APPLICATION FOR A CORRIDOR CERTIFICATE AND A ROUTE PERMIT

Southwest Oliver 230 kV Transmission Line

Case No. PU-11-620

November, 2011

minnesota power
AN ALLETE COMPANY

HDR

minnesota power
AN ALLETE COMPANY

David R. Moeller, Senior Attorney – Legal Services

Fax 218-723-3955 / E-mail dmoeller@allete.com

November 9, 2011

Mr. Darrel Nitschke
Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard Avenue, Department 408
Bismarck, ND 58505-0480

RE: Minnesota Power's Application for a Corridor Certificate and a Route Permit
Southwest Oliver 230 kV Transmission Line
Case No. PU-11-620

Dear Mr. Nitschke:

Pursuant to N.D.C.C. §§ 49-22-08, 49-22-08.1 and 49-22-07.2, under the Energy Conversion and Transmission Facility Siting Act, and promulgated rules, Minnesota Power has enclosed the following:

An original and ten copies of an Application for a Corridor Certificate and a Route Permit for a 230 kV transmission line and an Application for a Waiver of Procedures and Time Schedules.

In accordance with the North Dakota Public Service Commission's October 12, 2011 Motion, Minnesota Power previously sent a check for the $50,000 filing fee for this Application.

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

Sincerely,

David R. Moeller

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cc: Dan McCourtney, Minnesota Power
Kelly Garvey, HDR Engineering, Inc.

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1.0 INTRODUCTION

Minnesota Power (MP), an operating division of ALLETE, Inc., submits this Application for a Certificate of Corridor Compatibility (Corridor Certificate) and a Route Permit to construct a 230 kilovolt (kV) overhead electrical transmission line (Southwest Oliver 230 kV Transmission Line). There is one associated facility which is a 34.5/230 kV step-up substation (Tri-County 34.5/230 kV Substation) which will increase the voltage in order to facilitate the efficient transmission of wind-generated energy. The transmission line originates from the existing 34.5/230 kV Bison Substation in Morton County to the proposed Tri-County 34.5/230 kV Substation in Mercer County (the Route).

MP provides retail electric service to northeastern Minnesota and wholesale service to 16 municipal customers in Minnesota and two private utilities in Wisconsin. The development of this line is in anticipation of potential wind energy conversion facilities that may be proposed in Morton, Oliver, and Mercer Counties. ALLETE has had extensive project development experience in North Dakota with the development of the 82 MW Bison 1 Wind Project, the 105 MW Bison 2 Wind project and the 105 MW Bison 3 Wind Project located in Oliver and Morton counties, North Dakota. MP continues to engage in extensive development efforts to identify technically and economically viable renewable projects. MP is committed to minimizing the environmental impact of its facilities.

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

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

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

Table 1-1 and Table 1-2 outline the information necessary to fulfill the requirements for a Corridor Certificate and Route Permit based on PSC Guidelines and identifying where these requirements are addressed in this document.

1.1.1 Waiver of Procedures and Time Schedules

MP 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 11 mile, 230 kV transmission facility. By this Application, MP requests that the PSC, pursuant to NDCC Section 49-22-07.2, waive the following requirements:

1. That the PSC 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. MP also requests that the PSC shorten the 3-month period specified in NDCC Section 49-22-08(5) and the 6-month period specified in NDCC Section 49-22-08.1(5).

2. That the PSC 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 PSC waive requirements for Mylar maps and stereo-pair aerial photographs as set forth in the PSC's Application Guidelines for a Corridor Certificate and a Route Permit. Geographic Information System (GIS) maps are provided in the Application.

The PSC'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, MP'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

MP proposes to construct, own, and operate an approximately 11 mile, 230,000 volt (230 kV), three-phase alternating current electric transmission line and a 34.5/230 kV substation (transmission facility) from the existing 34.5/230 kV Bison Substation located in Section 4 of T140N, R86W, to the proposed Tri-County 34.5/230 kV Substation site in Section 36 of T141N, R88W. The purpose of the line is to transmit the energy generated by proposed future wind projects to the transmission system. The project provides North Dakota another opportunity to help meet society's need for renewable energy.

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

Need

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

Cost

The transmission line and associated substation are estimated to cost approximately $10 million

Justification for Waiver

Waivers of timelines and procedures are needed in order to prevent potentially significant delays in this Project. As set forth in section 1.3 of the Application, MP anticipates beginning construction in March 2012 and also needs to have the transmission line completed and energized in late 2012 to be in-service on schedule. Section 49-22-07.2 of the Act provides that the PSC 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, MP evaluated the transmission line using the criteria set forth in the Act, the Rules, and the PSC's Guidelines for Energy Conversion and Transmission Facility Siting (Guidelines). MP evaluated the impacts of the transmission line 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 transmission line 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.

MP's proposal takes into consideration all state and federal agency concerns and thereby further mitigates any adverse effects associated with the proposed facilities. The designated state agencies and officers listed in NDAC 69-06-01-05 were notified about the proposed Project in September 2011. MP will continue to work with the agencies to address any concerns.

MP submits 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 facilities will produce minimal adverse effects. Accordingly, MP respectfully requests that the PSC grant the requested waivers and render an expeditious decision.

1.1.2 Certificate of Corridor Compatibility

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

Table 1-1
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

State Authority	Description	Section
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
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 B Bison I Wind Project-
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 PSC 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
e.	Design and construction limitations; and	3.1.5

State Authority	Description	Section
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. Note: A waiver for this requirement has been requested.	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
9.	The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	8.9

State Authority	Description	Section
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.	Issues raised by federal agencies, other state agencies, and local entities	8.11

1.1.3 Route Permit Application

Table 1-2 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 1-2
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 (ROW) acquisition complete;	1.3
c.	Construction start date;	1.3
d.	Construction complete;	1.3
e.	Test operations; and	1.3
h.	In-service date.	1.3
Section B	Studies	
	Provide a copy of any studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state, or local agency.	Appendix B
Section C	Need for Facility	2.0
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

State Authority	Description	Section
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.	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 PSC'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
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. Note: A waiver for this requirement has been requested.	Figures

State Authority	Description	Section
c.	Furnish one (1) set of uncontrolled 9 x 9-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
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.	Issues raised by federal agencies, other state agencies, and local entities	8.11

1.2 PROJECT SUMMARY

MP proposes to construct a 230 kV transmission line on H-frame tangent structures within the Corridor identified in Section 1.2.1 as well as a 34.5 kV/230 kV substation (Tri-County 34.5/230 kV substation) located in Section 36 Township 141N Range 88W. A description of the proposed transmission facility is in Section 4.2. The 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 Proposed Corridor and Route for the new 230 kV transmission line. The new line will be approximately 11 miles long and will transmit electrical energy from the proposed Tri-County 34.5/230 kV Substation to the existing 34.5/230 kV Bison Substation.

1.2.1 Study Area and Proposed Corridor

Figure 2 presents exclusion and avoidance areas in the vicinity of the proposed Corridor. MP studied potential wind resource locations in North Dakota for siting a wind generation facility and transmission line.

At the Tri-County Substation, the power will be transformed to 230 kV and transmitted via an overhead line, interconnecting with the transmission grid at the existing Bison Substation and then via a 22 mile, 230 kV transmission line, built in 2010, to the Square Butte Substation. Electrical energy is converted from Alternating Current (AC) to Direct Current (DC) via a DC converter station within the Square Butte Substation. Electrical energy will be transmitted to customers via the existing MP DC Line, which extends from the Square Butte Substation to MP's Arrowhead Substation located near Duluth, Minnesota.

MP is proposing a 1.1-mile-wide Corridor for the proposed transmission line from the Tri-County 34.5/230 kV Substation to the point of interconnection, the Bison Substation. The Corridor consists of the sections, townships, and ranges in Table 1-3 and is represented on the Study Area map shown in Figures 2, 4, and 5. The corridor chosen complies with NDAC 69-06-04-02, which states that the width of the corridor must be 10 percent of the length of the line, and not less than 1 mile and not more than 6 miles wide.

Table 1-3
Corridor Study Area

County	Township	Range	Sections
Morton	140N	86W	3-6
	140N	87W	1-6
	140N	88W	1-3
Oliver	141N	86W	31-35
	141N	87W	31-36
Mercer	141N	88W	36

Following an analysis of potential transmission needs, 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. MP avoided wildlife management areas

(WMAs), residences, recreational areas, and irrigated land to the extent practicable. MP is interconnecting with existing infrastructure at the Bison 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, and to 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 65 feet on either side of the proposed Route centerline, which is wider than the right-of-way (ROW) discussed in section 4.2.1.2 of the Application. The townships, ranges, and sections comprising the route are shown in Table 1-4 and are almost identical to those of the Corridor.

Table 1-4
Route Location

County	Township	Range	Sections
Morton	140N	86W	4-6
	140N	87W	1-6
	140N	88W	1
Oliver	141N	86W	31-35
	141N	87W	31-36
Mercer	141N	88W	36

The average span length of the new transmission line would be approximately 900 feet. The criteria identified in section 1.2.1 as primary in the decision-making for the location of the proposed Corridor also dictated the selection of the proposed Route within the Corridor. In particular, the avoidance criteria for residences dictated the location of the line. Structure locations will be adjusted to more specifically avoid residences, wetlands and water bodies, and native vegetation to the extent practicable, as described within this document.

Modifications to the existing 230 kV Bison Substation will be required to allow interconnection of the 230 kV transmission line to the electric grid. These modifications are discussed in section 4.2.4.

1.2.3 Product

The line will transmit electrical energy from the Tri-County 34.5/230 kV Substation to the Bison Substation. The line is intended to carry 230 kV, three-phase, alternating current. The transmission line is expected to operate at 1065 MVA. Electrical energy will be transmitted to customers via the existing Bison Substation and then via the existing MP DC Line, which extends from the Square Butte Substation to Minnesota Power's Arrowhead Substation located near Duluth, Minnesota, and on the existing high voltage AC transmission system as capacity is available.

1.3 PROJECT SCHEDULE

The in-service date is dependent upon permitting approvals and other development activities.

1. Certificate of Corridor Compatibility: MP anticipates the Corridor Certificate will be approved in March 2012.
2. Route Permit Application: The route permit application is included here.
3. Route Permit: MP anticipates the Route Permit will be approved concurrent with the Corridor Certificate in March 2012. It is critical for MP to receive the Route Permit and Corridor Certificate as soon as possible, as completing this step will allow MP to move forward with other commitments associated with the Project, including ordering long-lead-time materials.
4. ROW Acquisition: MP is responsible for all ROW acquisition and is in the process of obtaining the necessary easements from landowners. MP is in the process of obtaining options to purchase easements from all private landowners for the Route.
5. Equipment Procurement, Manufacture, and Delivery: MP will order the transmission line components as soon as practicable. Once the components have been ordered, delivery is anticipated within six months.
6. Construction: MP anticipates construction could begin as early as March 2012 in areas that may require winter construction, and in mid-May 2012 for the rest of the transmission line. The construction will take approximately four months to complete.
7. Test and Operations: MP expects that testing of the system will occur in August 2012.
8. In-Service Date: The expected in-service date for the transmission line will be December 2012.

No expansions or modifications to the Project are proposed at this time. The proposed transmission line and Tri-County Substation will be designed for additional capacity to accommodate future wind generation development in the area. Any future wind generation facilities using this substation will be submitted separately.

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2.0 NEED FOR FACILITY

2.1 NEEDS ANALYSIS

This proposed 230 kV transmission line will provide the opportunity for development of additional wind energy in the vicinity without triggering the need to construct additional transmission line capacity. A 230 kV transmission line voltage was selected to be compatible with the point of interconnection to the transmission grid, the Bison Substation.

North Dakota has a unique opportunity to help meet regional energy needs with clean, efficient, renewable energy. The Project offers North Dakota and the surrounding region the opportunity to add transmission capacity and provide a transmission outlet for electricity from clean, cost-effective, renewable energy generation facilities. MP intends the Project to transmit significant amounts of energy to meet the region's needs over the next 35 years.

2.2 ALTERNATIVES

The proposed Tri-County 34.5/230 kV Substation is located in Section 36 of T141N, R88W. This point defines the western terminus of the proposed transmission line. The existing Bison Substation, the point of interconnection to the high voltage electrical grid, defines the eastern terminus of the line. The Route was selected on the following basis:

- The Route is relatively direct, minimizing costs of the transmission line facility and minimizing potential impacts to landowners and the environment.
- The Route uses properties of landowners willing to provide options to purchase easements.
- The potential for wetlands and other environmental impacts are minimized to the extent practicable.
- The Route will provide for potential future development of additional wind resources.

2.3 TEN-YEAR PLAN

MP filed a Ten-Year Plan with the PSC in June 2011. This Project was described in that Ten-Year Plan.

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3.0 TRANSMISSION FACILITY CORRIDOR AND ROUTE CRITERIA

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 future wind project to the existing Bison Substation, the transmission line originates at the proposed Tri-County 34.5/230 kV Substation and terminates at the Bison Substation. The 1.1 mile wide 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 36 of T141N, R88W, and end at the existing Bison Substation approximately 11 miles to the east. The proposed 11-mile route described in this Application is the result of this Corridor study, which included discussing easements with landowners, identifying known environmentally sensitive areas, considering North Dakota's power plant siting exclusion and avoidance areas, reviewing Mercer, Morton, and Oliver County requirements, and communicating with local, state, and federal agencies.

MP has reviewed the criteria in NDAC 69-06-08 and has factored these 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 NDAC 69-06-08 are discussed in this section.

3.1 EXCLUSION AREAS

Per NDAC 69-06-08-02-1, the following geographical areas (Table 3-1) are required to be excluded in the consideration of a route for a transmission facility, and would include a buffer zone of reasonable width to protect the integrity of each area. As Figures 2 and 3 show, there are no exclusion areas within the Corridor or Route proposed.

Table 3-1
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	None	None	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

Exclusion Area	Present within Project Vicinity?	Proposed Buffer		Section Addressed
		Corridor	Route	
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. MP is working with the U.S. Fish and Wildlife Service (USFWS) and North Dakota Game and Fish Department (NDGFD) to avoid potential impacts.	No unique or rare areas have been identified along the Route.	5.16

3.2 AVOIDANCE AREAS

Per NDAC 69-06-08-02-2, the following geographical areas (Table 3-2) 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 PSC 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 3-2
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	None	None	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

Avoidance Areas	Present within Project Vicinity?	Proposed Buffer		Section Addressed
		Corridor	Route	
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 are several occupied residences identified within the proposed Corridor.	No homes are located within 500 feet of the Route centerline.	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	The North Dakota State Water Commission's database reveals three irrigation permits were issued within the vicinity of the Route and may or may not be located within the Corridor. MP will avoid these parcels of land once final locations are determined. No buffer has been established and no conflicts are anticipated.	None	5.9
Areas of recreational significance which are not designated as exclusion areas	Present	A tract of Private Land Open to Sportsmen (PLOTS) land is located within the Corridor approximately halfway between the two Substations.	None	5.8

3.3 SELECTION CRITERIA

Per NDAC 69-06-08-02-3, a corridor or route shall be designated (Table 3-3) only when it is demonstrated to the PSC 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 7 to 16 identify the selection criteria for the Project as well as other related resources.

Table 3-3
Selection Criteria

Selection Criteria	Potential Adverse Effects		Section Addressed
	Corridor	Route	
The impact upon agriculture:			
Agricultural production	The structure type proposed will permanently impact approximately 100 ft^2 of land per structure. The placement of 65 structures would impact approximately 0.15 acres, which would result in an insignificant impact to agricultural production.	Approximately 0.15 acre (6,500 ft^2) of land will be permanently impacted due to 143 transmission line structures placed along the Route. This would result in an insignificant impact to agricultural production.	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 2 homes within the Corridor. No impacts to noise sensitive land uses are anticipated.	The noise level at 300 feet from the proposed transmission line is 33 dBA. Noise impacts are nominal. The nearest sensitive receptor to the proposed route is approximately 1500 feet. No impacts to noise sensitive land uses are anticipated.	5.5
The visual effect on the adjacent area	The transmission line will be visible to landowners and residents who live near the line. MP will minimize visual impacts to the extent practicable.	Visual impacts will be most evident to landowners and residents in close proximity to the Route . The route is primarily along non-maintained section line roads which will minimize impacts 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

Selection Criteria	Potential Adverse Effects		Section Addressed
	Corridor	Route	
Wetlands, woodlands, and wooded areas	Wetland resources will be avoided to the extent practicable. MP 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 all wetlands along the proposed Route can be spanned using the proposed transmission line design. There are not wetlands in the corridor which will require a crossing greater than the average span (900 ft) of the transmission line and thus it is unlikely that any wetland impacts will occur as a result of this Project. Should a wetland impact be unavoidable, MP intends to mitigate these impacts as required by the U.S. Army Corps of Engineers (USACE) and North Dakota Department of Health (NDDH). It is anticipated that a small amount woodlands and windbreaks may be impacted. Trees and shrubs will be replaced at a ratio of 2:1 at the site and will be monitored for survival for three 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 are anticipated.	No impacts to radio and television reception or other communication or electronic control facilities are anticipated due to the construction of the line in the proposed location (microwave study).	5.3
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

Selection Criteria	Potential Adverse Effects		Section Addressed
	Corridor	Route	
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 0.15 acres (6,500 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

3.4 POLICY CRITERIA

Per NDAC 69-06-08-02-4, the PSC may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a proper case may require the adoption of such policies and practices (Table 3-4).

Table 3-4
Policy Criteria

Policy Criteria	Suitable Policy or Practice of Applicant	Section Addressed
Location and design	MP's policy is to locate and design the proposed transmission line to minimize environmental impacts and utilizing existing corridors where practical.	1.1
Training and utilization of available labor in this state for the general and specialized skills required	MP will use local labor to the extent practicable. MP Project management will meet with local labor well in advance of construction to assure the necessary human resources are available.	5.1
Economies of construction and operation	MP will use local contractors to the extent practicable.	5.1

Policy Criteria	Suitable Policy or Practice of Applicant	Section Addressed
Use of citizen coordinating committees	MP has and will continue to work with landowners on the development of the Project.	7.0
A commitment of a portion of the transmitted product for use in this state	Due to the need to transmit and utilize this wind energy in MP's service territory to meet state of Minnesota renewable mandates, MP cannot make this commitment.	1.2, 4.2
Labor relations	No labor relations will be affected.	5.1
The coordination of facilities	Existing facilities and facility corridors were considered in the location of the transmission line and its associated facilities.	1.2.1, 1.2.2
Monitoring of impacts	MP and the construction contractor will employ Best Management Practices (BMPs) during construction to minimize soil impacts. Impacts will be monitored as required by the conditions of the general construction stormwater permit. MP will monitor tree and shrub replacement for three years, if needed.	5.10, 5.14, 5.15
Utilization of existing and proposed rights of way and corridors	The proposed 230 kV transmission line location was the best location when considering the factors identified by the PSC and MP's policies and Project design.	1.2.1, 1.2.2, 3.1.5
Other existing or proposed transmission facilities	The Corridor does not include existing transmission facilities and the Route does not parallel existing transmission lines. The proposed 230 kV transmission line crosses existing transmission facilities and will be designed to provide the required electrical clearances to these existing facilities.	1.2.1, 1.2.2, 3.1.5

3.5 Design and Construction Limitations

Project design and construction limitations are primarily associated with the proposed location of the transmission line. The points of termination largely dictate the location of the transmission line. The line must originate at the proposed Tri-County 34.5/230 kV Substation and terminate at the existing Bison Substation since the purpose of the proposed 230 kV transmission line is to transmit energy from proposed wind projects to the utility grid. The proposed Route is the most direct while minimizing impacts to the criteria identified in Section 69-06-08-02.

For this particular Project, MP will attempt to span all wetlands along the Route. Preliminary wetland mapping indicates that no wetland spans will be more than 1,000 feet long and it is anticipated that no transmission structures will be placed in wetlands. Should impacts be unavoidable, MP intends to mitigate them as required by the U.S. Army Corps of Engineers (USACE) and the North Dakota Department of Health (NDDH).

The existing Bison Substation layout largely dictates where new lines may enter. The configuration of the existing substation equipment and high voltage overhead transmission lines restrict where the new transmission line may enter the substation. The proposed 230 kV transmission line will enter the north side of the Bison Substation in order to be compatible with the existing configuration. MP will use wooden, two-pole H-frames for tangent structures, steel monopoles for angles in cultivated fields, and either guyed-wood multiple pole or steel monopole structures in pasture or grazing land. The use of wooden H-frame structures has design limitations; therefore, following geotechnical exploration it may

become necessary to use special structures or materials to avoid sensitive environmental features or to accommodate poor soil conditions or other design limitations.

3.6 Economic Considerations

There are many economic considerations in the design and routing of a transmission line. The initial cost of a transmission line increases as the voltage of the line increases. This higher initial cost is offset by a reduction in energy losses for higher voltage lines when compared with lower voltage lines. A 230 kV transmission line was selected for this facility in order to be compatible with the point of interconnection at the 230 kV Bison Substation.

In general, minimizing the length of the route and minimizing the number of angle structures decreases the cost of the transmission line by minimizing the material, construction, and ROW costs. The Route effectively balances the economic considerations of overall length of the line and the number of angle structures required with impacts on the environment, agricultural lands, and landowners.

