

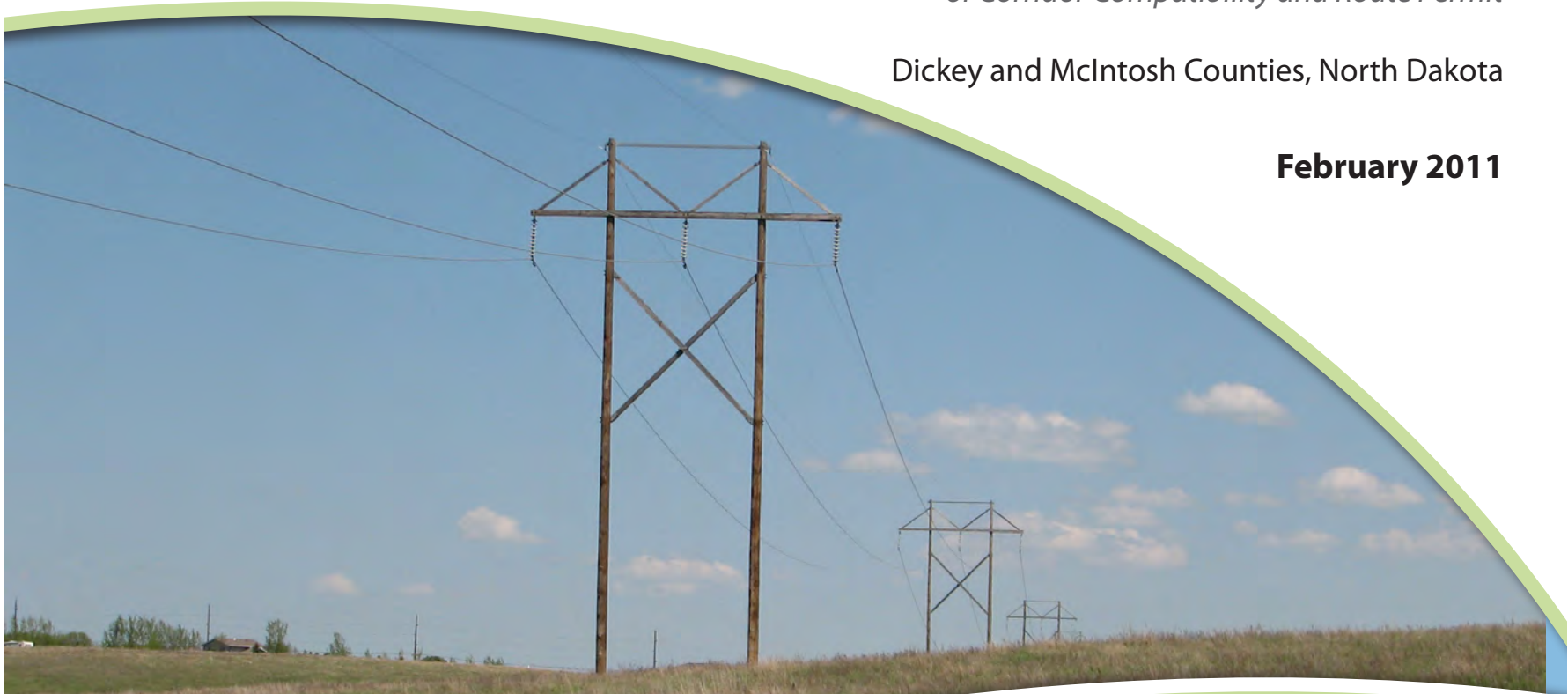
MERRICOURT WIND FARM TO ELLENDALE PROJECT

230 kV Transmission Line

Application to the North Dakota Public Service Commission for a Waiver of Procedures and Timelines, and Consolidated Certificate of Corridor Compatibility and Route Permit

Dickey and McIntosh Counties, North Dakota

February 2011



Prepared for:

Montana-Dakota Utilities Co.
400 North 4th Street
Bismarck, ND 58501

PU-10-164



Prepared by:

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MDU Exhibit 1



MONTANA-DAKOTA

UTILITIES CO.