The selection of materials and structure types also affects the cost of a transmission line. MP proposes to use wooden H-frame tangent structures to minimize the cost of the transmission facility. Although steel monopole angle structures are more expensive than guyed multiple wood-pole angle structures, MP has committed to the use of steel angle structures in cultivated lands in order to minimize disruption of farming activities.

4.0 ENGINEERING AND OPERATIONAL DESIGN

4.1 PREFERRED ROUTE DESCRIPTION

The transmission line will originate at the proposed Tri-County 34.5/230 kV Substation located in Mercer County. The proposed location of the Tri-County 34.5/230 kV Substation is in Section 36 of T141N, R88W. From this location, the Route will head east for approximately 11 miles, where it will turn south and end at the existing Bison Substation, in Section 4 of T140N R86W. 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 future wind projects to the Bison Substation. The Bison Substation is connected to the Square Butte Substation via an existing 22-mile 230 kV transmission line. Electrical energy will be transmitted to customers via the existing AC transmission system as available, and on the existing MP DC Line which extends from the Square Butte Substation to MP's Arrowhead Substation located near Duluth, Minnesota.

4.2.1 Transmission Structures and Right-of-Way Design

A design data report is attached as Appendix A.

4.2.1.1 Transmission Structures

The proposed transmission line is intended to carry 230 kV, alternating current. It is expected to operate at 629 MW.

MP is proposing to use predominantly single-circuit, H-frame wooden structures for the transmission line. However, final design, corner pole locations, 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 typical structures that will be used for the transmission line. The structures will be directly embedded into the ground. The structures will be 70 to 110 feet high with an average span between each structure of 900 feet. The proposed conductor will be 1780 kcmil (thousand circular mil) Aluminum Conductor, Steel Supported (ACSS/TW). The actual size of the conductor will be confirmed once the final design is complete. One 7/16-inch EHS (7-strand) shield wire will be used in conjunction with one 64 mm, 2/528 optical ground wire (OPGW) to provide lightning protection and communication capability on the transmission line. Locations of each structure will be submitted to the PSC once the plan and profiles have been completed, at least 7 days prior to the public hearing anticipated for this Project.

The proposed transmission line will be designed, constructed, operated, and maintained to meet or surpass all relevant state codes, National Electric Safety Code (NESC), Avian Power Line Interaction Committee (APLIC) raptor-safe design standards, and MP company standards. Appropriate safety standards will be met for construction, operation, and maintenance of the facility.

4.2.1.2 Right-of-Way Design

A 130-foot ROW will be acquired for the approximately 11-mile 230 kV transmission line (Figure 7). This includes 65 feet of ROW on each side of the structure centerline for the proposed facility. An

additional 100-foot width will accommodate a future 230 kV transmission line. ROW impacts and calculations for this Application are based on a 130-foot ROW and do not include the additional 100-foot width. Development within the additional 100-foot width would require a separate Corridor Certificate and Route Permit.

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

4.2.2.1 Right-of-Way Preparation

The proposed Route crosses primarily agricultural land. There are various locations where tree and shrub growth may require ROW clearing. Where safety requirements permit, trees and low-growing shrubs will remain (generally less than 15 feet high). A 130-foot-wide portion of the corridor will be cleared of tall, woody vegetation for the 11 mile length of the transmission line. It is anticipated that less than 0.70 acres of trees and shrubs may be affected. Significant amounts of grading are not anticipated for preparation of the transmission ROW.

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 on availability of materials, equipment, and construction labor. The schedule will consider anticipated weather conditions.

Construction of the transmission line will require minimal ROW preparation and minimal grading or leveling. Transmission structures will be placed at existing grade elevations. Limited grading may be required to provide level and stable access paths and working surfaces for construction crews at selected structure and wire stringing locations. Once construction is completed, the graded areas will be restored and blended with the original contours to the extent practicable.

Structure components will be delivered to either the staked structure location or to a Project storage yard. If the structures are delivered to the location where they will be installed, they will be placed on the ROW out of the clear zone of any adjacent roadways or designated pathways. Insulators and other hardware are normally attached while the structure is on the ground. Structures will be assembled and erected at the structure site using mobile cranes or similar heavy-duty equipment. Each pole will be directly embedded and will require a 10 to 12 foot deep hole approximately 3 feet in diameter. The pole will be set within the excavated hole and backfilled with native soils or crushed rock. Structures in poor or wet soils may require specially engineered foundations such as a steel culvert or cast-in-place reinforced concrete foundation.

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 square feet. Temporary impacts due to construction around each structure are estimated at approximately 4,000 square feet. Access paths will be approximately 10 to 12 feet wide; however, this impact will be temporary and would require minimal grading or excavation.

Once the structures have been erected, conductors will be installed by establishing stringing setup areas within or adjacent to the ROW. Stringing equipment generally consists of sheaves or stringing blocks,

wire pullers, tensioners, rope and wire trailers, and a bulldozer used for sagging. Stringing operations involve pulling ropes through the stringing sheaves located at every structure site. The rope is then used to pull a steel cable (hard line). The hard line is then used to pull the conductors through the sheaves under sufficient tension to keep the conductor from coming into contact with the ground. Temporary guard structures 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. The guard structures ensure that conductors will not obstruct traffic or contact existing energized conductors or other cables. After pulling the conductor, shield wire, and OPGW to the proper tensions, construction crews access each structure to secure or "clip" the conductors to the insulators and clamp the shield wire and OPGW to the supporting hardware.

Modifications to the existing Bison Substation will be required to allow interconnection of the 230 kV transmission line to the electric grid. These modifications will include the addition of new circuit breakers, switches, instrument transformers, and other electrical equipment, power wiring, underground cable, reinforced concrete foundations, structural steel terminal structure and equipment supports, and an electrical equipment enclosure (control house). These modifications will occur within an expansion area of the Bison Substation. This expansion area has been constructed to house additional substation equipment for the Bison 2 and 3 wind projects and will have available space to house the additional substation equipment for this project.

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, 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. Postconstruction reclamation activities include removing and disposing of debris, dismantling all temporary facilities (including staging and laydown areas), leveling or filling tire ruts, and reseeding disturbed areas 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 fence, rock checks, flow diverters, 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 will exercise caution when equipment is within 50 feet of streams and rivers and will not drive equipment through streams or rivers. Temporary timber mat bridges may be used to facilitate crossing of small streams and rivers with construction equipment. These crossing points will be restored and revegetated to their original condition to the maximum extent practicable.

4.2.2.4 Maintenance Procedures

MP will periodically use the ROW to perform inspections, maintain equipment, and make repairs over the life of the transmission line. MP 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

MP is securing options to purchase easements from all private landowners. During the acquisition phase, individual property owners have been advised of construction schedules, needed access to the site, and vegetation clearing required for the transmission line. The ROW will be cleared of the amount of vegetation necessary to construct, operate, and maintain the proposed transmission line.

MP will notify the landowners prior to conducting the necessary engineering surveys and soil investigations. Where possible, staging and laydown areas will be located within the ROW 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 laydown areas required outside of the proposed ROW.

4.2.4 Associated Facilities

The 34.5/230 kV Tri-County collector substation is the only associated facility with this project. This substation will increase the voltage in order to facilitate the efficient transmission of the wind-generated energy to the existing Square Butte Substation along a new 230 kV transmission line.

The attached design data report identifies the general specifications of the substation (Appendix A). Modifications to the existing Bison Substation will be required to allow interconnection of the 230 kV transmission line to the electric grid. These modifications will include the addition of new circuit breakers, switches, instrument transformers and other electrical equipment, power wiring, underground cable, reinforced concrete foundations, structural steel terminal structure and equipment supports, and an electrical equipment enclosure (control house). These modifications will generally be implemented within the Bison substation expansion area.

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 11 miles long with 900-foot average spans. The approximate number of structures for a line of this length, based on the average spans, is 65. The proposed structure type is a two-pole wooden H-frame. For angles, single pole, steel structures on reinforced concrete foundations may be used to avoid the placement of guy supports. Each structure will permanently impact approximately 100 square feet, or 50 square feet per pole. The temporary impacts are estimated to include an area of approximately 4,000 square feet around each structure and a 10- to 12-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 was obtained using the National Land Cover Dataset. 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 ROW. The cleared width of the ROW for the 230 kV transmission line is 65 feet on either side of the structure centerline.

Consistent with MP'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 proposed facility's environmental impact.

5.1 DEMOGRAPHICS

5.1.1 Description of Resources

The Project is located within a lightly populated rural area in south-central North Dakota. There is no indication of any new residential construction within the Corridor or Route (U.S. Census 2009). Information on demographics and housing for this section was taken from the 2000 U.S. Census.

The population of Morton County is 25,303. The population of Oliver County is 2,065. The population of Mercer County is 8,424. The closest town to the Corridor is Glen Ullin, located approximately 6 miles to the southwest in Morton County, with a population of 796. Table 5-1 summarizes the population and economic characteristics within the Corridor. The data for the townships is at the Census Tract level, which includes data from surrounding townships and accounts for the ranges given.

According to the 2000 U.S. Census, the largest industry employing residents of Morton County is educational, health, and social services, while the second largest industry is retail trade. The largest industry employing residents of Oliver County is agriculture, with the second largest industry being educational, heath, and social services. The largest industry employing residents of Mercer County is retail trade, with the second largest industry being accommodation and food service.

Table 5-1
Population and Economic Characteristics

Location	Population	Per Capita Income (dollars)	Percentage of Population Below Poverty Level
Morton County	25,303	17,202	9.6
T140N, R88W	3,580-5,638	10,802-15,839	8-13
T140N, R87W	3,580-5,638	10,802-15,839	8-13
T140N, R86W	3,580-5,638	10,802-15,839	8-13
Oliver County	2,065	16,271	14.9
T141N, R86W	94-537	15,840-18,893	14-22
T141N, R87W	94-537	15,840-18,893	14-22
Mercer County	8,424	29,900	7.2
T141N, R88W	2,629	18,285	4.5

5.1.2 Impacts

5.1.2.1 Corridor

Short-term impacts to socioeconomic resources 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 MP as business expenditures and state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies, and other products and services would benefit businesses in the counties and the state.

5.1.2.2 Proposed Route

Approximately 19 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 0.15 acres for the entire Route. Landowner compensation will be established by individual easement agreements. As stated above, agricultural areas surrounding transmission line structures can be returned to production following construction of the line. The transmission line 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 transmission line 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. MP 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 transmission line would be located in Mercer, Morton, and Oliver Counties within south-central North Dakota. The Corridor and Route are located in portions of the Northwestern Great Plains and Northwestern Glaciated Plains Ecoregions[1](USEPA 2009). The predominant land use within these Ecoregions is cattle ranching, farming, and spring wheat and alfalfa crops. Within the Corridor, the primary land use is rural agriculture to produce crops and graze cattle. The proposed Corridor is not within incorporated 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.

Based on a review of aerial photographs, land use database information, and visits to the Corridor and Route, it was determined that the majority of the land area is agricultural (Figure 11). In addition, the U.S. Geological Survey (USGS) National Land Cover Dataset program was used as a source for GIS land cover data. Land cover reflects the vegetation and artificial structures that cover the land's surface, including trees, grass, crops, wetlands, water, buildings, and pavement. Land cover is typically an indicator of land use. Table 5-2 identifies current land use in the Corridor and Route.

Table 5-2
Major Habitats and Their Relative Abundance

Habitat	Transmission Corridor		Transmission Route	
	Acreage	Percent of Corridor	Acreage	Percent of Route
Open Water	8.5	0.1	--	--
Developed, Open Space	267.3	3.2	2.7	1.6
Forest (Deciduous/Evergreen)	22.5	0.3	--	--
Shrub/Scrub	5.8	0.1	1.0	0.6

[1] An area defined by its environmental conditions, climate, landforms, and soil characteristics.

Habitat	Transmission Corridor		Transmission Route	
	Acreage	Percent of Corridor	Acreage	Percent of Route
Grassland/Herbaceous	3,249.8	39.3	51.5	29.6
Pasture/Hay	464.1	5.6	7.5	4.3
Cultivated Crops	4,172.8	50.4	109.3	62.8
Woody Wetlands	44.7	0.5	0.6	0.3
Emergent Herbaceous Wetland	41.6	0.5	1.5	0.8
Total	8,277.1	100.0	174.2	100.0

Approximately 95 percent of the Corridor is used for agricultural purposes. Agricultural land use includes approximately 50.4 percent cultivated crops, 5.6 percent pasture and hay, and 39.3 percent grasslands. Approximately 4.7 percent of the Corridor is developed-open space, forest, shrub-scrub, open water, and woody and emergent herbaceous wetlands.

Approximately 97 percent of the Route is used for agricultural purposes. Agricultural land use includes approximately 62.8 percent cropland, 4.3 percent pasture and hay, and 29.6 percent grasslands. Approximately 3.3 percent of the Route is developed-open space, shrub-scrub, and woody and emergent herbaceous wetlands.

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. One transmission line (46.5 kV) is already present within the Corridor (Figure 5) along the western terminus, and the Route is adjacent to an existing arterial roadway (30th Street SW). Land used for crops is abundant in the Corridor. Ranching activity is also not expected to be impacted by the proposed transmission line. The majority of the area under or adjacent to the transmission line can still be used for agricultural practices following construction.

5.2.2.2 Proposed Route

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 landowners. 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

MP will work closely with landowners and 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 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 Corridor is located in a lightly populated, rural area in south-central North Dakota. There is an established transportation and utility network that provides access and necessary services to the light industry, small cities, homesteads, and farms existing in and near the Corridor. The closest town to the Corridor is Glen Ullin, located approximately 6 miles southwest of the western portion of the transmission Corridor. The city provides parks and the Glen Ullin Public Library. Additionally, the city's local services include emergency services: a fire department, ambulance service, and a police department. There are also local retail service facilities and institutions.

Electrical Service

There is one primary transmission line running through the Corridor. A 46.5 kV line, owned by Montana-Dakota Utilities Company, crosses the Corridor along the western terminus (see Figure 2).

Roads

County and township (section line) roads characterize the existing roadway infrastructure in and around the Corridor. The approximately 11 mile Route would be located along unimproved section line road and would cross maintained county roads in three different places. The ends of the route are approximately 4 miles west of State Highway 31 and 0.5 miles east of State Highway 49. Interstate 94 is approximately 8 miles south of the southernmost section of the Route (see Figure 1).

Traffic

The existing traffic volumes on the area's state highways are documented in Table 5-3 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 roadways.

Table 5-3
Existing Daily Traffic Levels

Roadway Segment	Existing Average Annual Daily Traffic (AADT)
State Highway 31 south of Highway 25	855
State Highway 49 north of Interstate 94	1620

Source: 2010 Traffic Volumes, NDDOT 2010

Additional county and township roads run through the Corridor, but have no count data available. In general, the North Dakota Department of Transportation (NDDOT) indicated that roads under 100 ADT are rarely counted.

The Route will be located between Highway 49 (1 mile from the western terminus) and Highway 31 (4.5 miles from the eastern terminus).

Water Supply

The townships have limited public infrastructure services, which is typical of most townships. Homes typically use septic systems and water wells for their household needs. Although not used for water supply, there is one monitoring well located along the western terminus of the Route.

Telephone, Fiber Optic, Microwave, Television, and Radio Communications

Potential 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.

No private land mobile communication sites or microwave towers are present within 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 11 miles long. The access path will be approximately 10 to 12 feet 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 an average of 20 to 30 additional vehicle trips per day. Using any combination of state and county highways and other township roads throughout the Project area, the traffic impacts are considered negligible. Since many of the area roadways have minimal ADT currently, the addition of 20-30 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 the level-of-service to the traveling public would not be impacted.

Truck access to the Corridor is served by Interstate 94, State Highway 31, and State Highway 49. Specific truck routes will be dictated by the location required for delivery of transmission line components. 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. During excavation of foundations for the steel monopole structures in unstable soil conditions, it may be necessary to pump water in the excavation to stabilize the soils. Potable water would be used for this purpose. Coordination with the appropriate authorities will occur to avoid and/or minimize disruption to the existing monitoring well located along the western terminus of the Route.

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

Construction, operation, and maintenance of the transmission line will not impact local services, and no mitigation is required.

Electrical Service

The construction of the transmission line, including proposed upgrades to the Bison Substation, will not negatively impact existing electrical service.

Roads

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

If temporary dewatering of groundwater is required during construction activities, discharge will be conducted under the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and Storm Water Pollution Prevention Plan (SWPPP). Coordination with the appropriate authorities will occur to avoid and/or minimize disruption to the existing monitoring well located along the western terminus of the Route.

Telephone, Fiber Optic, Microwave, Television, and Radio Communications

North Dakota One Call will be contacted prior to construction to locate and avoid underground facilities. To the extent Project facilities cross or otherwise affect existing telephone or fiber optic lines or equipment, MP will comply with all regulations required to avoid interference with these existing facilities.

Since no impacts to microwave or land based telecommunication 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 field (EMF) refers to electric and magnetic fields that are present around any energized 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 examine whether exposure to power-frequency (60 Hz) EMF cause biological responses and health effects (Minnesota

State Interagency Working Group on EMF Issues 2002, NIEHS 1999). Toxicological studies have shown no statistically significant association or weak associations between EMF exposure and health risks. Some epidemiological studies have indicated an association between power frequency EMF and health effects, while many others have not. The most recent and exhaustive reviews of the health effects from power-frequency fields conclude that the evidence of health risk is weak.

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 (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 of EMF exposure.

5.4.1.2 Human Safety

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

The proposed transmission line will be equipped with protective devices such as breakers and relays at the substations 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 substations will de-energize the line in the event of an electrical fault. In addition, the substations are fenced and access is limited to authorized personnel.

5.4.2 Impacts

5.4.2.1 Corridor

Human Health

Decades of research have to-date failed to demonstrate that exposure to electric and magnetic fields can cause biological responses or adverse health effects in humans; though research has yet to resolve the issue conclusively. Lacking conclusive findings, some epidemiological agencies recommend reasonable and prudent avoidance of exposure. Based on the long separation distances from occupied residences and other sensitive receptors, the Project will not significantly add to public exposure to EMF and therefore will have little effect on public health and safety.

5.4.2.2 Proposed Route

Electric Forces and Magnetic Fields from 230 kV Line

According to the Project base maps, there are two occupied residences within 2,000 feet of the proposed Route. The nearest sensitive receptor to the proposed Route is approximately 1,500 feet away, 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, MP 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 composed 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 emissions from a transmission line are greatest 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 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 a slight, 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. 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. Table 5-4 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 5-4
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 method to evaluate audible noise from high voltage transmission lines. The 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 model and assuming a wet environment.

5.5.2.2 Proposed Route

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

- The three conductors were assumed to be approximately 26 feet above the ground, and spaced 19.5 feet apart.
- The conductor diameter was assumed to be 1.445 inches, as defined by the simulation software.
- The line to neutral voltage was calculated to be 132.79 kV.
- Phase angles were modeled as 240, 120, and 0 degrees, respectively.

Table 5-5 presents modeling results for the proposed line in dBA on an L_{50} basis. These levels are predicted to occur at a 0.5 feet above the ground and during wet conditions. The attenuation rate is approximately -3 dB per distance doubled. This rate is typical of noise sources that are characterized as line sources.

Table 5-5
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	33	35	38	41	43	45	43	41	38	35	33

5.5.3 Mitigation

5.5.3.1 Corridor

The nearest sensitive receptor to the proposed route is approximately 1,500 feet away, 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 shallow drainages. Elevations in the Corridor range between 2,150 and 2,400 feet above sea level. A topographic map of the Project area is shown in Figure 5.

Within the Project area the dominant land use is agricultural, consisting of cultivated crops, pasture and hay, and grasslands. 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 Tri-County Substation and the transmission line are located in the Heart River Drainage Basin. Within the Corridor, a few small intermittent creeks that exit the site flow to the west-southwest. Specifically, Sweet Briar Creek lies along the eastern terminus, while Hailstone Creek lies along the south-central portion of the Corridor. Small bands of National Wetland Inventory- (NWI-) mapped wetlands also exist in the Corridor. Figure 5 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 predominant structure design will be single-circuit, wooden H-frame tangent structures which minimize visual impacts.

5.6.2.2 Proposed Route

The new transmission line will have an effect on the visual quality within the vicinity of the Route. The impact to aesthetics will be minimal, due to the existing transmission lines. Figure 10 shows a photo of the existing structures along the Route.

MP is proposing to use multiple structure types for the Project. The majority will be wooden H-frame structures. Steel monopoles will be used for angles in cultivated fields and either guyed-wooden multiple pole or steel monopoles structures will be used in pasture or grazing land. Figure 6 depicts the dominant structures that will be used for the transmission line. The structures will be directly imbedded into the ground. They will be up to 110 feet high with an average span between each structure of 900 feet.

The Route will be located about 6 miles to the northeast of Glen Ullin; therefore, it will have minimal visual impacts on the town. The majority of the proposed 230 kV line will cross agricultural land next to existing road ROW (30th Street SW) and will result in minimal visual impacts to residences. Visual impacts will be most evident to landowners and residents near the Route and drivers traveling along State Highway 49 or 30th Street SW.

5.6.3 Mitigation

5.6.3.1 Corridor

The proposed Corridor contains an existing 41.6 kV line along the western terminus.

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 41.6 kV line and other infrastructure, such as 30th Street SW. The proposed Route will minimize the number of residences impacted by the line. There are only two residences within the corridor and care will be taken to avoid structure placement, as much as possible, in biologically sensitive areas such as wetlands and high quality native prairie. Placing structures in front of picture windows will also be avoided.

5.7 CULTURAL RESOURCES

5.7.1 Description of Resources

MP contacted the North Dakota State Historic Preservation Office (SHPO) in September 2011 to review files in order to determine if any previous investigations have been conducted in the Study Area or if known or suspected cultural resources exist that may be affected by the Project. The literature review of cultural resources information on file at SHPO found that two manuscripts, four archaeological sites, seven isolated finds, but no archaeological site leads, were on file within 1 mile of the Project. The two manuscripts describe previous cultural resource investigations for a wind energy center (Bison 2) and for a proposed aggregate borrow area. A Class I Cultural Resource Inventory (Appendix B) describes the literature search results in detail. A summary of results is presented in Table 5-6 below.

Table 5-6
Summary of Archaeological Sites, Site Leads, & Isolated Finds near the Project

SITS #	Location			Affiliation	Description	NRHP Status
	Twp	R	S			
32MO1385	140	86	3	Period Unknown	CM Scatter/Cairn	Ineligible
32OL616	140	86	35	Period unknown	CM Scatter	Unevaluated
32OL617	140	86	35	Period Unknown	Cairn, Stone Circle	Unevaluated
32OL627	141	86	35	Period Unknown	Cairn, Stone Circle	Unevaluated
32MOx528	140	86	4	Period Unknown	Isolated Find, Chipped Stone	Ineligible
32MOx533	140	86	3	Period Unknown	Isolated Find, Chipped Stone	Ineligible
32OLx251	141	86	35	Period Unknown	Isolated Find, Chipped Stone	Ineligible
32OLx242	141	86	35	Period Unknown	Isolated Find, Chipped Stone	Ineligible
32OLx243	141	86	35	Period Unknown	Isolated Find, Chipped Stone	Ineligible
32OLx249	141	86	35	Period Unknown	Isolated Find, Chipped Stone	Ineligible
32OLx250	141	86	36	Period Unknown	Isolated Find, Chipped Stone	Ineligible

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

5.7.2 Impacts

5.7.2.1 Corridor and Proposed Route

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

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

5.7.3 Mitigation

5.7.3.1 5.7.3.1 Corridor and Proposed Route

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

MP will develop and put in place an Unanticipated Discovery Plan before construction in the Project area begins. The plan will detail the steps to take if previously unknown archaeological resources or human

remains are encountered during construction. The plan will outline a communication framework for reporting on such discoveries in an efficient and legally compliant manner. The Discovery Plan may include the following topics: construction contractor training, identification of resources in the field, contact information for MP-designated professionals to address a discovery, procedures for avoidance, and associated tasks in the event of work stoppage in a construction area. With regard to a discovery of human remains, procedures would be followed to ensure that the appropriate authorities would become involved quickly and in accordance with local and state guidelines.

5.8 Recreational Resources

5.8.1 Description of Resources

Recreational opportunities in Mercer, Morton, and Oliver Counties 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. The primary resources in the Corridor that could support recreation uses are public lands, including:

- PLOTS (Private Lands Open to Sportsmen). A tract of PLOTS land is located within the Corridor near the central section of the transmission line, but outside of the proposed transmission line Route (NDGFD 2009).

This area is depicted in Figure 15.

5.8.2 Impacts

5.8.2.1 Corridor

In general, recreational impacts will be visual 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. No other significant impacts to recreational resources are anticipated.

5.8.2.2 Proposed Route

Recreational impacts will be visual 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 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 Figure 11. Cultivated land comprises approximately 7,886 acres (95 percent) of the Corridor and 168 (97 percent) acres of the Route. There may be areas of cultivated land currently enrolled in the Conservation Reserve Program (CRP).

According to the 2007 Census of Agriculture, Oliver County is ranked 46th overall in agricultural products sold in North Dakota; Morton County is ranked 22nd; and Mercer County is ranked 51st (USDA 2007). Combined, Mercer, Morton and Oliver counties contain 1,564 farms (273 in Oliver County, 836 in Morton County, and 455 in Mercer County), of which the primary commodity is crops, primarily wheat. Cattle are the primary livestock in the counties. According to the 2007 Census of Agriculture, the amount of land in farms decreased 9 percent in Morton County, decreased 6 percent in Oliver County, and decreased 5 percent in Mercer County. The market value of production in Oliver County in 2007 was approximately $53,389,000, of which crop sales account for approximately 46 percent. The market value of production in Morton County in 2007 was approximately $117,251,000, of which crop sales account for approximately 52 percent. The market value of production in Mercer County in 2007 was approximately $40,068,000, of which crop sales account for approximately 61 percent.

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 NRCS has two classifications for prime farmland (USDA 2008). 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 5-7 lists the soils considered prime farmland and soils of statewide or local importance within the Corridor and along the Route. Figure 12 shows the prime farmland soil distribution in the Corridor and along the Route.

Table 5-7
Prime Farmlands – Morton, Oliver, and Mercer Counties

Corridor Soil Units	All Areas are Prime Farmland	Soil of Statewide/Local Importance
Amor-Arnegard loams, 0 to 3 percent slopes		X
Amor-Shambo loams, 3 to 6 percent slopes		X
Arnegard loam, 0 to 2 percent slopes	X	
Arnegard loam, 2 to 6 percent slopes	X	
Belfield silt loam, 2 to 6 percent slopes		X
Belfield-Grail silty clay loams, 0 to 2 percent slopes		X
Belfield-Morton silt loams, 0 to 2 percent slopes		X
Belfield-Morton silt loams, 2 to 6 percent slopes		X
Belfield-Straw loams, 0 to 2 percent slopes		X
Farland silt loam, 2 to 6 percent slopes		X
Grail silt loam, 0 to 2 percent slopes	X	
Grail silt loam, 2 to 6 percent slopes	X	
Grail silty clay loam, 0 to 2 percent slopes	X	
Grail silty clay loam, 2 to 6 percent slopes	X	
Grail-Belfield silty clay loams, 2 to 6 percent slopes		X
Lawther silty clay, 2 to 6 percent slopes		X
Lefor fine sandy loam, 3 to 6 percent slopes		X
Morton silt loam, 0 to 3 percent slopes		X
Morton silt loam, 3 to 6 percent slopes		X
Morton silt loam, 6 to 9 percent slope		X
Morton-Cabba silt loams, 3 to 9 percent slopes		X
Morton-Farland silt loams, 3 to 6 percent slopes		X
Parshall fine sandy loam, 0 to 6 percent slopes		X
Reeder-Farnuf loams, 3 to 6 percent slopes		X
Regent silty clay loam, 3 to 6 percent slopes		X
Regent silty clay loam, 6 to 9 percent slopes		X
Regent-Savage silty clay loams, 0 to 3 percent slopes		X
Regent-Savage silty clay loams, 3 to 6 percent slopes		X
Regent-savage silty clay loams, 6 to 9 percent slopes		X
Savage silty clay loam, 2 to 6 percent slopes		X
Sen and Amor loams, 0 to 3 percent slopes		X
Sen and Amor loams, 3 to 6 percent slopes		X
Sen and Amor loams, 6 to 9 percent slopes		X
Sen silt loam, 3 to 6 percent slopes		X
Sen-Chama silt loams, 3 to 6 percent slopes		X
Shambo loam, 0 to 2 percent slopes		X
Straw loam, 0 to 2 percent slopes	X	
Tally-Parshall fine sandy loams, 0 to 6 percent slopes		X
Tally-Vebar fine sandy loams, 0 to 3 percent slopes		X

Corridor Soil Units	All Areas are Prime Farmland	Soil of Statewide/Local Importance
Vebar fine sandy loam, 3 to 6 percent slopes		X
Vebar-Parshall fine sandy loams, 0 to 6 percent slopes		X
Vebar-Tally fine sandy loams, 3 to 6 percent slopes		X
Vebar-Tally loams, 3 to 6 percent slopes		X
Williams loam, 0 to 3 percent slopes		X
Williams loam, 3 to 6 percent slopes		X
Williams loam, 6 to 9 percent slopes		X
Williams-Bowbells loams, 0 to 3 percent slopes		X
Williams-Reeder loams, 3 to 6 percent slopes		X

The North Dakota State Water Commission's database reveals that four irrigation permits were issued in the vicinity of the Route (ND State Water Commission 2009). These may or may not be located within the Corridor. MP will avoid these parcels of land once final locations are determined. It is unlikely the Route will adversely impact any irrigation permits since the Route is primarily located adjacent to roads or property boundaries and therefore should not affect mechanical irrigation.

There are two occupied 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 approximately 1,500 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.

5.9.2 Impacts

5.9.2.1 Corridor

Agriculture/Farming

Impacts to agriculture will be nominal. Permanent impacts will be to 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 0.15 acres (6,500 square feet) 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 10- to 12-foot-wide construction access road that will extend along the transmission line (approximately 11 miles). Total temporary impacts from construction staging and the construction access road are approximately 19 acres.

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.

Even if all the structures were placed within prime farmland areas, only approximately 0.15 acres of prime farmland would be impacted, or less than one percent of prime farmland within the Route, which totals 99.6 acres.

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

Woodlands

It is anticipated that less than 0.70 acres of woodlands and windbreaks will be impacted within the 130-foot corridor along the Route that is cleared of tall, woody vegetation.

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. MP 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. MP will replace impacted trees and shrubs at a ratio of 2:1 and will monitor replacement vegetation for three 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 composed of three soils associations; Regent-Savage-Cabba, Vebar-Parshall-Flasher, and Amor-Daglum-Regent. A soil association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on a map (USDA/NRCS 2011a).The soil associations are mapped in Figure 13.

Regent-Savage-Cabba soils are well drained and commonly found on uplands, alluvial fans, stream terraces, drainageways, sedimentary plains, till plains, hills, escarpments and sedimentary plains. A majority of the Corridor and Route is made up of the Regent-Savage-Cabba soils. These soils support small grains, dryland crops, irrigated crops, and rangeland. Vebar-Parshall-Flasher soils are well-drained and typically found on hills and ridges in upland areas with fans, flats, hills, and ridges dissected by drainageways, terraces, and floodplains. Most areas of this association are used for rangeland. Less steep areas are used for cultivated crops. Amor-Daglum-Regent soils are well drained and commonly found on uplands. Common uses include small grains, rangeland, pasture, flax, and hay (USDA/NRCS 2011b. These soils are located in the southern portion of the east end of the Corridor. Prime farmland soils are addressed in Section 5.9.

5.10.2 Impacts

5.10.2.1 Corridor

The permanent impact to soils in the area will be limited to the transmission line structure locations, which correspond to the areas removed from agricultural production. These impacts will be relatively minor, totaling approximately 0.15 acres (6,500 square feet) for the approximately 11-mile transmission line. During transmission line construction, approximately 19 acres may be impacted temporarily for access roads and staging areas. In isolated cases, grading may be required for access roadway construction. 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. Mitigation measures during construction will minimize soil erosion during and after transmission line construction. Impacts are not expected to be significant.

5.10.2.2 Proposed Route

See above, Section 5.10.2.1.

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, best management practices (BMPs) for erosion and sediment control will be used. Only non-structural practices should be required. These practices include: dust suppression, 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

The Project is located in the Missouri Plateau of the Great Plains physiographic province and is characterized by plains and low-lying hills with entrenched river valleys and isolated tablelands (Carlson 1983). The geology underlying the Corridor consists of silt, sand, clay, shale, and lignite of the Tertiary Sentinel Butte Formation (Carlson 1973, 1983). This geologic unit is approximately 200 meters thick in the Project area.

Mineral resources in the Project area include gravel deposits and lignite. There are no gravel pits within the Corridor. The closest gravel pit is approximately 1 mile from the corridor. The closest active lignite mine is the Center Mine operated by BNI Coal, Ltd., in Oliver County.

A number of exploratory oil and gas wells have been drilled in the area surrounding the Corridor. The closest is located about 4 miles east-northeast of the Corridor (North Dakota GIS 2009). All of these wells are now dry, and the most recent was drilled in 1980. Based on these results, oil and gas reserves appear to be unlikely in the Project area.

No areas of geologic instability (e.g., fault zones, karst topography, landslide susceptibility) were identified within the Corridor or along the Route (Carlson 1973, 1983).

Groundwater resources in the area occur within sand and gravel aquifers in glacial drift and alluvium or sandstone bedrock formations (Carlson 1973). Groundwater likely occurs at shallow depths locally, in association with creeks and isolated wetlands in the Corridor and along the Route. Groundwater flow direction within the water table aquifer varies greatly and generally follows local topography.

Review of the North Dakota State Water Commission database indicates one well within the Corridor with unknown use. Two domestic water wells having depths of 140 and 154 feet are listed in the vicinity of the Project. Additional water wells not documented in the well database may be present; it is assumed that each residence has at least one water supply well.

5.11.2 Impacts

5.11.2.1 Corridor

Mineral resources will not be impacted by the Project. There may be sand and gravel resources within the Corridor that will be unavailable for future use due to the Project. However, due to the widespread availability of these aggregate resources, the impact would be negligible. Impacts to groundwater resources are not anticipated as water supply needs will be limited to minor construction related activities. No wells will be necessary for the Project.

5.11.2.2 Proposed Route

See above, Section 5.11.2.1.

5.11.3 Mitigation

5.11.3.1 Corridor

At the Corridor level, if future development of potential sand and gravel resources is precluded by the Project, 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 domestic wells because the structures will not be sited on or adjacent to occupied structures (where domestic wells are typically located). 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, MP 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 USGS topographic maps, Flood Insurance Rate Maps (FIRM) produced by the Federal Emergency Management Agency (FEMA), and U.S. Fish and Wildlife Service (USFWS) NWI data. The surface waters located within the Corridor include a number of small, unnamed creeks, Hailstone Creek, and wetlands (discussed in detail in Section 5.13) (FEMA 1995, North Dakota State Water Commission 2008). These water resources are shown in Figure 14.

The Corridor lies within the Heart River and Knife River watersheds. Review of FEMA floodplain maps indicates the Corridor and its surroundings are not within 100-year or 500-year floodplains (North Dakota GIS 2009).

5.12.2 Impacts

5.12.2.1 Corridor

Construction of the transmission line will disturb land along the Route. Soil disturbance can create the potential for erosion and sediment transport to surface waters. In general, the transmission line structures will be built on uplands, thereby avoiding creeks and wetlands. Access roads will be built to minimize temporary impacts to surface waters. Impacts to wetlands are further addressed below in Section 5.13. No impacts are anticipated during operation.

5.12.2.2 Proposed Route

See above, section 5.12.2.1.

5.12.3 Mitigation

5.12.3.1 Corridor

The Route minimizes impacts to waters of the United States to the extent practicable. Construction access roads adjacent to wetlands or creeks and drainageways will be designed so that runoff from the upper portions of the watershed can flow unrestricted to the lower portion of the watershed. An NPDES permit application and SWPPP will be prepared by MP and submitted to the NDDH prior to the initiation of transmission line construction. The SWPPP will contain BMPs to avoid or minimize transport of sediment to surface waters during construction. Measures to mitigate soil erosion are also addressed in Section 5.10.3.

5.12.3.2 Proposed Route

Mitigation for potential temporary surface water impacts during construction will meet or exceed regulatory requirements.

5.13 WETLANDS

5.13.1 Description of Resources

The USFWS provides an inventory of mapped wetlands within the United States though its NWI database (USFWS 2008). The USFWS uses aerial photographs as a basis for the NWI maps. Wetlands within the transmission line Corridor and along the Route were identified using this database (Figure 14). The NWI map provides guidance in determining areas for evaluation of wetland characteristics within the Project area; however, the NWI database is a preliminary screening tool and should not be used as the sole basis for wetland determinations. A formal wetland delineation of the route will be completed as part of the planning process.

Figure 14 illustrates the NWI wetland locations within the Corridor and Route. Table 5-8 presents the NWI wetland type and acreage with in the Corridor. The majority of the wetlands within the Corridor are emergent and are located outside of the Route. According to the NWI database, the Route includes only one type of wetland, a freshwater pond (PUBFx) of approximately 0.26 acres.

Table 5-8
NWI Wetland Types and Acreages in Corridor

Cowardin Classification	Acres[1]
Freshwater Emergent Wetland (PEMA, PEMAh, PEMC, PEMCh, PEMCx, PEMFh)	43.55
Freshwater Forested/Shrub Wetland (PFOA)	0.28
Freshwater Pond (PABFh, PUBFx)	17.78
Total	61.61

[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 avoid wetland areas. However, during construction it is possible that wetlands may be temporarily disturbed. Wetland delineation will be conducted to assure impacts to wetlands are avoided to the greatest extent possible.

Additionally, during construction there is the possibility of sediment reaching surface waters due to activities such as excavation, grading, and construction vehicle traffic. Once completed, the Project will have no impact on surface waters resulting in water quality impacts.

5.13.2.2 Proposed Route

As mentioned previously, the preliminary review of the NWI map shows that there are approximately 0.26 acres of freshwater pond wetland within the proposed route (T141N, R87W, Section 34 [Figure 14]). Wetland delineation will be conducted to assure impacts to wetlands are avoided to the greatest extent possible. Each structure will permanently impact approximately 100 square feet, or 50 square feet per pole. The temporary impacts are estimated to include an area of approximately 4,000 square feet around each structure and a 10- to 12-foot-wide temporary access road that would extend the length of the Route and would require only limited grading.

Should the wetland delineations determine that impacts to wetlands are unavoidable, MP will mitigate those impacts as required by USACE.

5.13.3 Mitigation

5.13.3.1 Corridor

Wetlands will be avoided to the greatest extent practicable during the construction phase of the Project. If it is determined that construction of the Project will result in impacts to USACE jurisdictional wetlands, a Section 404 and 401 permit application will be submitted to USACE and the State of North Dakota, respectively.

MP will use BMPs during construction and operation of the transmission line to protect topsoil and adjacent wetland resources, and to minimize soil erosion. BMPs may include, but are not limited to, the following: containing excavated material, covering exposed soil, stabilizing restored material and revegetating disturbed areas with native plant species.

5.13.3.2 Proposed Route

As mentioned above, impacts to wetlands will be mitigated according to USACE and North Dakota regulatory requirements. If determined unavoidable, impacts to the wetlands identified in Section 34 will be mitigated through Section 404 permitting through USACE.

5.14 VEGETATION

The Project is located in the Northern Great Plains Spring Wheat Land Resource Region and the Rolling Soft Shale Plain Major Land Resource Area (USDA 2006). Native grasslands have been largely replaced by spring wheat, alfalfa, and rangeland areas. This area supports natural prairie vegetation characterized by western wheatgrass (*Pascopyrum smithii*), needle-and-thread (*Hesperostipa comata*), green needlegrass (*Stipa viridula*), and blue grama (*Bouteloua gracilis*). Little bluestem (*Schizachyrium scoparium*), prairie sandreed (*Calamovilfa longifolia*), and sideoats grama (*Bouteloua curtipendula*) are important species on shallow soils. 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 cottonwoods, willows, green ash, box elder, American elm, 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 breaks (windrows and homestead groves) or were established by natural means, such as being transported to the area by animals, birds, or wind.

Based on a review of aerial photographs, land use database information, and USFWS database information, it was determined that the majority of the land use is agricultural. Table 5-2 (Section 5.2.1) identifies current land use. Approximately 56 percent of the land use within the Corridor is cropland and hayland. Approximately 1 percent of the Corridor is wetland, lake, open water, or riparian area.

Approximately 67 percent of the land use within the Route is cropland and hayland. Less than 1 percent of the Route is wetland, lake, open water, or riparian area.

The principal crop in Mercer, Morton, and Oliver Counties is wheat. Other crops include corn, oats, barley, sunflowers, and hay (USDA 2007). Grasslands are used for range and pasture of cattle. Heavily grazed range typically contains Kentucky bluegrass, quack grass, and brome grasses. Lightly grazed or undisturbed range contains native prairie species. CRP land is typically covered by brome grasses, orchard grass, and alfalfa (USDA 2009). CRP land 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.

Approximately 23.4 acres of the Corridor are classified as forest, which includes deciduous and evergreen forests. There were no forests identified within the Route. Typical tree species in forested areas include bur oak, cottonwood, aspen, green ash, box elder, American elm, silver maple and introduced conifer species.

5.14.1 Impacts

5.14.1.1 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.

5.14.1.2 Proposed Route

Approximately 65 structures will be required for the Project, based on the length of approximately 11 miles and average spans of 900 feet. Each structure will permanently impact approximately 100 square feet, or 50 square feet per pole. The temporary impacts are estimated to include an area of approximately 4,000 square feet around each structure and a 10- to 12-foot-wide temporary access road that would extend the length of the Route and would require only limited grading. Temporary impacts will occur during construction and will include ground disturbance by construction equipment around each structure and along the ROW as the line is constructed. Temporarily disturbed areas will be reseeded per NRCS recommendations to blend in with existing vegetation.

5.14.2 Mitigation

5.14.2.1 Corridor

MP will work closely with USFWS during micrositing to minimize impacts to vegetation along the Route. MP will conduct a preconstruction inventory of existing wetlands, native prairie, and forests. MP 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. New plantings will be monitored for survival for three years.

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.

MP 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.

5.14.2.2 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 Project area was obtained from a variety of sources including observations during field visits and information from the North Dakota Parks and Recreation Department (NDPRD), NDGFD, and USFWS.