A Division of MDU Resources Group, Inc.

400 North Fourth Street
Bismarck, ND 58501
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February 7, 2011

Executive Secretary
ND Public Service Commission
State Capitol Building
Bismarck, ND 58505

Re: Montana-Dakota Utilities Co.'s Application
for a Corridor Certificate and a Route
Permit for a 230 kV transmission line in
Dickey and McIntosh counties, North
Dakota - Case No. PU-10-164

Montana-Dakota Utilities Co., a Division of MDU Resources Group, Inc. (Montana-Dakota) submits this Application for a Corridor Certificate and Route Permit for a 230 kV Transmission Line and an Application for a Waiver of Procedures and Time Schedules pursuant to North Dakota Century Code 49-22-08, 49-22-08.1 and 49-22-07.2, under the Energy Conversion and Transmission Facility Siting Act, and promulgated rules.

An original and ten copies of this Application for a Corridor Certificate and Route Permit for a 230 kV transmission line and an Application for a Waiver of Procedures and Time Schedules has been delivered to the Commission on this date.

Please refer all inquiries regarding this filing to:

Mr. Henry Ford
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Also, please send copies of all written inquiries, correspondence and pleadings to:

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A check payable to the North Dakota Public Service Commission in the amount of \$92,500 is enclosed based on the Commission's standard for establishing the filing fee required here at \$5,000 per \$1 million investment. This represents an increase over the filing fee set by the Commission on June 2, 2010 pursuant to Montana-Dakota's Letter of Intent filed on May 19, 2010 in this case as the new interconnecting substation was inadvertently omitted from the project cost estimate underlying the Commission's original assessment.

If you have any questions, or need additional information, please contact me at 701-222-7856.

Sincerely,



Tamie A. Aberle
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Enclosure

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**Merricourt Wind Farm Project to
Ellendale
230 kV Transmission Line**

**Application to the North Dakota Public
Service Commission for a
Waiver of Procedures and Timelines, and
Consolidated Certificate of Corridor
Compatibility and Route Permit**

February 7, 2011

Prepared for:

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1.0 INTRODUCTION

Montana-Dakota Utilities Co (Montana-Dakota), a Division of MDU Resources Group, Inc., proposes to construct, operate, and maintain a 230 kilovolt (kV) transmission line, new Interconnect Substation, and substation modifications from Ellendale, North Dakota, to the Merricourt Wind Power Project located northeast of Ashley, North Dakota, called the Merricourt Wind Project to Ellendale 230 kV Transmission Line Project and referred herein as the Project. The Project is being built as a direct result of a System Impact Study and Facility Study performed in accordance with the Midwest Independent System Operator (MISO) Generator Interconnection Procedures. A Generator Interconnection Agreement between Montana-Dakota, MISO, and enXco Development Corporation (enXco) was executed on April 27, 2010, wherein Montana-Dakota agreed to construct the network upgrades to Montana-Dakota's transmission system necessary for enXco to interconnect its proposed 150 megawatt (MW) wind project. enXco has agreed to reimburse Montana-Dakota for its costs incurred for this Project under the provisions of Attachment FF of the MISO Tariff. enXco's siting application for the Merricourt Wind Project is pending before the North Dakota Public Service Commission (Commission) in Case No. PU-08-932.

The Project is located in McIntosh and Dickey counties, North Dakota (Figure 1), and will consist of approximately 30 miles of 230 kilovolt (kV) transmission line between the existing Montana-Dakota-owned Ellendale Junction Substation located about 1.5 miles west of Ellendale in Dickey County to the proposed Merricourt Wind Power Project Interconnect Substation located about 15 miles east-northeast of Ashley in McIntosh County. The Project also includes upgrades to the existing Montana-Dakota-owned Ellendale Junction Substation near Ellendale and the construction of a new Merricourt Wind Power Project Interconnect Substation located near the Merricourt Wind Power Project.