Wildlife in the Project area consists of birds, mammals, fish, reptiles, amphibians, and insects, both resident and migratory, which utilize the Project area habitat for forage, migratory stopover, breeding, and/or shelter. Species present in the Project area are associated with agricultural fields, pasture

grasslands, and wetland areas. Common mammals in the Project area include raccoon, mink, skunk, weasel, white-tailed deer, coyote, red fox, badger, porcupine, and rabbit.

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, and wetlands and open water, which serve as resting areas. Generally, the most difficult part of the structure for birds 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:

- MP will prepare and implement an Avian Protection Plan for use during construction and operation of the Route.
- 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 clearance of 60 inches required for raptors. MP proposes an H-frame design using suspension insulators with a clearance of approximately 84 inches.
- The proposed transmission line will be designed to meet APLIC raptor-safe design standards (APLIC 2006).
- MP is working with agencies to identify any areas that may require marking transmission line shield wires and/or to use alternate structures to reduce collisions.
- MP is conducting preconstruction inventories of wetlands, native prairies, and woodlands in the vicinity of the proposed transmission line and associated facilities to minimize impacts.
- MP will avoid or minimize disturbance of individual wetlands or drainage systems during construction and operation of the Project.
- MP will protect or replace existing trees and shrubs if impacted at a 2:1 ratio along the Route.

- MP 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 (NDDH 1999) will be used. These practices include: temporary seeding, permanent seeding, mulching, filter strips, erosion blankets, grassed waterways, and sod stabilization.
- MP will revegetate non-cropland and pasture areas with seeding mix as recommended by the USFWS and NRCS.
- MP 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.

MP is committed to minimizing wildlife impacts within the Project area. MP continues to consult with the USFWS and NDGFD regarding appropriate mitigation measures for wildlife impacts.

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

No federally listed endangered, threatened, or candidate plant species are known to occur in the Project area. The USFWS identifies six federally listed threatened and endangered wildlife species and two candidates for listing for Morton, Mercer, and Oliver Counties (USFWS 2010) (see Table 5-9). Habitat for all of the species is either completely lacking or is extremely limited in the Project area, though the avian species (i.e. crane, plover, and tern) may pass through the Project area during migration.

Table 5-9
Federally-Listed Threatened and Endangered Species

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

The state of North Dakota maintains a list of 100 species of conservation concern. Several of these species have been documented near the Project area during USGS Breeding Bird Surveys. Impacts to many of these species can be avoided or minimized by focusing construction activities on cultivated landscapes.

5.16.2 Impacts

5.16.2.1 Corridor

Because of the lack of habitat in the Corridor for the threatened and endangered species, no impacts to rare and unique natural resources are anticipated.

5.16.2.2 Route

Because of the lack of habitat in the Route for the threatened and endangered species, 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 preconstruction inventory of existing wetlands, native prairie, and woodlands will be conducted along the Route. MP will avoid the resources identified to the extent practicable.

Though no impacts to rare and unique natural resources are anticipated, the following measures will be implemented as part of MP's North Dakota Avian and Bat Protection Plan.:

- MP will coordinate with the US Fish and Wildlife Service to mark new transmission lines with bird flight diverters. MP will also coordinate with the US Fish and Wildlife Service to mark an equal length of existing and previously unmarked transmission lines within the Corridor to help reduce the potential for mortality associated with transmission line collisions.
- MP will implement wildlife friendly on-site habitat management practices.
- MP will contribute to off-site wildlife habitat enhancement efforts.
- MP will work closely with a number of other wind developers and the USFWS to prepare a regional habitat conservation plan for the whooping crane.

5.17 SUMMARY OF ROUTE IMPACTS

Table 5-10 summarizes the resources that will be impacted as a result of the construction of the transmission line and the appropriate mitigation.

Table 5-10
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 0.15 acres of land will be impacted due to the construction of the transmission line. Approximately 3 acres will be used for the Tri-County substation. Land use is primarily agriculture and will remain so since the land under or adjacent to the line can still be used by the landowner.	MP 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.	MP 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. MP 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 30th St. and Highways 49 and 31, as well as residents and landowners near the Route.	The Route minimizes the number of residences impacted by the line.
Cultural and Archaeological	No impacts to previously identified cultural resources are anticipated.	MP has completed a Class I Cultural Resources Inventory for the Corridor and Route. MP 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.
Land Based Economies	A total of approximately 0.15 acres of land will be permanently impacted by the transmission line construction. Approximately 19 acres of temporary impacts are anticipated. The Project substation will occupy approximately 3 acres of land. It is anticipated that less than 0.7 acres of woodlands and windbreaks will be impacted.	MP will work with landowners to minimize impacts to their land. Prime farmland will be avoided to the extent practicable.

Resource	Impact	Mitigation
Soils	A total of approximately 0.15 acres of land will be permanently impacted by the transmission line construction. Approximately 19 acres of temporary impacts are anticipated. The Project substation will occupy approximately 3 acres of land.	BMPs for erosion and sediment control will be used 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	A formal wetland delineation of the Route has been completed in October 2011.	MP will mitigate impacts according to USACE requirements. All additional wetlands will be avoided to the extent practicable.
Vegetation	A total of approximately 0.15 acres of land will be permanently impacted by the transmission line construction. Approximately 19 acres of temporary impacts are anticipated. The Project substation will occupy approximately 3 acres of land. It is anticipated that less than 4.7 acres of woodlands and windbreaks will be impacted.	MP will avoid existing trees and shrubs as practicable. MP will use BMPs during construction and operation to minimize impacts. Individual trees or shrubs impacted will be replaced at a ratio of 2:1 and will be monitored for survival for three years. Temporarily disturbed areas will be reseeded per USFWS and NRCS recommendations.
Wildlife	Impacts to wildlife populations are expected to be minimal. Potential avian impacts 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.

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6.0 PUBLIC COORDINATION

Keeping the public informed on the Project status is a key component to its success. Principal stakeholders in the Project are landowners that have entered into easement agreements with MP. MP has provided written Project updates to the landowners and will continue to do so as it moves forward. In addition, MP hosted a landowner meeting to provide an update and to answer questions on the Project on April 14, 2011.

In addition, MP has been working with key state and federal agencies, including NDGFD and USFWS, to inform them of the Project and to address areas of interest particular to each of them..

Letters introducing the Project and requesting feedback were sent on September 28, 2011, to the following agencies and Project stakeholders:

- North Dakota Attorney General
- Governor of North Dakota
- Senator Robert Erbele (District 28)
- Representative Mike Brandenburg (District 28)
- Representative William E. Kretschmar (District 28)
- North Dakota Aeronautics Commission
- North Dakota Department of Transportation
- North Dakota Game and Fish Department
- North Dakota Department of Agriculture
- North Dakota Department of Health
- North Dakota Department of Human Services
- North Dakota Department of Labor
- North Dakota Department of Career and Technical Education
- North Dakota Department of Commerce
- North Dakota Geological Survey
- North Dakota Indian Affairs Commission
- North Dakota Job Service
- North Dakota Natural Heritage Program
- North Dakota Office of Management and Budget
- North Dakota Department of Commerce, Division of Community Services
- North Dakota Parks and Recreation Department

- North Dakota State Land Department
- North Dakota State Land Department, Energy Development Impact Office
- North Dakota State Soil Conservation Commission
- North Dakota State Water Commission
- State Historical Society of North Dakota
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- U.S. Geological Survey
- U.S. Department of Agriculture: Natural Resources Conservation Service
- Federal Aviation Administration
- Federal Highway Administration
- Mercer County Highway Department
- Mercer County Soil and water Conservation District
- Mercer County Planning & Development Department
- Morton County Highway Department
- Morton County Soil and water Conservation District
- Morton County Planning & Development Department
- Oliver County Highway Department
- Oliver County Soil and Water Conservation District
- Oliver County Planning & Development Department

MP is committed to keeping key stakeholders engaged in the Project as it moves forward. MP expects to participate in several additional landowner, agency, or other stakeholder meetings before the PSC's public hearing.

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 7-1.

Table 7-1
Possible Permits and Approvals

Agency	Type of Approval	Status	Need
Federal Approvals			
USACE	Section 404 Permit	Final layout will determine whether permit/approval is needed	Permit required for filling in jurisdictional waters of the U.S. Project will avoid or minimize impacts on waters of the U.S. to the extent practicable. Coverage under an existing Nationwide Permit may be necessary for minor unavoidable impacts.
Environmental Protection Agency	Spill Prevention Control and Countermeasure Plan	Will apply once Certificate is received	Required if the substation facility has greater than 1,320 gallons of oil. A copy of the plan will be maintained on file with the substation's owner/operator and will be reviewed by the certifying engineer every five years.
State of North Dakota			
Public Services Commission	Waiver of Procedures and Time Schedules	Subject of this Application	Included herein.
	Certificate of Corridor Compatibility	Subject of this Application	Included herein.
	Route Permit	Subject of this Application	Included herein.
North Dakota Department of Health	401 Water Quality Certification	Final layout will determine whether permit/approval is needed	Required for fill in jurisdictional waters of U.S.
	NPDES Permit: General Construction Storm Water	Will apply once Certificate is received	Required for disturbance of over 1 acre of land. Must prepare a Storm Water Pollution Prevention Plan (SWPPP).
North Dakota Division of Emergency Management	Emergency Planning and Community Right-to-Know Act Tier II report	Will apply once Certificate is received	Required for owner/operators of facilities containing hazardous materials. A copy of the report must be filed annually by March 1st.
SHPO	Section 106 Compliance Approval	Final layout will determine whether permit/approval is needed	Section 106 Compliance Approval is required if there is federal involvement in the Project (i.e. federal funding or wetland fill). Need for approval is not anticipated at this time.

Agency	Type of Approval	Status	Need
North Dakota Highway Patrol	Oversize/Overweight Permit	Will apply once Certificate is received	Permit required for hauling construction equipment and materials on state highways.
North Dakota Department of Transportation	Road Approach/Access Permit	Will apply once Certificate is received	Permit required for construction of access roads from state highways.
	Utility Permit/Risk Management Documents	Will apply once Certificate is received	Permit required for utility crossings on state highway ROW.
Local Permits			
Oliver County	Conditional Use Permit	Will apply once Certificate is received	Permit required for Project construction.
	Utility Permit	Will apply once Certificate is received	Permit required for Project construction in highway ROW.
Mercer County	Conditional Use Permit	Will apply once Certificate is received	Permit required for Project construction.
	Utility Permit	Will apply once Certificate is received	Permit required for Project construction in highway ROW.
Morton County	Special Use Permit and Unified Development Application	Will apply once Certificate is received	Permit required for Project construction.
	Transportation Permit	Will apply once Certificate is received	Permit required for Project construction.
	Utility Occupancy Form	Will apply once Certificate is received	Permit required for Project construction in highway ROW.

8.0 FACTORS CONSIDERED

The North Dakota Energy Conversion and Transmission Facility Siting Act lists 11 factors to guide the PSC 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 under impacts and mitigation in section 5.0. Impacts evaluated in the Corridor and Route are minor.

8.2 TECHNOLOGIES TO MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS

MP will use the most recent technologies that minimize impacts to the environment. The Corridor study demonstrates that 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.

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. MP 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 was selected to convey energy generated from the potential wind projects to the Bison 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. The few commitments of resources associated with this Project that are irreversible and irretrievable are primarily related to construction.

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

8.7 Direct and Indirect Economic Impacts of the Proposed Facility

Direct economic impacts include those associated with up to 0.15 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 Mercer, Morton and Oliver Counties will contribute to the total personal income of the region. Additional personal income will be generated for residents in the county and the state by circulation and recirculation of dollars paid out by MP as business expenditures and state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies, and other products and services benefit businesses in the county and the state.

Long-term beneficial impacts to the county's tax base as a result of the construction and operation of the transmission line will contribute to improving the local economy in this area of North Dakota. The development and transmission 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

MP has reviewed cultural resources information on file at SHPO for the Project area and prepared a Class I Literature Search (Appendix B). A review of previous cultural resources studies and cultural resource recordation forms at SHPO identified four previously recorded archaeological resource sites within one mile of the proposed transmission line corridor centerline. Currently, no impacts are anticipated to known cultural resources on the Route. MP is committed to minimizing impacts to these resources and will avoid, to the best of their ability, these resources and any additional resources identified throughout the life of the Project. If avoidance is not possible, MP will work with North Dakota SHPO to appropriately mitigate potential impacts.

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

8.10 EFFECT OF ROUTE ON BIOLOGICAL RESOURCES

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

8.11 ISSUES RAISED BY AGENCIES

In September 2011, agencies were contacted to comment on the Southwest Oliver 230 kV Transmission Line Project. Summaries of the responses from agencies are included below. Copies of response letters from agencies are included in Appendix C.

8.11.1 North Dakota Office of Attorney General

MP sent a letter to the North Dakota Attorney General's Office on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.2 North Dakota Governor

MP sent a letter to the North Dakota Governor's Office on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.3 North Dakota Senator Robert Erbele (District 28)

MP sent a letter to the Senator Erbele's Office on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.4 North Dakota Representative Mike Brandenburg (District 28)

MP sent a letter to the Representative Brandenburg's Office on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.5 North Dakota Representative William Kretschmar (District 28)

MP sent a letter to the Representative Kretschmar's Office on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.6 Aeronautics Commission

MP sent a letter to the Aeronautics Commission on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.7 North Dakota Department of Transportation

MP sent a letter to the North Dakota Department of Transportation on September 30, 2011 (Appendix C). In an October 31, 2011, response the agency stated the project should have no adverse effect on North Dakota Department of Transportation highways, and noted that should any work need to be done on highway rights-of-way that the appropriate permits and risk management documents would need to be obtained.

8.11.8 North Dakota Game and Fish Department

MP sent a letter to the North Dakota Game and Fish Department (NDGF) on September 30, 2011 (Appendix C). In an October 31, 2011 response, NDGF stated that their primary concern is possible disturbance of native prairie and wetland areas. In addition, NDGF recommends that overhead lines be marked when placed over perennial streams or sited in close proximity to large wetland complexes to minimize possible avian impacts. NDGF does not believe the project will have any significant adverse effects on wildlife or wildlife habitat.

8.11.9 North Dakota Department of Agriculture

MP sent a letter to the North Dakota Department of Agriculture on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.10 North Dakota Department of Health

On September 30, 2011, a letter was sent to NDDH to determine if they had concerns about the project. In an October 12, 2011 response, NDDH confirmed they own no land in or adjacent to the area. NDDH believes the environmental impacts will be minor and can be controlled by proper construction methods. Included in Appendix C is their letter which provides comments and guidance on fugitive dust emissions, degradation of waterways, stormwater management, and noise. MP will implement these measures, as appropriate.

8.11.11 North Dakota Department of Human Services

MP sent a letter to the North Dakota Department of Human Services on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.12 North Dakota Department of Labor

MP sent a letter to the North Dakota Department of Labor on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.13 North Dakota Department of Career and Technical Education

MP sent a letter to the North Dakota Department of Career and Technical Education on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.14 North Dakota Department of Commerce

MP sent a letter to the North Dakota Department of Commerce on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.15 North Dakota Department of Commerce, Division of Community Services

MP sent a letter to the North Dakota Department of Commerce, Division of Community Services, on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.16 North Dakota Geological Survey

MP sent a letter to the North Dakota Geological Survey on September 30, 2011 (Appendix C). In an October 5, 2011 response, the North Dakota Geological Survey stated that it had not identified any mineable coal within the project corridor, based on existing data. The also stated that they had not completed a landslide inventory in this particular area, but they assumed that the risk would be slight given the surface topography.

8.11.17 North Dakota Indian Affairs Commission

MP sent a letter to the North Dakota Indian Affairs Commission on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.18 North Dakota Job Service

MP sent a letter to the North Dakota Job Service on September 30, 2011 (Appendix C). In an October 4, 2011 response, the North Dakota Job Service stated it had not comments about the proposed project and no applicable permits from the Job Service are required.

8.11.19 North Dakota Natural Heritage Program

MP sent a letter to the North Dakota Natural Heritage Program on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.20 North Dakota Office of Management and Budget

MP sent a letter to the North Dakota Office of Management and Budget on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.21 North Dakota Parks and Recreation Department

MP sent a letter to the North Dakota Parks and Recreation Department on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.22 North Dakota State Land Department

MP sent a letter to the North Dakota State Land Department on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.23 North Dakota State Land Department, Energy Development Impact Office

MP sent a letter to the North Dakota State Land Department, Energy Development Impact Office on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.24 North Dakota Soil Conservation Commission

MP sent a letter to the North Dakota Soil Conservation Commission on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.25 North Dakota State Water Commission

MP sent a letter to the North Dakota State Water Commission on September 30, 2011 (Appendix C). In a October 12, 2011 response, the State Water Commission stated that the property was not located in a floodplain and that it was the responsibility of the project sponsor to ensure that local, state and federal agencies are contacted for any required approvals, permits, and easements. The State Water Commission also asked that waste material be disposed of properly. In the NPDES permit required for the Project, MP will address and implement proper disposal of waste materials.

8.11.26 North Dakota State Historical Society

North Dakota State Historical Society recommended a Class III Pedestrian Survey be completed on unsurveyed portions that may be impacted by the Project (Appendix C). They also recommended an inventory of standing structures. MP has completed a Class I Literature Search (Appendix B). Two cultural resources reports were identified within or within a one-mile of the Route centerline. A review of these reports and cultural resource record forms at State Historical Society identified four previously recorded archaeological resource sites (Table 5-6).

MP continues to consult with State Historical Society in preparation for a Class III inventory. The Class I Literature Search has also addressed the probability for archaeological sites within the Project area and recommends survey strategies to identify additional cultural resources.

8.11.27 U.S. Fish and Wildlife Service

MP sent a letter to the USFWS on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.28 U.S. Army Corps of Engineers

MP sent a letter to USACE on September 30, 2011 (Appendix C). In a October 7, 2011 response, the COE identified permit requirements for the project. MP will obtain permits through USACE and NDDH in accordance with Sections 404 and 401 of the Clean Water Act, respectively. MP will also mitigate impacts as required by these regulatory bodies. No additional issues were raised.

8.11.29 U.S. Geological Survey

MP sent a letter to the USGS on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.30 USDA, Natural Resources Conservation Service

MP sent a letter to the North Resources Conservation Service on September 30, 2011 (Appendix C). In a October 7, 2011 response, NRCS did not identify any problems with the Project. Since there are no federal funds, the Farmland Protection Policy Act (FPPA) does not apply. NRCS recommended impacts to wetlands be avoided (Appendix C). A discussion of wetlands and potential wetland impacts is included in section 7.14. Temporarily disturbed areas will be reseeded per USFWS and NRCS recommendations to blend with existing vegetation.

In addition, MP 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 0.3 acres of prime farmland would be permanently removed from production.

8.11.31 Federal Aviation Administration

MP sent a letter to the FAA on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.32 Federal Highway Administration

MP sent a letter to the Federal Highway Administration on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.33 Mercer County Highway Department

MP sent a letter to the Mercer County Highway Department on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.34 Mercer, Morton, and Oliver Counties Soil and Water Conservation Districts

MP sent letters to the Mercer, Morton, and Oliver County Soil and Water Conservation Districts on September 30, 2011 (Appendix C). Comments were deferred to the NRCS office in Jamestown, North Dakota. See section 8.11.30. No response from the Oliver County Soil Conservation District has been received as of October 28, 2011.

8.11.35 Mercer County Planning and Development Department

MP sent a letter to the Mercer County Planning and Development Department on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.36 Morton County Highway Department

MP sent a letter to the Morton County Highway Department on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.37 Morton County Planning and Development Department

MP sent a letter to the Morton County Planning and Development Department on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.38 Oliver County Highway Department

MP sent a letter to the Oliver County Highway Department on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

8.11.39 Oliver County Planning and Development Department

MP sent a letter to the Oliver County Planning and Development Department on September 30, 2011 (Appendix C). No response has been received as of October 28, 2011.

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9.0 QUALIFICATIONS OF CONTRIBUTORS TO SITING STUDY

Name Project Role	Education And Professional Experience
Bruce Moreira Environmental Project Manager HDR Engineering	Mr. Bruce Moreira has experience in wetland delineation, GIS systems, regulatory documentation, wind farm permitting, and project management. He specializes in wetland delineation, GIS mapping and data collection, plant ecology, database construction/support, and natural resource management. He has worked on wind farm projects in eleven states on over 1,500 MW of proposed generation capacity. He has experience in writing regulatory permit applications and environmental review documents. He is a registered Professional Wetland Scientist (PWS) and a Geographic Information Systems Professional (GISP). Master of Science, Environmental Sciences/Studies (Forest Resources), University of Minnesota System, 2001 Bachelor of Arts, Biology, Reed College, 1996
Kelly Garvey Senior Environmental Scientist HDR Engineering	Ms. Garvey currently is a project manager with 20 years of experience focused on environmental review and environmental permitting. She has prepared and managed consultants in the preparation of environmental documents and studies for compliance with NEPA, Section 4(f), and applicable environmental laws and executive orders. She has worked with several federal and state agencies on environmental documents and permitting issues. Associate of Applied Science, Environmental Studies, Arrowhead Comm Co Vermilion, 1981
Patricia Terhaar, PG Environmental Project Manager HDR Engineering	Ms. Terhaar has 25 years of environmental consulting and project management experience. She has managed or worked as part of multi-disciplinary teams in the preparation of documents supporting NEPA compliance and environmental permitting for energy projects across the United States including electric transmission, pipeline, and LNG projects. She has managed and performed phase I/II site assessments, hydrogeologic investigations, and remedial investigations/feasibility studies associated with landfills, hazardous waste sites, chemical and petroleum spills, asbestos, and brownfields. Master of Science, Geology, Texas A&M University, College Station, 1985 Bachelor of Science, Earth Science, Montana State University, Bozeman, 1983
Ron Grina, AICP Senior Environmental Planner HDR Engineering	Mr. Grina is an environmental planning professional who specializes in permit acquisition, environmental project management, and NEPA/SEPA documentation for renewable energy, natural resource, transportation, public services, utilities, and land use projects. He has prepared siting and certificate studies on wind farm projects in six states and is skilled at preparing federal, state, and local permits for complex capital projects. He is an accredited planning professional by the American Institute of Certified Planners (AICP). Bachelor of Science, Environmental Policy and Assessment, Huxley College of the Environment, Western Washington University, 1994

Name Project Role	Education And Professional Experience
Hilary Bird Environmental Planner HDR Engineering	Ms. Bird has over seven years experience preparing environmental documents for a variety of public and private projects in California. Her experience includes preparation of environmental compliance documents for renewable energy projects in compliance with the California Environmental Quality Act (CEQA), as well as environmental documents in compliance with the National Environmental Policy Act (NEPA). Ms. Bird has also prepared numerous Critical Issues Analysis reports and siting studies for renewable energy projects within California and other parts of the United States. She specializes in natural resource management and has Bachelor s Degree in Biology from the University of San Diego, 1998 and a Master s Degree in International Environmental Policy from the Monterey Institute of International Studies, 2003.
Tim Casey, QEP Environmental Specialist HDR Engineering	Mr. Casey is HDR's Environmental Acoustics Program Manager and has more than ten years of experience leading HDR's Environmental Acoustics efforts. He specializes in noise and vibration monitoring and modeling for stationary and mobile sources including railroads, highways, combustion turbines, diesel generators, pumps, industrial and municipal installations, etc. Extensive use of the FHWA Stamina 2.0/Optima model, FTA transit noise and vibration analysis methodologies, and PC-based GIS technology. Additional training and experience on FHWA Traffic Noise Model 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. B.S., Biological/Life Sciences, Saint Xavier University, 1988 Associate of Science, Science, Valley Community College, 1986
Stephen Sabatke Archaeologist HDR Engineering	Mr. Sabatke has seven years of experience working in the cultural resource field. He has worked on a variety of cultural resource projects including: wind power transmission, transmission lines, rail roads, pipeline, recreation use development, prehistoric site preservation, historic building preservation, and historic building rehabilitation. Additionally, he has prepared cultural resource studies for federal and state review. He has reviewed and developed cultural resource plans, cultural resource proposals, conducted meetings with SHPO, led field survey investigations, managed cultural resource contractors, subcontractors, and staff, and has managed cultural resource budgets for projects. M.A., Anthropology, University of Minnesota Twin Cities, 2006 B.A., Anthropology, University of Minnesota Duluth, 2002
Anjali Malhotra GIS Specialist HDR Engineering	Ms. Malhotra has almost five years of professional experience in the field of Geographic Information Systems (GIS). Ms. Malhotra has provided spatial and data analysis, modeling, and GIS technical support on a variety of wind energy and environmental projects across the United States. Ms. Malhotra is proficient in generating cartographic products, mapping, and graphic presentations using GIS and advanced graphic software. She also has more than two years experience in Urban Planning & Design. Master of Urban and Regional Planning (Specialization: Information Technology and GIS); State University of New York at Buffalo, 2005 Bachelor of Architecture, Pune University, India, 2001

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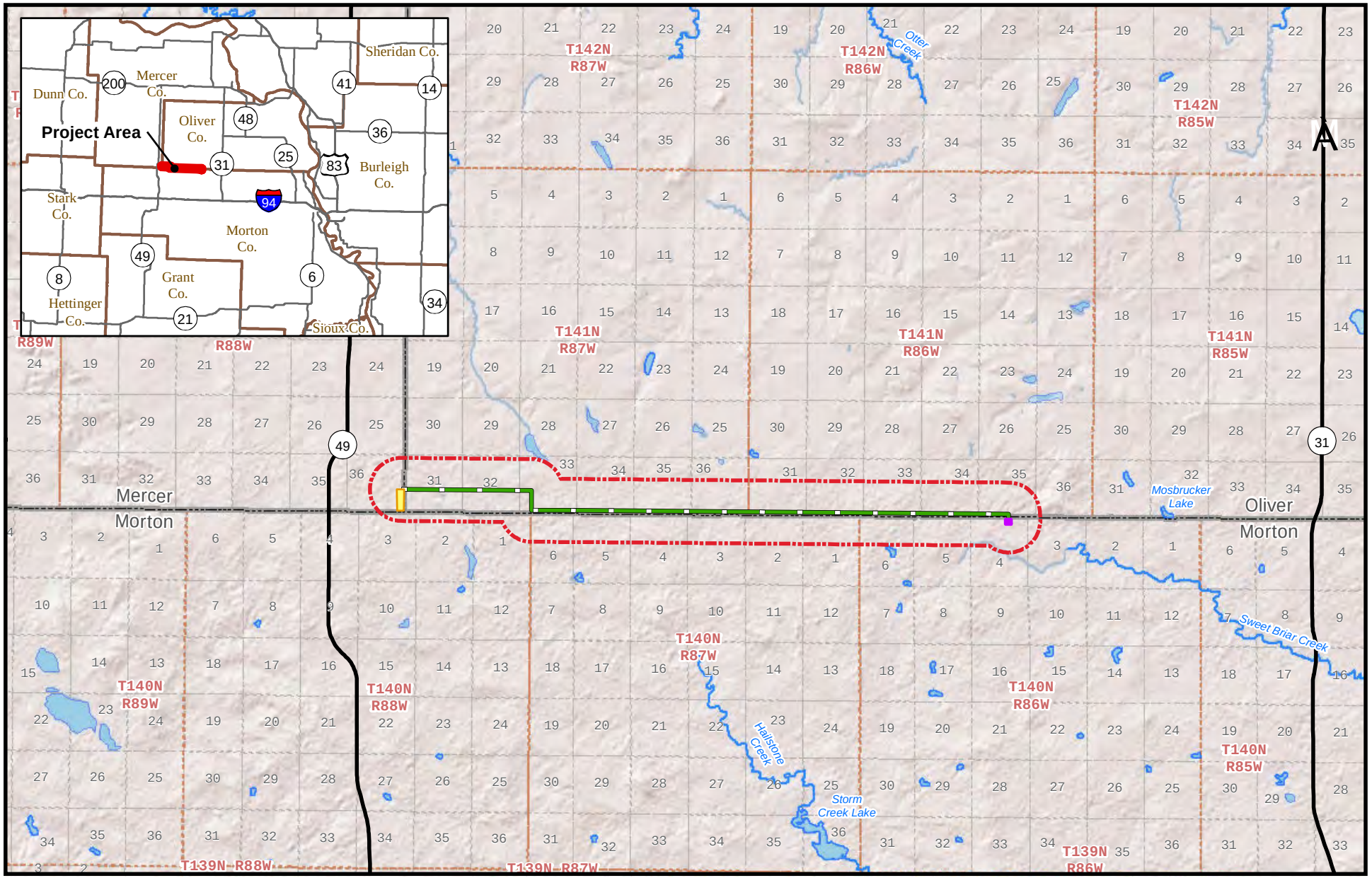
11.0 DEFINITIONS

Abbreviation or Term	Definition
ADT	Average Daily Traffic
APLIC	Avian Power Line Interaction Committee
BMPs	Best Management Practices; prevents soil erosion and sedimentation
Capacity	The capability of a system, circuit, or device for storing electric charge.
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.
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.
EMF	Electric and Magnetic Field
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act
Geotechnical	A science that deals with the application of geology to engineering.
GIS	Geographic Information Services
Interconnection	To be or become mutually connected.
kV	kilovolt
MW	megawatt
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.
MP	Minnesota Power, an operating division of ALLETE, Inc.
NDDOT	North Dakota Department of Transportation

Abbreviation or Term	Definition
NESC	National Electric Safety Code
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDDH	North Dakota Department of Health
NDGFD	North Dakota Game and Fish Department
NDPRD	North Dakota Parks and Recreation Department
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
Project, the	Southwest Oliver 230 kV Transmission Project
PSC	North Dakota Public Service Commission
RES	Renewable Energy Standard
ROW	Right-of-Way
RPS	Renewable Portfolio Standards
SHPO	North Dakota State Historic Preservation Office
Substation	A subsidiary station in which electric current is transformed.
SWPPP	Storm Water Pollution Prevention Plan
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	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WMA	Wildlife Management Areas

Figures



HDR

minnesota power

Miles
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Proposed 230 kV Transmission Line
Bison Substation
Tri-County Substation
Corridor (1.1 miles)
Section Boundary
Township Boundary
County Boundary
Streams
Lakes
Highways

Figure 1: Project Vicinity
Southwest Oliver 230 kV
Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

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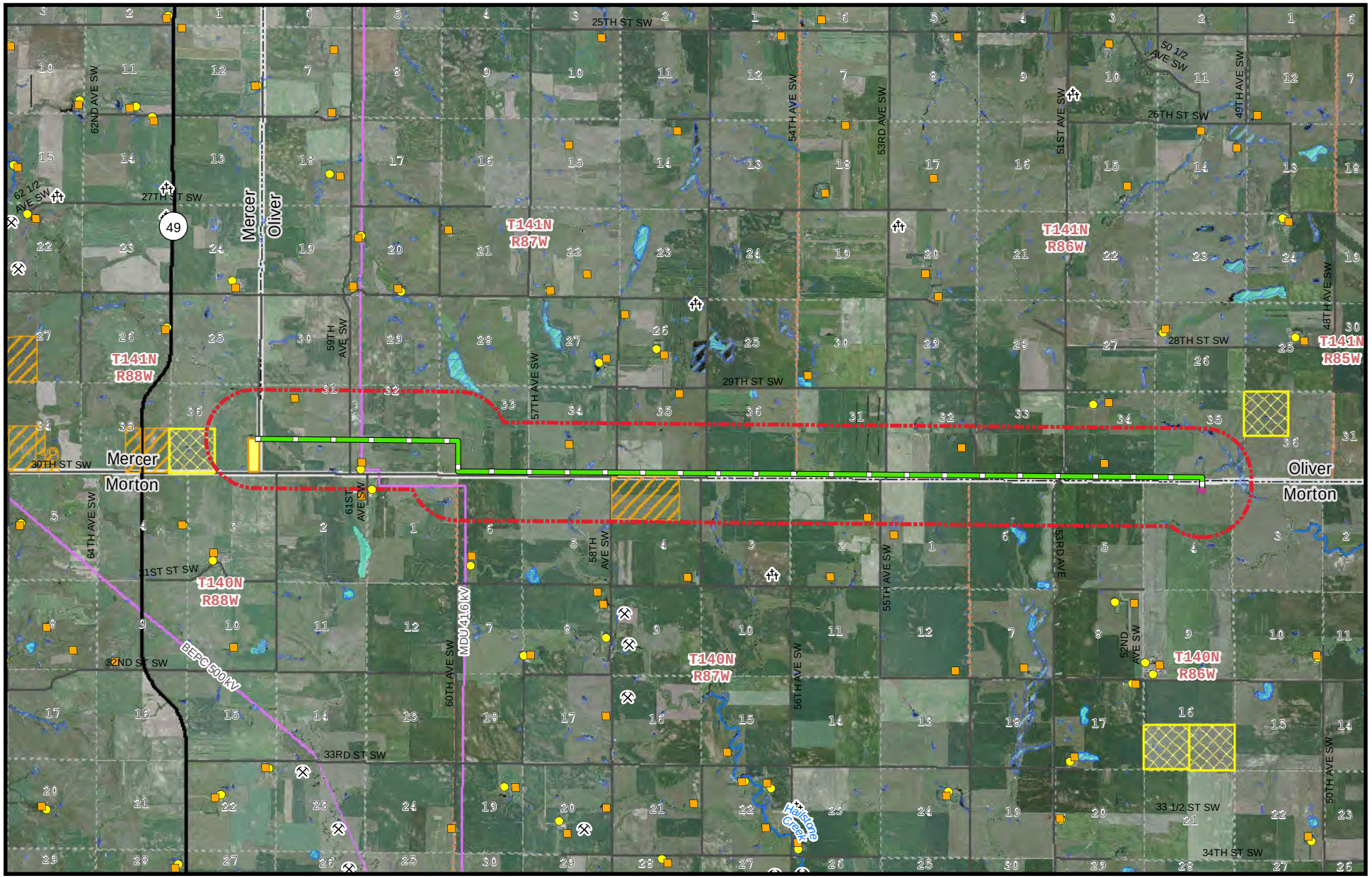

Figure 2: Corridor Exclusion & Avoidance Areas
Southwest Oliver 230 kV Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

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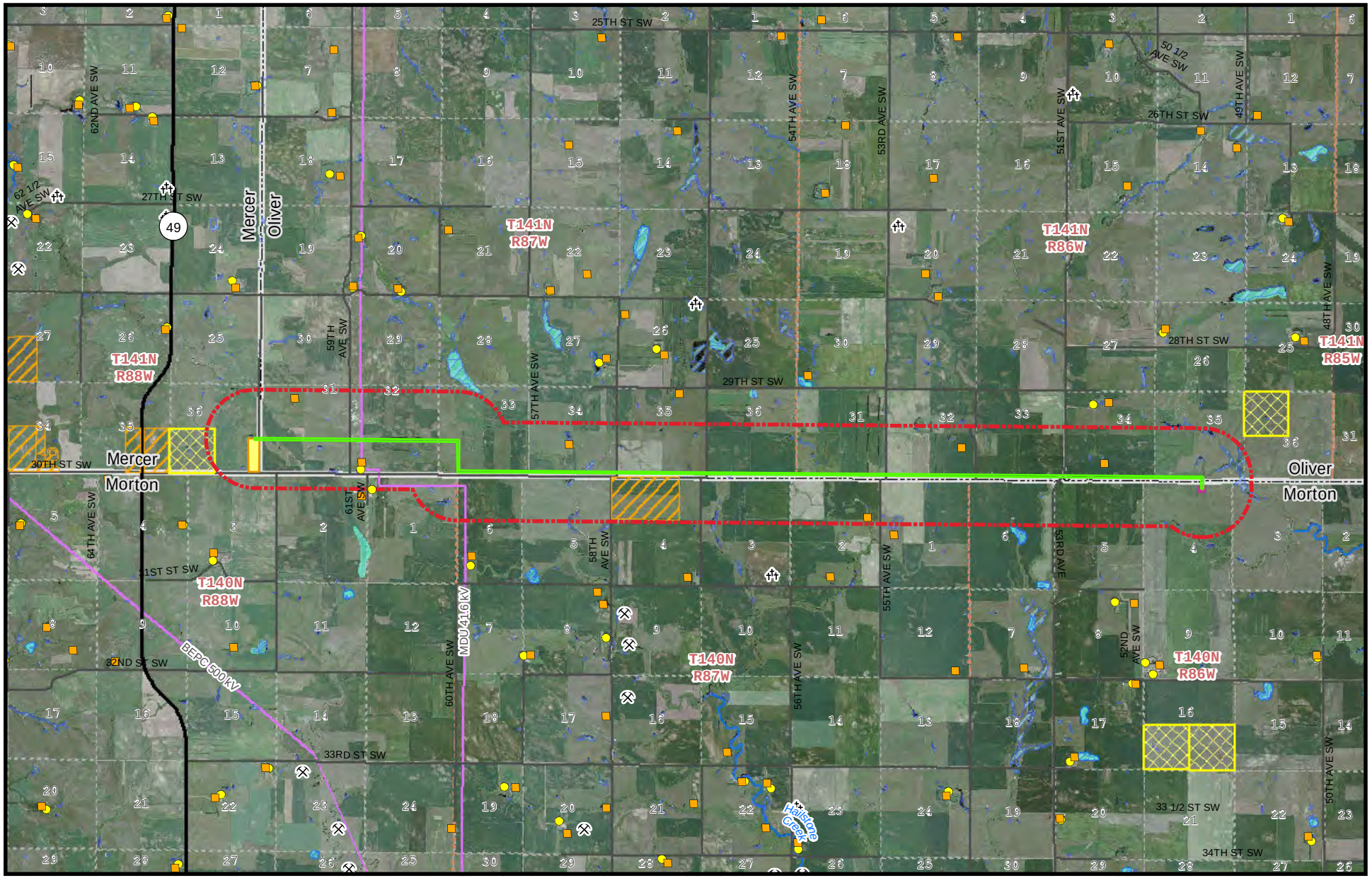

Figure 3: Route Exclusion & Avoidance Areas
Southwest Oliver 230 kV Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

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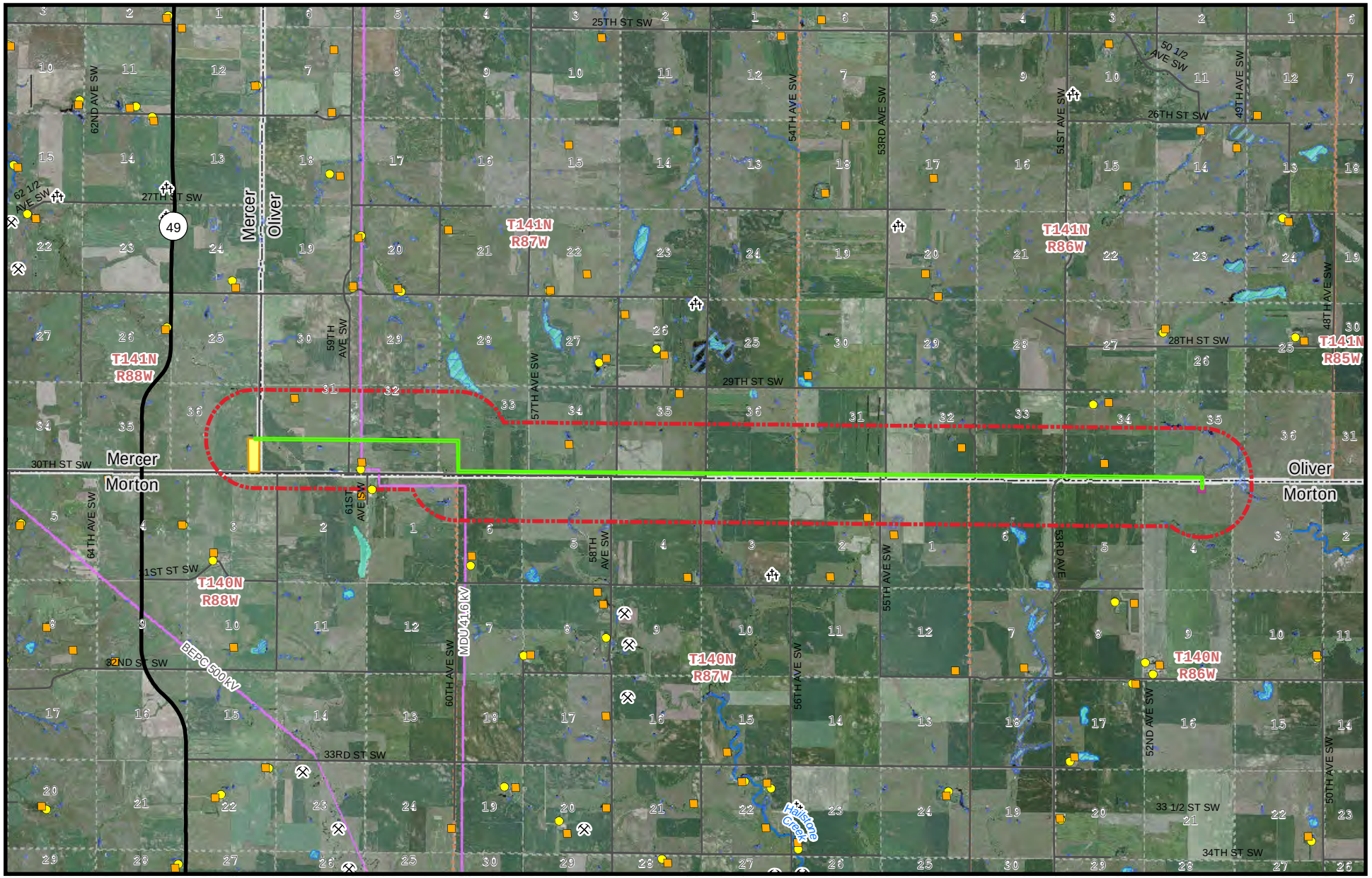

Transmission Route (130 ft)
Corridor (1.1 miles)
Bison Substation
Tri-County Substation
Existing Transmission Line

Occupied Residence (Verified)
Farm Unit (Not Verified)
Gravel Pit (Not Verified)
Cemetery and/or Churches (Not Verified)
Streams
Lakes

NWI Wetland
Roads
Highways
Section Boundary
Township Boundary
County Boundary

Miles
0 0.5 1 2

Figure 4: Project Location (Aerial)
Southwest Oliver 230 kV Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