Montana-Dakota submits this application for a Waiver of Procedures and Time Schedules, a Consolidated Certificate of Corridor Compatibility (Corridor Certificate) and Route Permit to construct the Project and respectfully requests that the Commission approve the corridor and route developed for the Project.

Montana-Dakota is headquartered in Bismarck, North Dakota, and provides natural gas and/or electric service to parts of Montana, North Dakota, South Dakota, and Wyoming. The Montana-Dakota service area covers about 168,000 miles and serves approximately 355,000 customers. In North Dakota, Montana-Dakota provides service to approximately 73,350 electric and 90,000 natural gas customers in about 150 communities. A Certificate of Public Convenience and Necessity was issued by the Commission for the Project in Case No. PU10-506.

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

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

To the extent available, Montana-Dakota has presented herein information required by the North Dakota Siting Act. Montana-Dakota has also considered exclusion areas, avoidance areas, selection criteria, and policy criteria in the selection and design of the proposed route (Figure 2). Montana-

Dakota has selected a corridor that is substantially adjacent to existing utility and transportation corridors, which helps to minimize environmental impacts.

Tables 1 and 2 outline the information required to fulfill the requirements for a Corridor Certificate and Route Permit with the Commission using the Commission's Guidelines and identifying where these requirements are addressed in this document.

1.1.1 Waiver of Procedures and Time Schedules

Montana-Dakota submits this Application for a Waiver of Procedures and Time Schedules and consolidated applications for a Corridor Certificate and Route Permit (collectively, Application) for the purposes of siting and constructing an approximately 30-mile-long 230 kV transmission facility and substation. By this Application, Montana-Dakota request that the Commission, pursuant to NDCC Section 49-22-07.2, waive the following requirements:

1. That the Commission hold separate hearing as may be required by NDCC Sections 49-22-08 and 49-22-08.1, 49-22-13 and North Dakota Administrative Code (NDAC) Section 69-06-01-02. Montana-Dakota request that the Commission hold a single consolidated hearing on this waiver request and Application for a Certificate of Corridor Compatibility and Route Permit. Montana-Dakota also requests that the Commission shorten the three-month period specified in NDCC Section 49-22-08(5) and the six-month period specified in NDCC Section 49-22-08.1(5).
2. To comply with NDCC Section 49-22-04 and NDAC Section 69-06-01&02 Montana-Dakota submitted an updated Ten Year Plan to the North Dakota Public Service Commission on July 16, 2010. This Project is consistent with the Ten-Year Plan on file with the Commission.
3. That the Commission waive requirements for mylar maps and stereo-pair aerial photographs as set forth in the Commission's Application Guidelines for a Corridor Certificate and a Route Permit. Geographic Information System (GIS) maps that meet the intent of the Commission requirements are provided in the Application.

In May 2010, Montana-Dakota submitted a Letter of Intent (LOI) to submit an application for a combined Certificate of Corridor Compatibility and Route Permit and a request for a waiver of the one-year notice period between filing the LOI and Certificate of Corridor Compatibility and Route Permit Application in Case No. PU-10-164. The LOI was accepted and the waiver request was granted by the Commission on June 2, 2010 (Appendix A).

The Commission's Application Guidelines for Waiver of Procedures and Time Schedules require a facility description, need for, cost of and justification for the request for waiver, together with evidence that the Project will produce minimal adverse effects. As demonstrated in the Application, and as summarized below, Montana-Dakota'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

MDU proposes to construct, own, and operate an approximately 30-mile-long, 230 kV transmission line, new Interconnect Substation, and substation modifications from Ellendale, North Dakota, to the

proposed Merricourt Wind Power Project. This Project does not include development of the Merricourt Wind Power Project. The Project would consist of the following five major components:

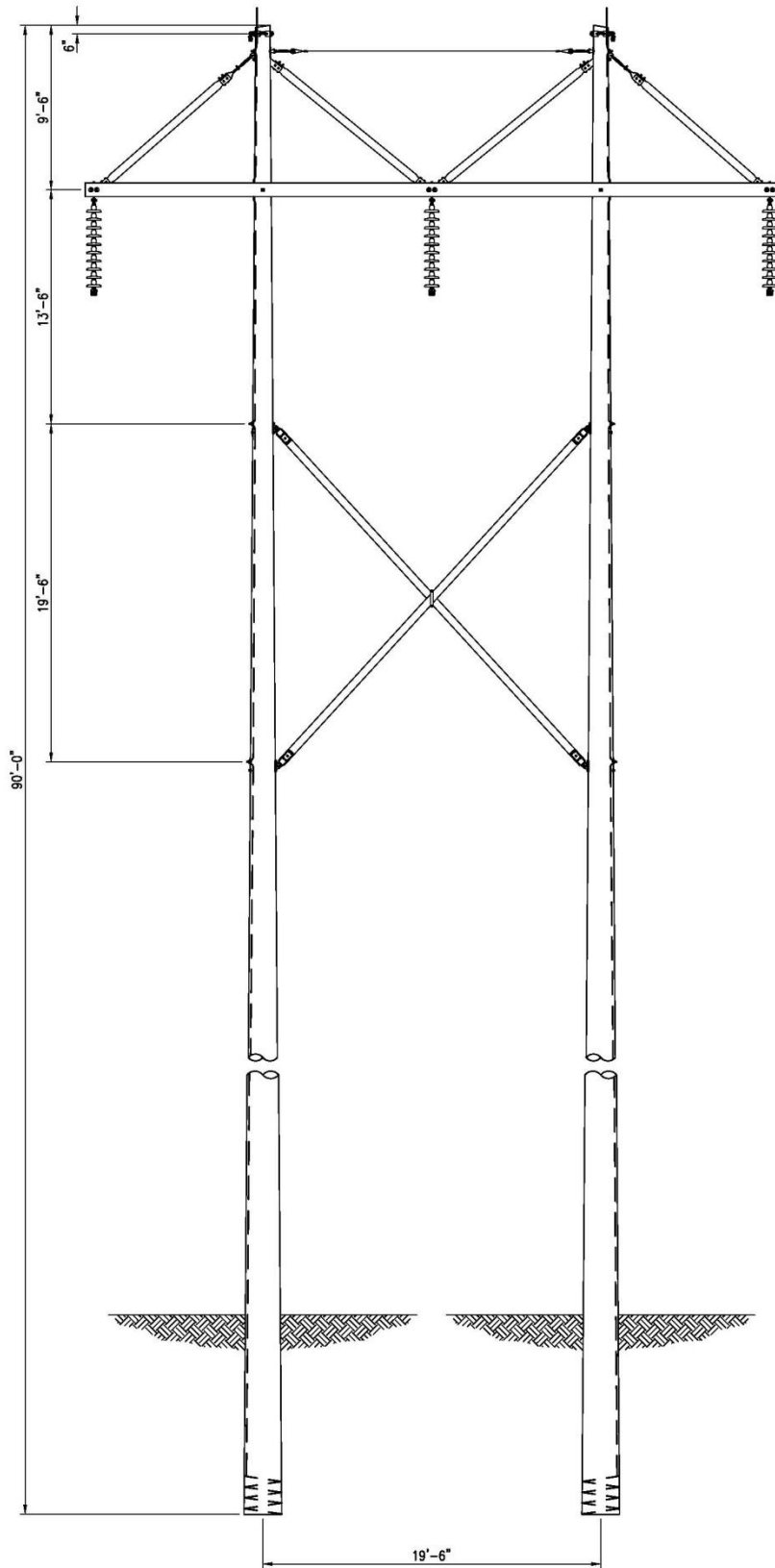
1. **230 kV High Voltage Transmission Line** – Montana-Dakota proposes to construct about 30 miles of new, high-voltage, three-phase alternating current (AC) electric transmission line from the existing Montana-Dakota-owned Ellendale Junction Substation, located about 1.5 miles west of Ellendale in Section 10, T129N, R63W, Dickey County, to a proposed Merricourt Wind Power Project Interconnect Substation, located in Section 3