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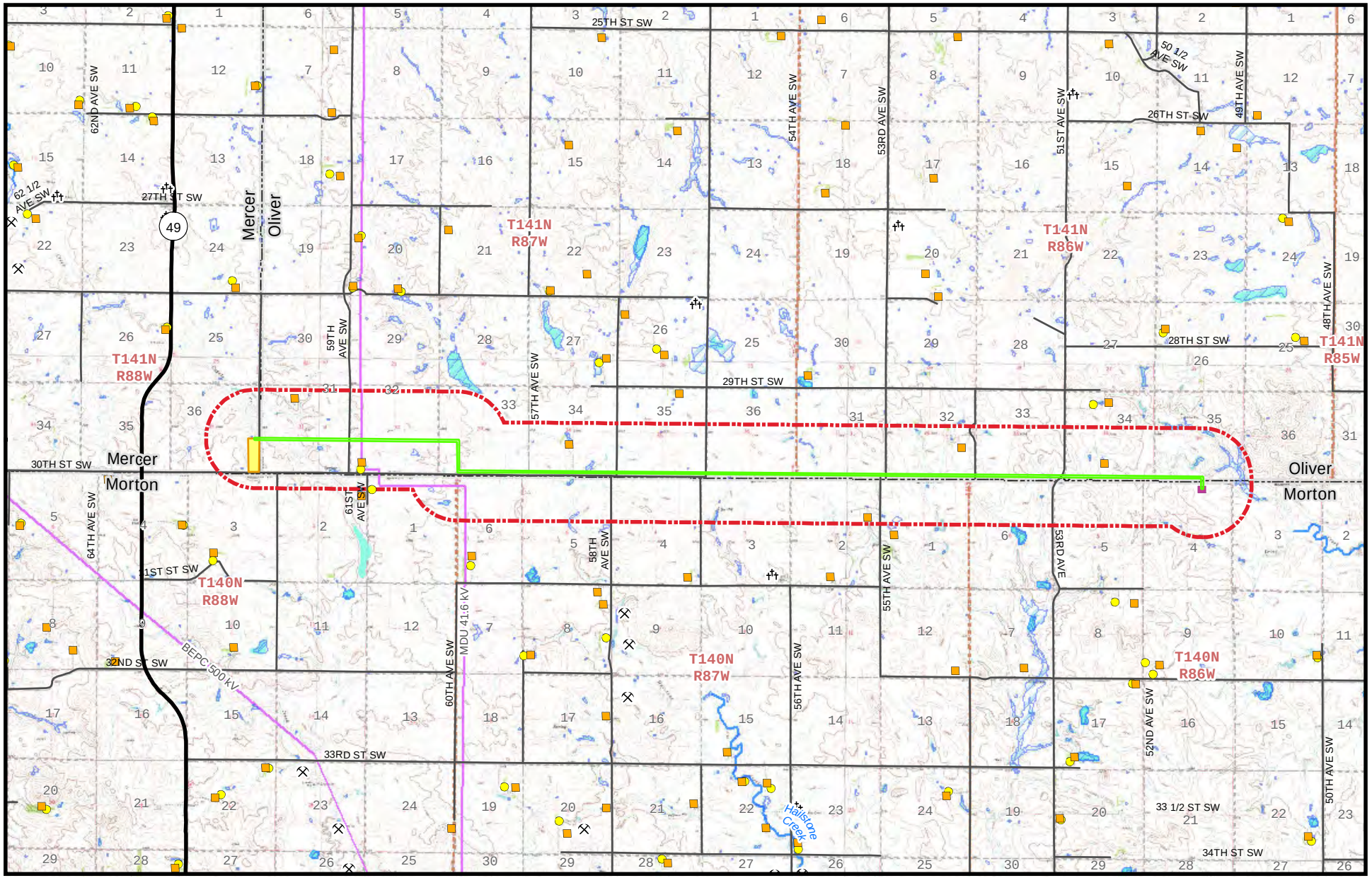

Figure 5: Project Location (Topographical)
Southwest Oliver 230 kV Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

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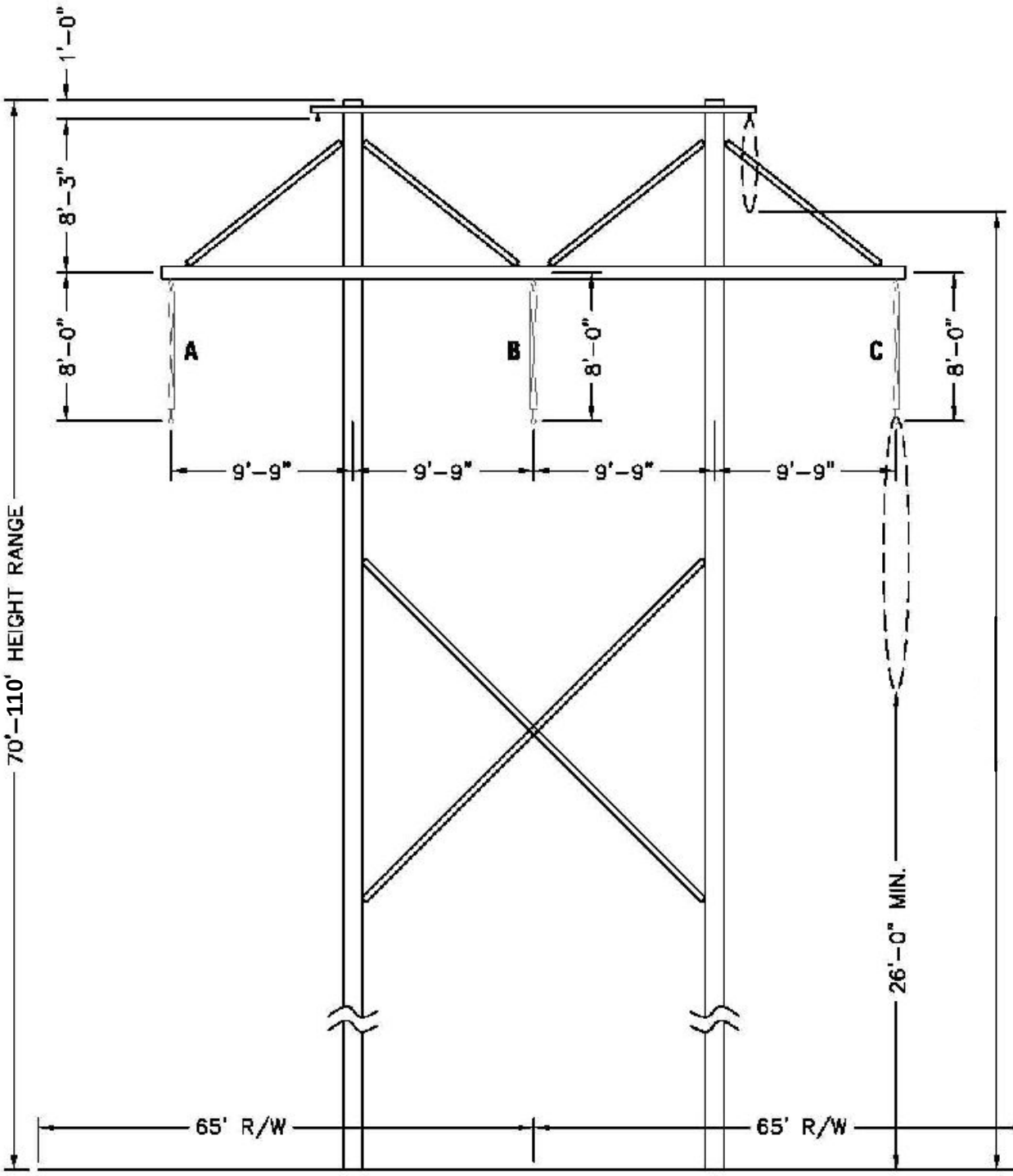

Figure 6: 230 kV Structure
Southwest Oliver 230 kV
Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

Path: Z:\ALLETECleanEnergy\170200\map_docs\PermitFigures\ACE_8X11P_Fig6_230kV Pole Structure.mxd

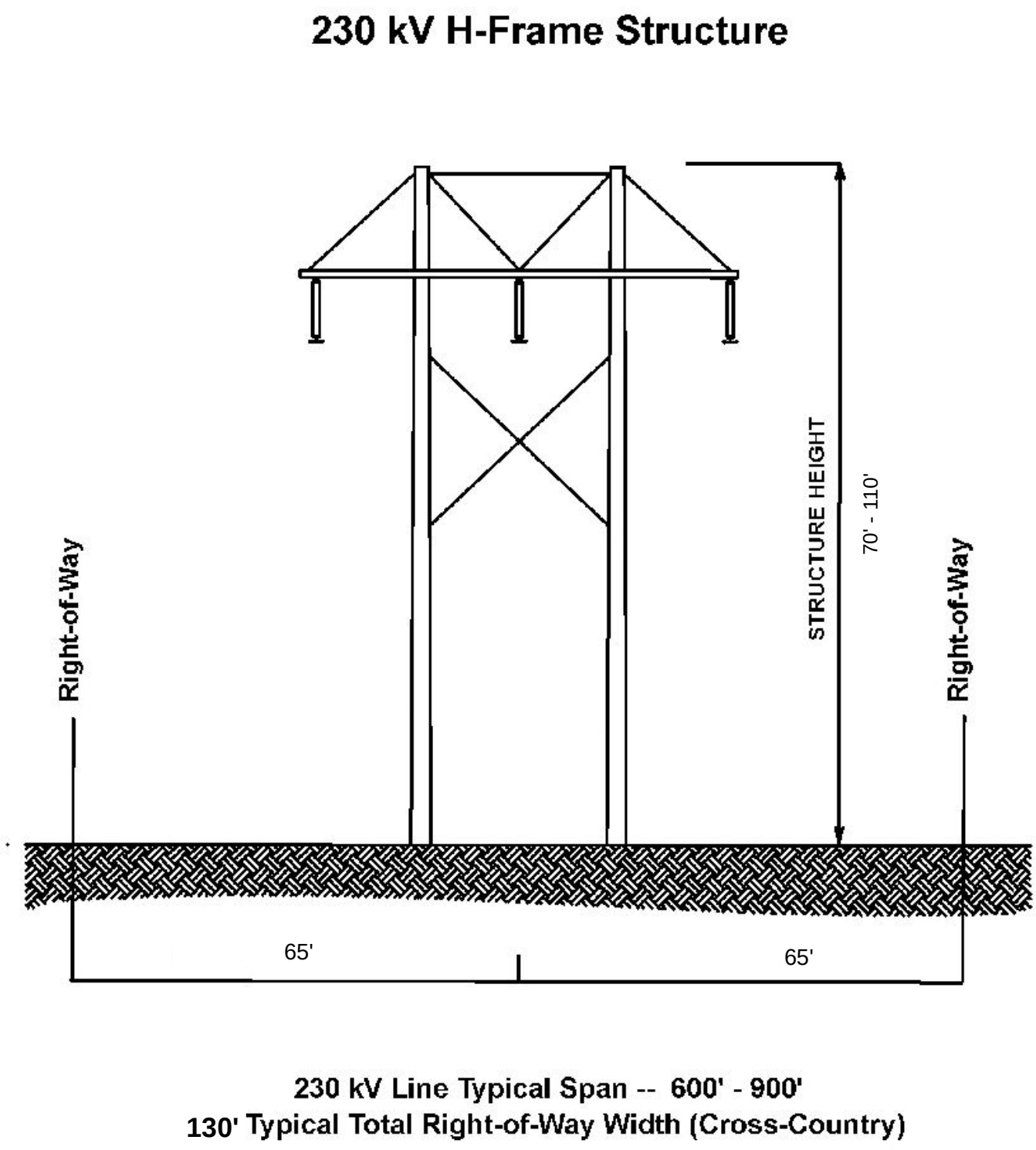

Figure 7: Right of Way Requirements
Southwest Oliver 230 kV
Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

Path: Z:\ALLETECleanEnergy\170200\map_docs\PermitFigures\ACE_8X11P_Fig7_Right of Way.mxd

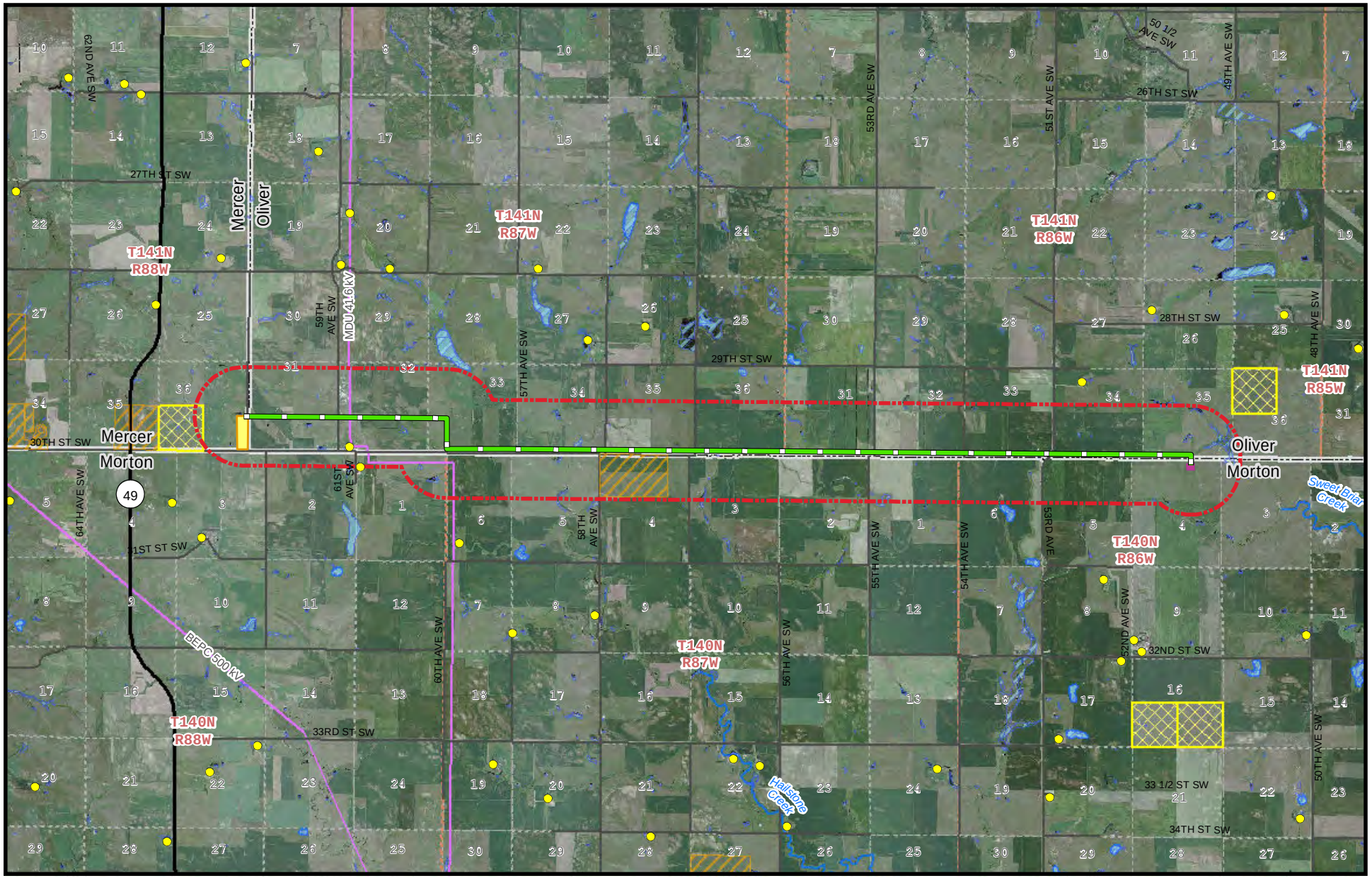

Figure 8: Public Lands
Southwest Oliver 230 kV
Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

Path: Z:\ALLETECleanEnergy\170200\map_docs\PermitFigures\ACE_8X11L_Fig8_PublicLands.mxd

Path: Z:\ALLETECleanEnergy\170200\map_docs\PermitFigures\ACE_8X11L_Fig9_AveDailyTrafficCounts.mxd

minnesota power

HDR

N
W
E
S

Miles
0 0.5 1 2

Proposed 230 kV Transmission Line
Bison Substation
Tri-County Substation
Road
Highway
County Boundary

Source: 2010 Traffic Volumes from NDDOT (NDDOT 2010)

TRAFFIC LEGEND

AADT (Average Annual Daily Traffic) - 2500
Commerical Truck Traffic - 150

TRAFFIC FIGURES ARE THE TOTAL AT THE CLOSEST HIGHWAY INTERSECTION OR TOWN.

Figure 9: Average Daily Traffic
Southwest Oliver 230 kV
Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

Figure 10: Existing Environment
Southwest Oliver 230 kV
Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

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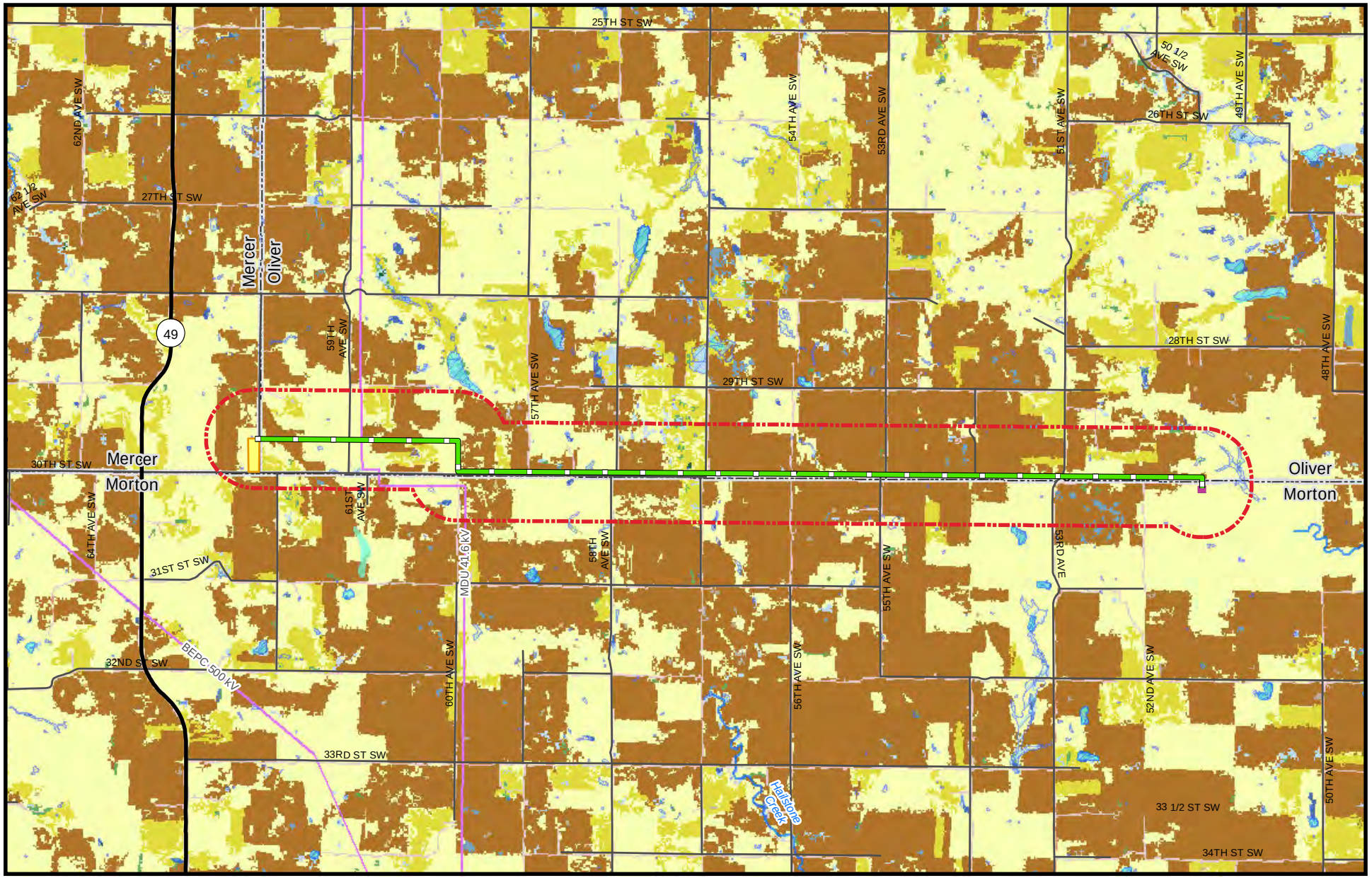

Proposed 230 kV Transmission Line
Corridor (1.1 miles)
Bison Substation
Tri-County Substation
Existing Transmission Line
Streams
Lakes
NWI Wetland
Roads
Highways
County Boundary

Land Use
Open Water
Developed, Open Space
Deciduous Forest
Evergreen Forest
Shrub/Scrub
Grassland/Herbaceous
Pasture/Hay
Cultivated Crops
Woody Wetlands
Emergent Herbaceous Wetland

Miles
0 0.5 1 2

Figure 11: Land Use (NLCD)
Southwest Oliver 230 kV Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

Path: Z:\ALLETECleanEnergy\170200\map_docs\PermitFigures\ACE_8X11L_Fig11_LandUse.mxd

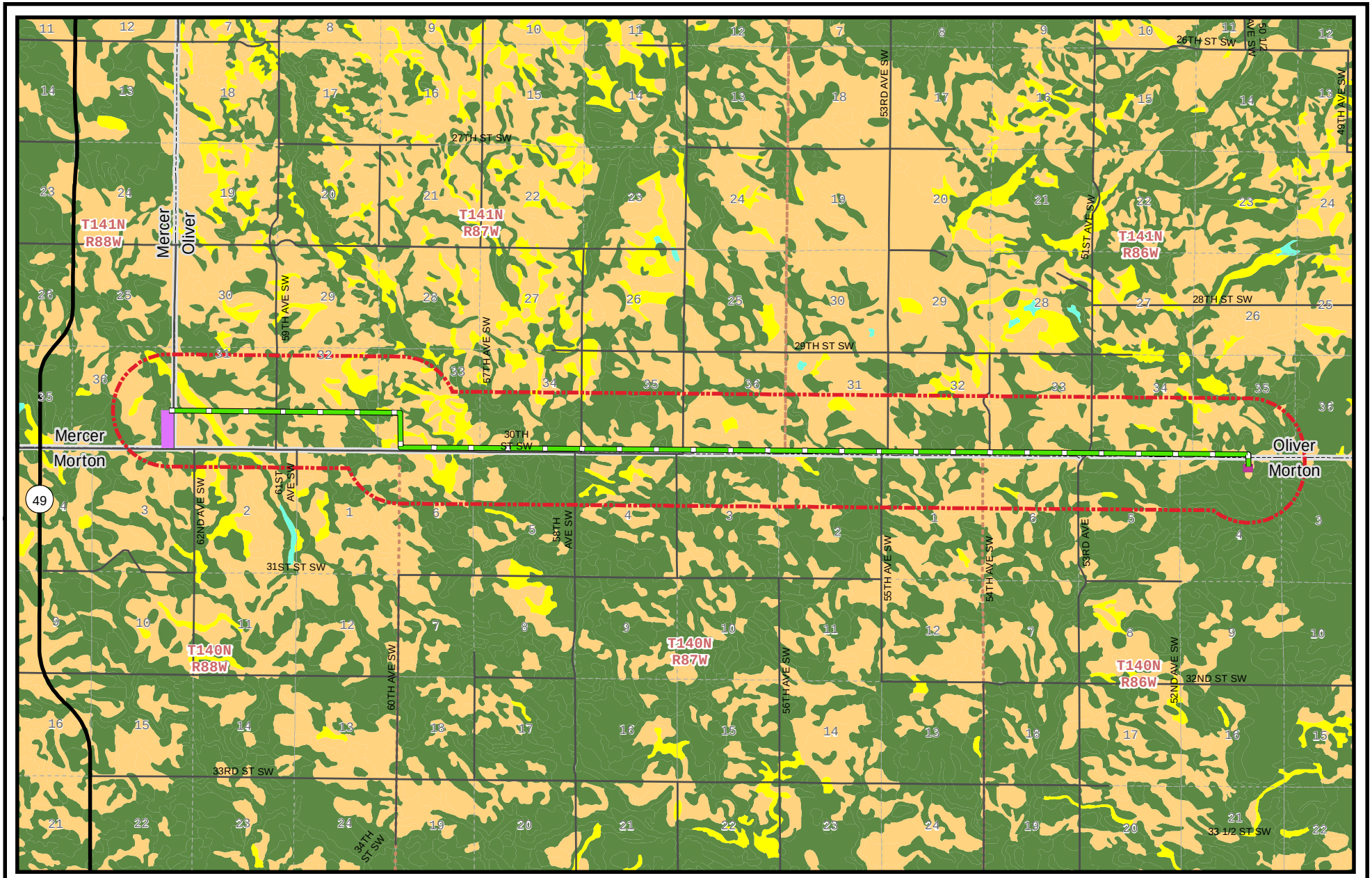

Figure 12: Prime Farmland and Soil Distribution (Ssurgo Soil)
Southwest Oliver 230 kV Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

Path: Z:\ALLETECleanEnergy\170200\map_docs\PermitFigures\ACE_8X11L_Fig12_PrimeFarmlandSoil.mxd

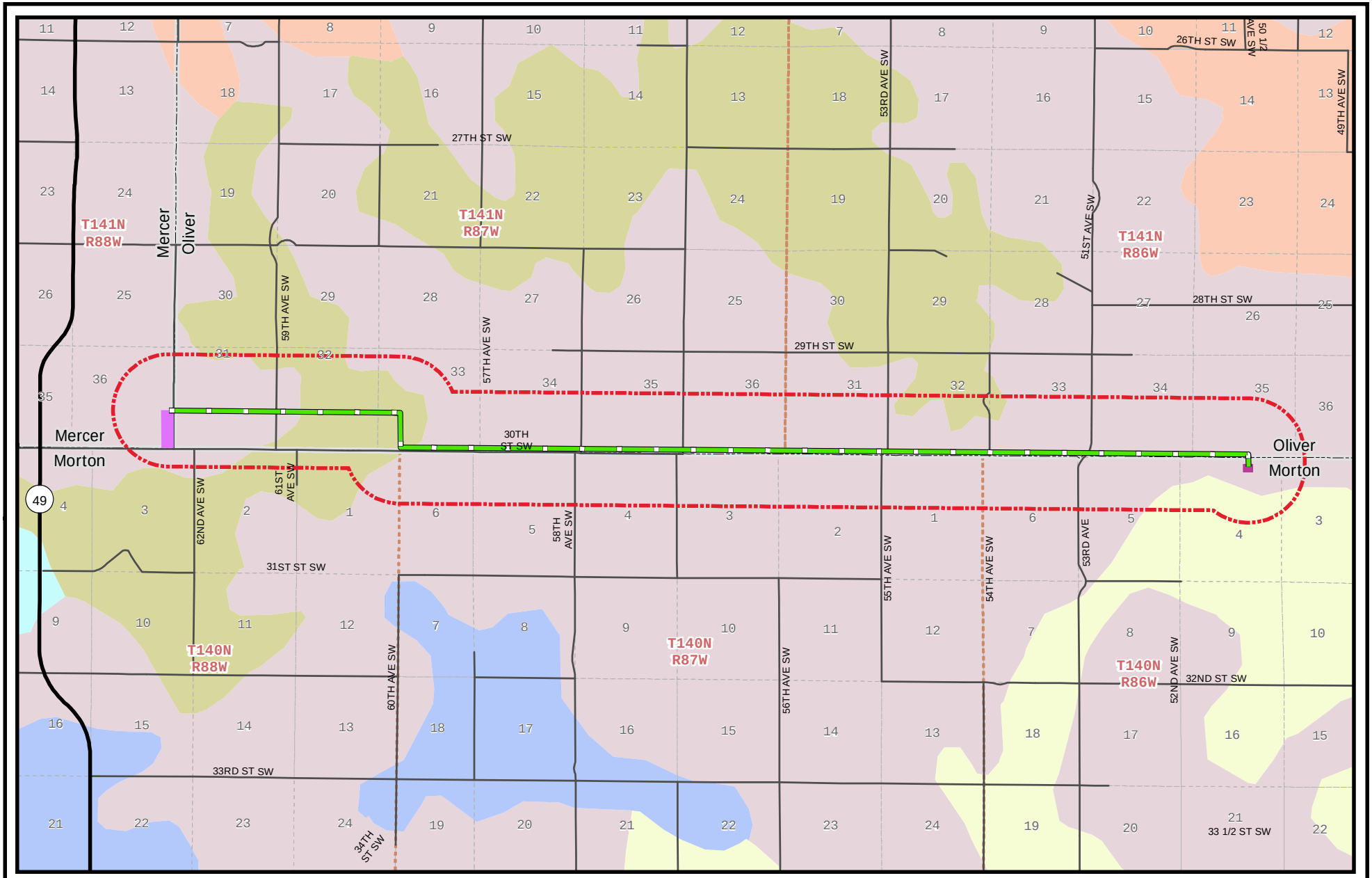

Figure 13: State Soils Association (Statsgo Soil)
Southwest Oliver 230 kV Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

Path: Z:\ALLETECleanEnergy\170200\map_docs\PermitFigures\ACE_8X11L_Fig13_STATSGO_Soil.mxd

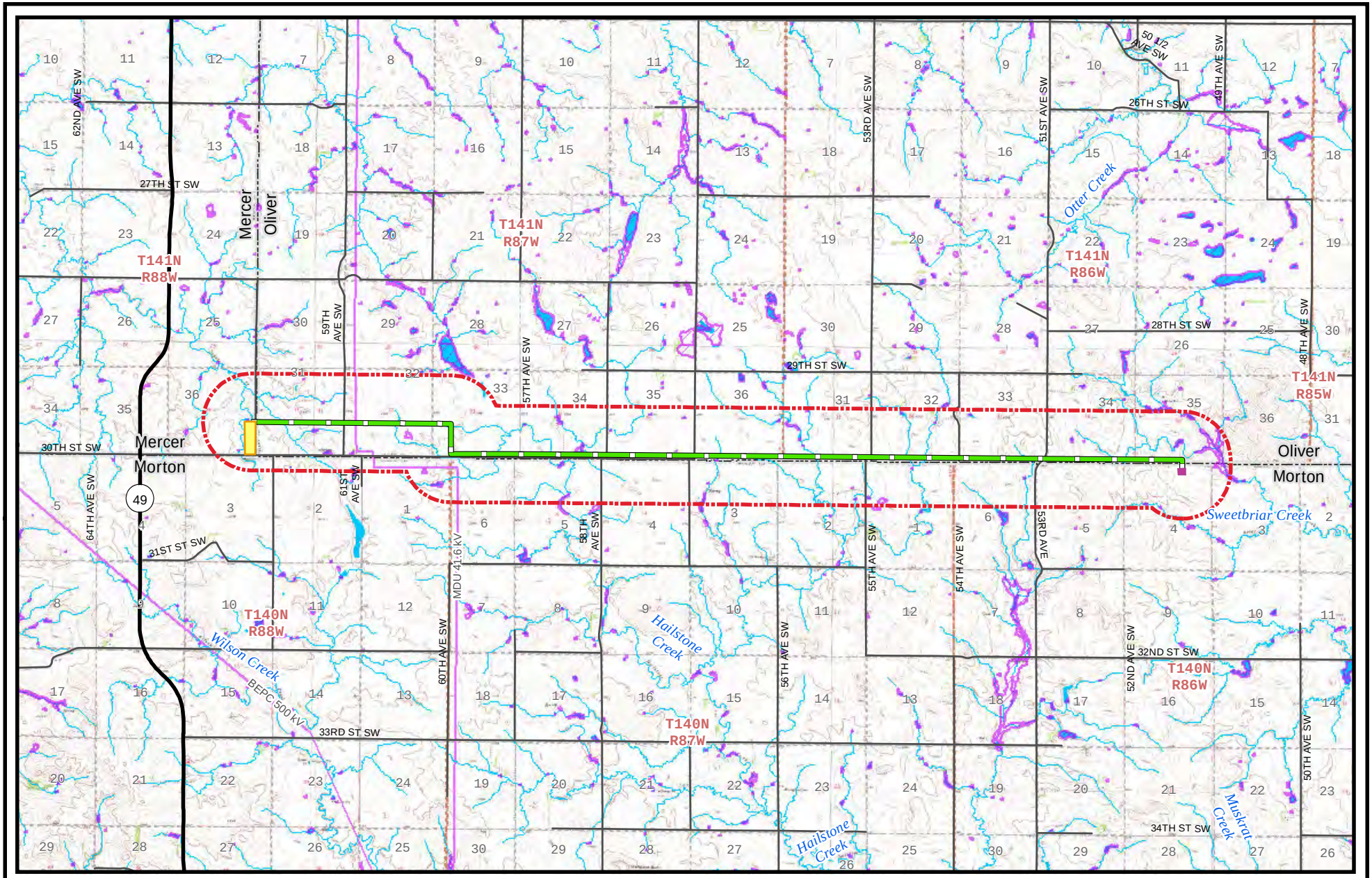

Figure 14: National Wetlands Inventory and Surface Waters
Southwest Oliver 230 kV Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

Path: Z:\ALLETECleanEnergy\170200\map_docs\PermitFigures\ACE_8X11L_Fig14_SurfaceWater.mxd

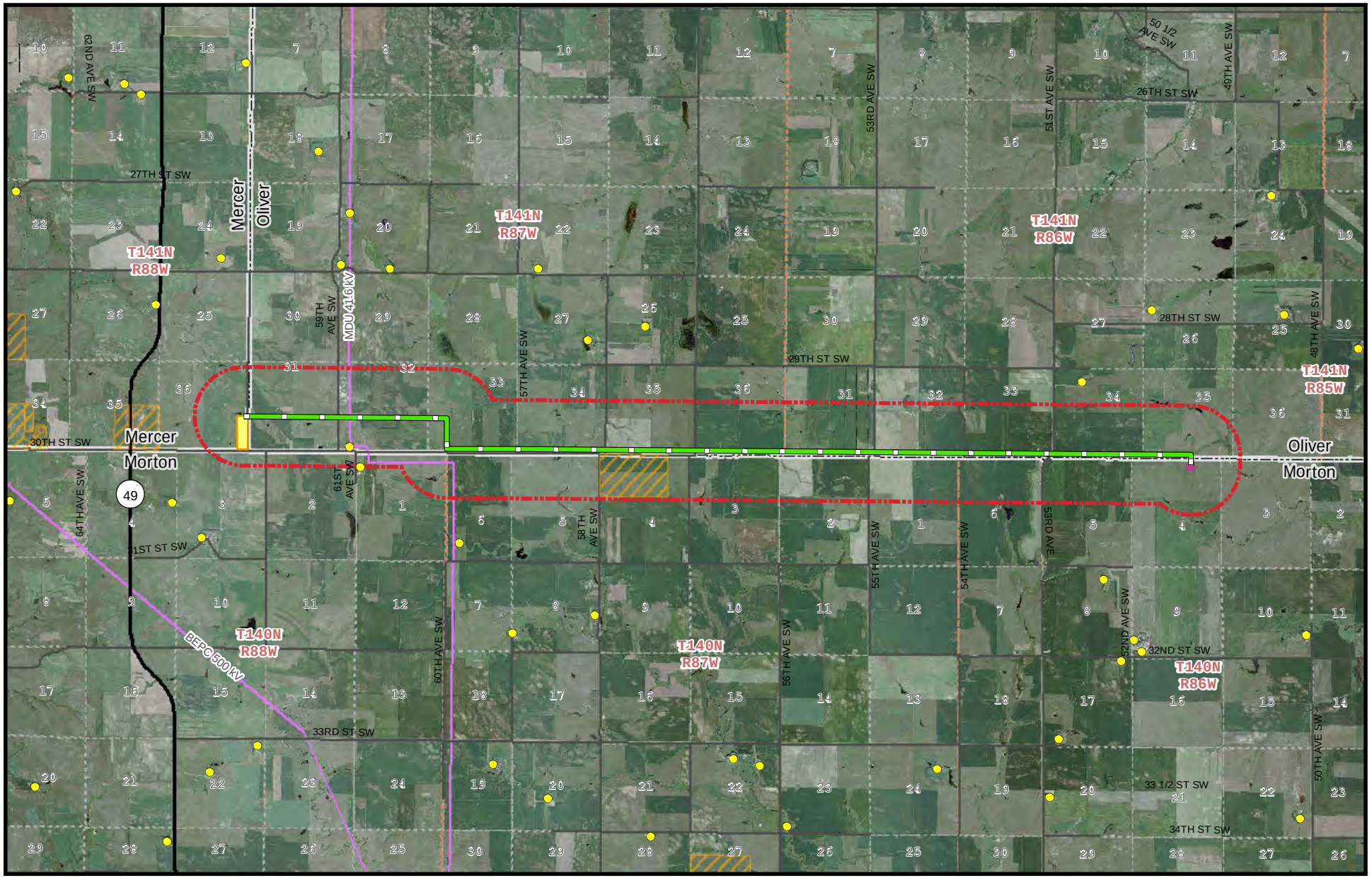

Figure 15: Public Lands Potentially Available for Recreation
Southwest Oliver 230 kV Transmission Line Project
Minnesota Power
Morton, Mercer & Oliver Counties, ND

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Appendix A
Design Data Report

SOUTHWEST OLIVER 230 KV TRANSMISSION LINE
MERCER, MORTON AND OLIVER COUNTIES, NORTH DAKOTA

DESIGN DATA REPORT

Project

- Approximately 11 mile transmission line.
- Final layout and structure types to be completed after design is finalized.

Transmission Line

GENERAL SPECIFICATIONS

Voltage	230 kV
Height, above ground	70 - 130 feet
Operating Capacity	629 MW
Average Span Length	900 feet
Structure Type	Wood H-frame tangent structures and Steel Angle Structures
Conductor Size	1780 kcmil Aluminum Conductor Steel Supported (ACSS/TW)
Shield Wire	One 7/16 inch EHS Steel and One 64mm2/528 OPGW
Right-of-Way	130 feet wide, 65 feet of right-of-way on each side of structure centerline and an additional 100 foot width to accommodate a future 230 kV transmission line
Average Pole Depth	10 to 15 feet
Average Pole Diameter	1.5 - 2 feet, hole dia. 4 Ft.
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
Bison 1 Project Substation Improvements	
Equipment	Addition of high-voltage switches, circuit breakers, power wiring, foundations and supporting structures, conduit, cable, and control equipment all within the existing fenced enclosure

Appendix B
Studies and Assessments

Class I Cultural Resource Inventory for the Allete Energy 230 kV Transmission Line Project in Mercer, Morton and Oliver Counties, North Dakota

Prepared for: HDR, Inc. on behalf of Allete Energy, Inc.

Prepared by: Wade Burns, M.S./RPA

Beaver Creek Archaeology, Inc.

Mandan, North Dakota

BCA Project #: 2011 - 372

September, 2011

Beaver Creek
ARCHAEOLOGY

WHERE PROGRESS MEETS PRESERVATION

301 1st St NE, Suite 201 | Mandan, ND 58554 | PH (701) 663.5521 | FX (701) 663.5589

www.bcarch.org | e-mail: info@bcarch.org

1.0 Introduction

HDR, Inc. on behalf of Allete Energy, Inc. contracted Beaver Creek Archaeology, Inc. (BCA) to perform a Class I Cultural Resource Inventory (Literature Review/File search) of a proposed transmission line project located in central North Dakota. The Area of Potential Effect (APE) covers approximately 237 acres (11 miles) in Mercer, Morton and Oliver Counties North Dakota. The Township, Range, and Sections included are presented below in a tabular format:

Table 1. Allete, Inc. 230 kV Transmission Line APE

Township	Range	Sections
140N	86W	4
141N	86W	31-35
141N	87W	31-36
141N	88W	36

On September 23, 2011, Raina Hanley of Beaver Creek Archaeology, Inc. conducted the file search at the State Historical Society of North Dakota (SHSND). A total of two manuscripts, four archaeological sites, no archaeological site leads and seven isolated finds were on record within a one mile radius of the APE.

This report contains information about currently recorded Historic and Pre-Historic sites and the potential for such sites within the APE. It also contains a basic environmental description of the area as well as recommendations for future cultural resource inventories.

2.0 Project Goal

The goal of the Class I Cultural Resource Inventory is to provide HDR, Inc. and Allete Energy, Inc. with knowledge of the cultural resources and the potential of cultural resources within the APE. This knowledge can aid in the planning stages of the transmission line project by potentially avoiding such resources and thereby complying with Federal and State regulations.

3.0 Environment

The APE is located in the Heart River Archaeological Study Unit and the Knife River Archaeological Study Unit, within the Glaciated Missouri Plateau Subsection of the Missouri Platau Section of the Great Plains Physiographic Province (SHSND 2008:3.1 & 4.1). The project area is located on a rolling to hilly plains with gentle slopes. A few buttes dot the landscape, with Hailstone Butte being the largest. The rolling

terrain of is abundant with potholes, sloughs, and streams. Named streams include Hailstone Creek and Sweet Briar Creek.

This area of North Dakota is situated in a Mixed-grass Prairie (Sedivec and Barker 1998). Western wheatgrass, blue grama, and needle-and-thread grass are found as well as chokecherries, buffaloberry, juneberry, gooseberry, and prairie turnips would have been found seasonally (SHSND 2008).

This is a fit habitat for a number of animals, such as white-tailed deer, mule deer, coyote, muskrat, beaver, fox, and other fur-bearing animals. Bison, elk, antelope, bear, and wolf were once present. There is also an abundance of eagles, hawks, and owls, as well as waterfowl along wetland marshes and prairie potholes. Many of these creatures were resources for food, furs, and feathers for native groups.

Today the area contains an agricultural-based economy. Small grain, corn, grasslands and pasture comprise the Project area. Tree cover in the Project area is limited to wind blocks surrounding farmsteads and along riparian areas.

This biotic diversity along with the availability of water makes this setting favorable for human settlement, both during prehistoric and historic time-periods. One prominent natural resource in this area is Knife River Flint (KRF), which is abundant and has been quarried for centuries by native peoples. Also, good quality Tongue River Silicified sediment, chalcedonies, and silicified wood attracted people to the area who were looking for chippable stones for stone tool production.

4.0 Result

BCA conducted a literature review at the State Historical Society of North Dakota (SHSND) and found two manuscripts, four archaeological sites, no archaeological site leads and seven isolated finds within a one mile radius of the APE. These are listed below in a tabular format, and are depicted on the maps in Appendix A.

Table 2: Manuscripts on File at the Archaeology and Historic Preservation Division, State Historical Society of North Dakota in or near the APE.

Year	MS #	Author	Location			Title
			Twp	R	S	
2011	12258	Burns, C.	140	86	4	Bison 2 Wind Energy Center: A Class III Cultural Resource Inventory, Oliver and Morton Counties, ND
1997	7017	Kinney, W.	141	86	35	Class III Cultural Resource Inventory for a proposed Oliver County Borrow Area. NDDOT Project #DPI-SC-0179(001)305

Table 3: Summary Information on Archaeological Sites Recorded near the APE.

SITS #	Location			Affiliation	Description	Recorder	NRHP Status
	Twp	R	S				
32MO1385	140	86	3	Period Unknown	CM Scatter/Cairn	Johnson	Ineligible
32OL616	140	86	35	Period Unknown	CM Scatter	Johnson	Unevaluated
32OL617	140	86	35	Period Unknown	Cairn, Stone Circle	Johnson	Unevaluated
32OL627	141	86	35	Period Unknown	Cairn, Stone Circle	Johnson	Unevaluated

Table 4. Summary Information on Archaeological Site Leads/Isolated Finds near the APE.

SITS #	Location			Affiliation	Description	Recorder	NRHP Status
	Twp	R	S				
32MOx528	140	86	4	Period Unknown	Isolated Find, Chipped Stone	Johnson	Ineligible
32MOx533	140	86	3	Period Unknown	Isolated Find, Chipped Stone	Johnson	Ineligible
32OLx251	141	86	35	Period Unknown	Isolated Find, Chipped Stone	Johnson	Ineligible
32OLx242	141	86	35	Period Unknown	Isolated Find, Chipped Stone	Johnson	Ineligible
32OLx243	141	86	35	Period Unknown	Isolated Find, Chipped Stone	Johnson	Ineligible
32OLx249	141	86	35	Period Unknown	Isolated Find, Chipped Stone	Johnson	Ineligible
32OLx250	141	86	36	Period Unknown	Isolated Find, Chipped Stone	Johnson	Ineligible

According to the State Historical Society of North Dakota, the Knife River and the Heart River Study Units has seen some of the most intensive prehistoric human settlement in the state, particularly within the Missouri River Valley and the major tributaries, such as the Knife River and the Hearth River (SHSND: 3.1-3.78 & 4.1-4.44). Thus, the proposed APE boundary has a high potential for archaeological sites.

Most sites in Heart River Study Unit are located on terraces, ridges, and hills/knolls/bluffs. Apart from Cultural Material (CM) Scatter, most of the feature types on terraces are Hearths. On ridges and hills/knolls/bluffs, the most abundant features (apart from CM scatters) are Stone Circles, Other Rock Features, and Quarries/mines (SHSND 2008: 3.10 & 4.7).

There have been very few cultural resource inventory surveys (two) performed within the one mile radius of the APE. There are four Pre-Historic archaeological sites recorded within the one mile radius of the APE. Three of these sites

(32OL616, 32OL617 and 32OL627) would require further evaluation, such as a site revisit to determine if the site has been previously impacted, evaluative testing if they are to be impacted by the project. From the current layout it is apparent that they will not be impacted, so at the present, no further work for these sites is recommended. The fourth remaining site, 32MO1385 have been deemed ineligible for the National Register of Historic Places (NRHP) by a previous cultural resource project. There have been seven isolated finds recorded within a mile radius of the APE. These are not considered to be sites and are therefore ineligible for the NRHP. Site 32MO1385 and the seven isolated finds are ineligible for the NRHP thus no avoidance is necessary.

5.0 Recommendation

The proposed APE is located in a region that has a very high potential for archaeological sites. The majority of the land is privately owned within the region, and as a result very few inventories have been previously conducted within the one mile radius of the APE. However, within areas that have been previously inventoried (wind farms and coal mines) which surround this project but are outside the one mile radius, numerous sites have been recorded. The region contains some of the highest concentration of archaeological sites in North Dakota and has seen some of the most intensive Pre-Historic human settlement in this state. As a result, BCA recommends that a Class III Cultural Resource Inventory be performed within the corridor of the proposed APE.

References Cited

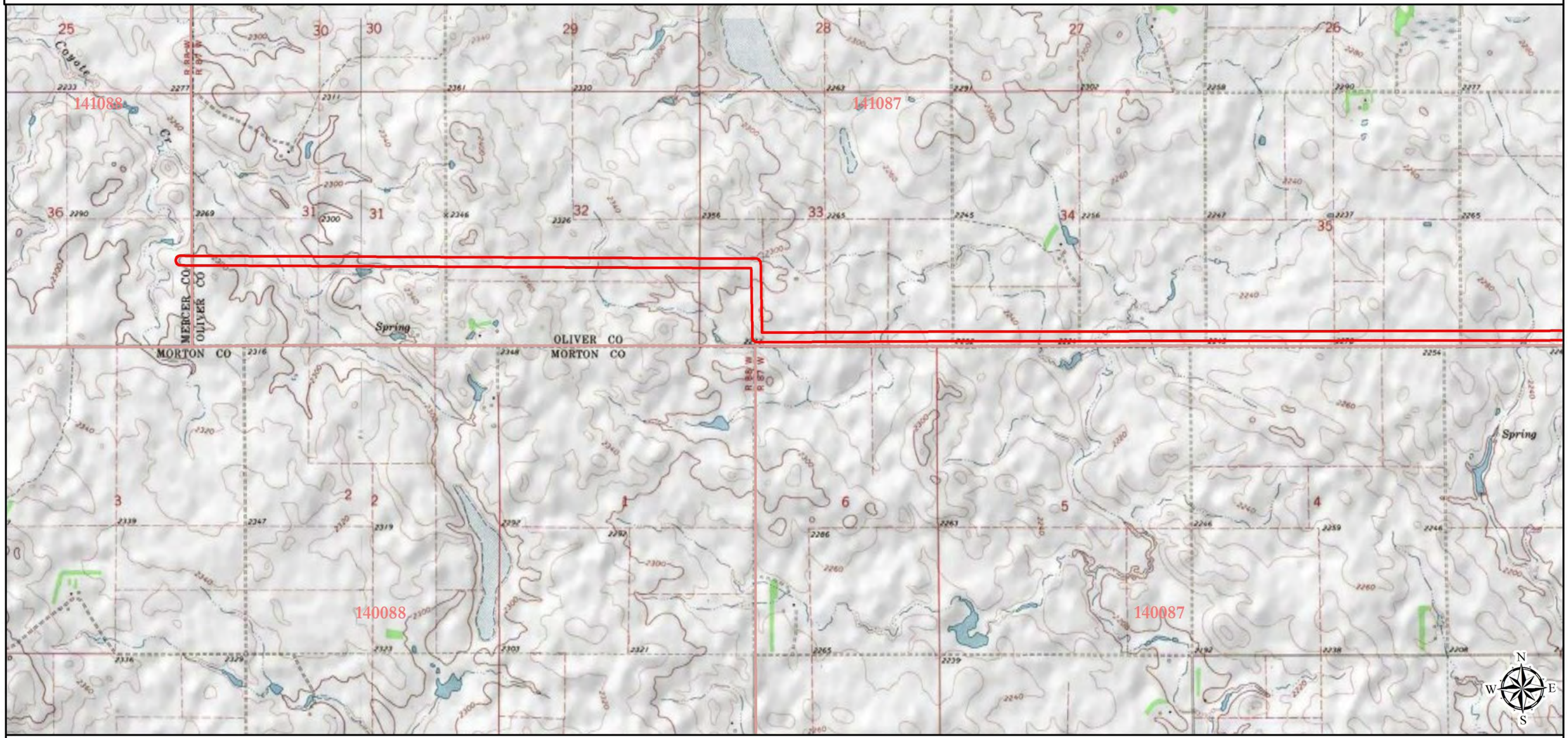
State Historical Society of North Dakota
2008 North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component. Archaeology and Historic Preservation Division, State Historical Society of North Dakota, Bismarck, North Dakota

Appendix A:
Map Section

Beaver Creek
ARCHAEOLOGY

Map 1 of 2

ALLETE - 230kV Transmission Line
Minnesota Power (ALLETE Energy)/HDR
T141N R87W Section 31-36; T141N R88W Section 36;
Glen Ullin NE and Hailstone Butte Quad Maps
Oliver and Mercer Counties, North Dakota



Legend

APE

Cultural Resources

Eligible/Unevaluated Sites

Ineligible Sites/Isolated Finds

0 250 500 1,000 1,500 2,000 Meters

0 0.125 0.25 0.5 0.75 1 Miles

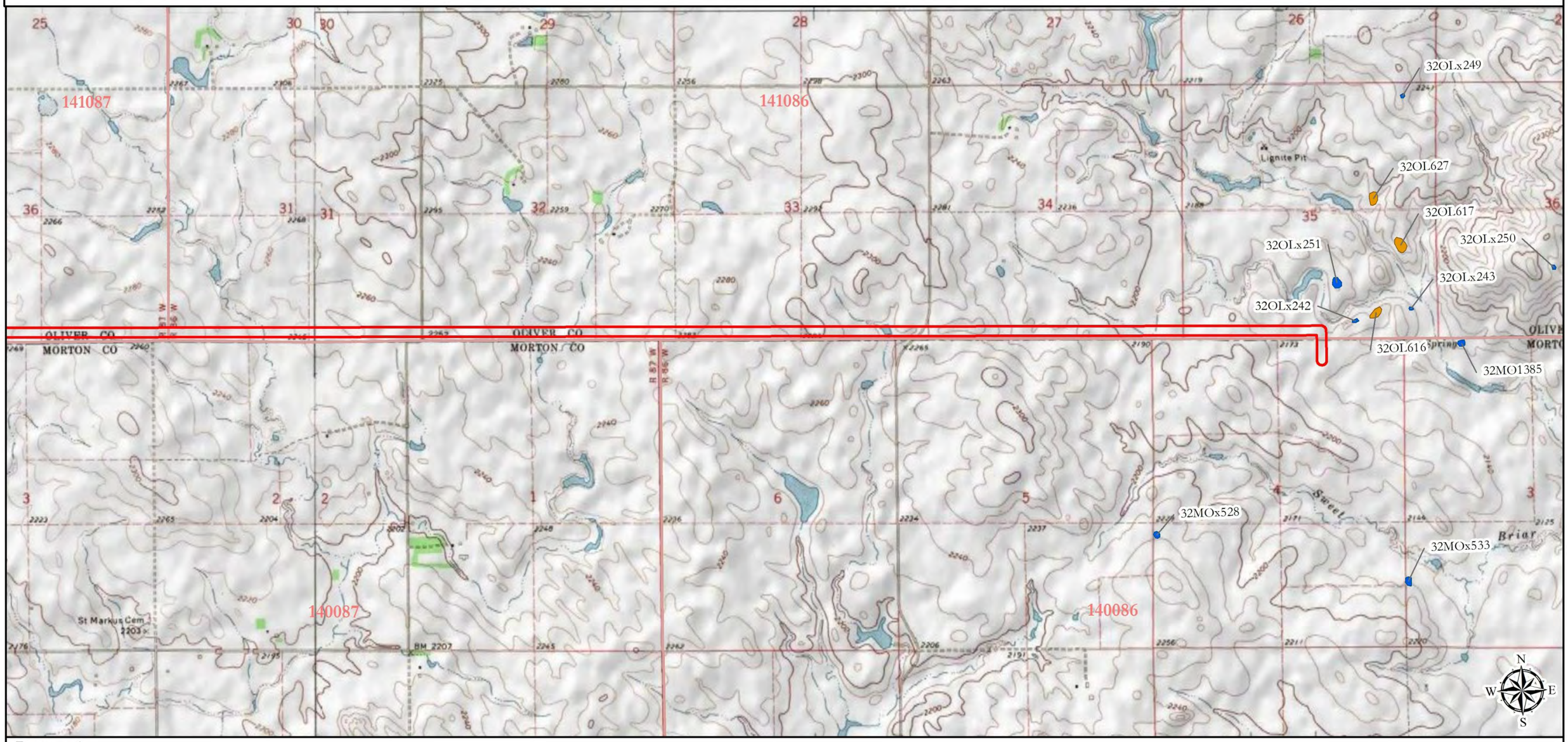
Base map: USGS 7.5'
Scale: 1:24,000
UTM NAD 83 Zone 14

cgb

Beaver Creek ARCHAEOLOGY

Map 2 of 2

ALLETE - 230kV Transmission Line
Minnesota Power (ALLETE Energy)/HDR
T140N R86W Section 4; T141N R86W Sections 31-35; T141N R87W Section 36
Bluegrass and Hailstone Butte Quad Maps
Oliver and Morton Counties, North Dakota



Legend

APE

Cultural Resources

Eligible/Unevaluated Sites

Ineligible Sites/Isolated Finds

0 250 500 1,000 1,500 2,000 Meters

0 0.125 0.25 0.5 0.75 1 Miles

Base map: USGS 7.5'
Scale: 1:24,000
UTM NAD 83 Zone 14

cgb

Appendix C
Agency Letters

Responding Agencies

- North Dakota Department of Transportation
- North Dakota Game and Fish Department
- North Dakota Geological Survey
- North Dakota Job Service
- North Dakota State Water Commission
- State Historical Society of North Dakota
- U.S. Army Corps of Engineers
- United States Dept of Agriculture: Natural Resources Conservation Service

North Dakota Department of Transportation

Francis G. Ziegler, P.E.
Director

Jack Dalrymple
Governor

October 31, 2011

HDR Engineering
701 Xenia Avenue South, Suite 600
Minneapolis, MN 55416

GATHERING ENVIRONMENTAL INFORMATION FOR SOUTHWEST OLIVER 230Kv TRANSMISSION LINE PROJECT, MORTON, MERCER, AND OLIVER COUNTIES, NORTH DAKOTA

We have reviewed your September 30, 2011, letter.

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

However, if because of this project any work needs to be done on highway right-of-way, appropriate permits and risk management documents will need to be obtained from the Department of Transportation District Engineer, Kevin Levi at 701-328-6955.

Robert Fode

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

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

"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

October 31, 2011

Kelly Garvey
Environmental Scientist
HDR Engineering, Inc.
701 Xenia Avenue South, Suite 600
Minneapolis, MN 55416

Dear Ms. Garvey:

RE: Minnesota Power – Southwest Oliver Transmission Project
Mercer, Morton, and Oliver Counties, North Dakota

The North Dakota Game and Fish Department has reviewed this project for wildlife concerns.

Our primary concern is the possible disturbance of native prairie and wetland areas during construction of the transmission line. We ask that work within these areas be avoided to the extent possible, above-ground appurtenances not be placed in wetland areas, and disturbed areas be reclaimed to pre-project conditions. Any unavoidable destruction or degradation of wetland acres should be mitigated in kind.

We recommend that overhead lines be marked when placed over perennial streams or sited in close proximity to large wetland complexes to minimize possible avian impacts. The publication "Mitigating Bird Collisions with Power Lines: the State of the Art in 1994" provides a range of management options which can be used to reduce avian collisions.

We do not believe this project will have any significant adverse effects on wildlife or wildlife habitat, including conservation priority species, provided these recommendations are implemented where appropriate.

Sincerely,

Greg Link
Chief
Conservation & Communication Division

js

North Dakota Geological Survey

Edward C. Murphy - State Geologist

Department of Mineral Resources

Lynn D. Helms - Director

North Dakota Industrial Commission

https://www.dmr.nd.gov/ndgs/

October 5, 2011

Kelly Garvey
HDR Engineering, Inc.
701 Xenia Avenue South, Suite 600
Minneapolis, Minnesota 55416

RE: Southwest Oliver Transmission Project in Mercer, Morton, and Oliver Counties, North Dakota

Dear Kelly,

When reviewing these types of corridors in western North Dakota we consult our mineable coal and our landslide maps. We have not identified any mineable coal within this corridor, based upon existing data. We have not completed a landslide inventory in this particular area, but I assume that the risk would be slight given the surface topography.

Please contact me if you have any questions.

Sincerely,

Edward C. Murphy
State Geologist

JOB SERVICE North Dakota
jobsnd.com

Jack Dalrymple, Governor • Maren L. Daley, Executive Director

PO Box 5507 • Bismarck, ND 58506-5507

October 4, 2011

Mr. Kelly Garvey
Environmental Scientist
HDR Engineering, Inc.
701 Xenia Avenue South, Suite 600
Minneapolis, MN 55416

RE: Southwest Oliver Transmission Project
Mercer, Morton and Oliver Counties, North Dakota

Dear Mr. Garvey:

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

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

Sincerely,

Maren L. Daley
Executive Director

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
701-328-2750 • TDD 701-328-2750 • FAX 701-328-3696 • INTERNET: http://swc.nd.gov

October 12, 2011

Kelly Garvey
HDR Engineering
701 Xenia Avenue S STE 600
Minneapolis, MN 55416

Dear Ms. Garvey:

This is in response to your request for review of environmental impacts associated with to the Southwest Oliver Transmission Project in Mercer, Morton and Oliver Counties, ND.

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

- The property is not located in an identified floodplain and it is believed the project will not affect an identified floodplain.

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

- All waste material associated with the project must be disposed of properly and not placed in identified floodway areas.

- No sole-source aquifers have been designated in ND.

There are no other concerns associated with this project that affect State Water Commission or State Engineer regulatory responsibilities.

Thank you for the opportunity to provide review comments. If you have any questions, please call me at 328-4969.

Sincerely,

Larry Knudtson
Research Analyst

LJK:dp/1570

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

October 4, 2011

Ms. Kelly Garvey
Environmental Scientist
701 Xenia Avenue South, Suite 600
Minneapolis MN 55416

NDSHPO REF.: 12-0008 PSC Southwest Oliver Transmission Project in Mercer, Morton, and Oliver Counties, North Dakota

Dear Ms. Garvey:

We received your letter on NDSHPO REF.: 12-0008 PSC Southwest Oliver Transmission Project in Mercer, Morton, and Oliver Counties, North Dakota. We recommend a Class III (pedestrian) archaeological survey on the unsurveyed portions of the project and an inventory on standing structures.

Thank you for the opportunity to review the project at this time. We look forward to review of the surveys and further consultation. If you have questions please contact Susan Quinnell at squinnell@nd.gov or (701) 328-3576.

Sincerely,

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

C: Mr. Patrick Fahn, PSC

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

REPLY TO
ATTENTION OF

October 7, 2011

North Dakota Regulatory Office

HDR Engineering, Inc.
Attn: Kelly Garvey, Environmental Scientist
701 Xenia Avenue South, Suite 600
Minneapolis, Minnesota 55416

Dear Mr. Garvey:

This is in response to your letter on behalf of Minnkota Power, received October 03, 2011, requesting Department of the Army (DA), US Army Corps of Engineers (Corps) comments regarding the Southwest Oliver Transmission Project located in Mercer, Morton and Oliver Counties, North Dakota.

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

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

If your proposal requires review by the Corps in accordance with Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act, please complete and submit the enclosed Corps of Engineers permit application to the U. S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504.

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

Sincerely,

Daniel E. Cimarosti

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosures
ENG Form 4345
Fact Sheet NWP 12

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
1301 Suite 1 Business Loop East
Jamestown, ND 58401

October 7, 2011

Kelly Garvey
Environmental Scientist
HDR Engineering, Inc
701 Xenia Ave S
Suite 600
Minneapolis, Mn 55416

RE: Southwest Oliver Transmission Project, Morton County, North Dakota

Dear Kelly Garvey,

Recently Michelle Doyle the District Conservationist in Mandan contacted me about your office requesting comments about Southwest Oliver Transmission Project. The Natural Resources Conservation Service (NRCS) concerns are in regards to prime farmlands, wetlands, and soil erosion in Morton County. NRCS policy regarding prime farmlands and wetlands is as follows.

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

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

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

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

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

NRCS would recommend that impacts to wetland(s) be avoided. If the alignment of the permanent structure requires construction in a wetland, NRCS can complete a certified wetland determination, if requested by the landowner/operator. In addition, care should be taken during the construction of the proposed project to minimize soil blowing and water erosion as these may cause negative impacts to adjacent farmlands.

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

Sincerely,

FREDERICK P. AZIZ
Area Resource Soil Scientist

Cc:
Michelle Doyle, DC, NRCS, Mandan, ND
Steven J. Sieler, SSL, NRCS, Bismarck, ND

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
1301 Suite 1 Business Loop East
Jamestown, ND 58401

October 7, 2011

Kelly Garvey
Environmental Scientist
HDR Engineering, Inc
701 Xenia Ave S
Suite 600
Minneapolis, Mn 55416

RE: Southwest Oliver Transmission Project, Oliver County, North Dakota

Dear Kelly Garvey,

Recently David Pfiliger the District Conservationist in Center contacted me about your office requesting comments about Southwest Oliver Transmission Project. The Natural Resources Conservation Service (NRCS) concerns are in regards to prime farmlands, wetlands, and soil erosion in Oliver County. NRCS policy regarding prime farmlands and wetlands is as follows.

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

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

Sincerely,

FREDERICK P. AZIZ
Area Resource Soil Scientist

Cc:
David D. Pfliger, DC, NRCS, Center, ND
Steven J. Sieler, SSL, NRCS, Bismarck, ND

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request
Name Of Project	Federal Agency Involved
Proposed Land Use	County And State
PART II *(To be completed by SCS)*	Date Request Received By SCS

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply — do not complete additional parts of this form).* Yes ☐ No ☐	Acres Irrigated	Average Farm Size
Major Crop*(s)*	Farmable Land In Govt. Jurisdiction Acres: %	Amount Of Farmland As Defined in FPPA Acres: %
Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By SCS

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site				
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*				

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160				
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or a local site assessment)*	160				
TOTAL POINTS *(Total of above 2 lines)*	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection: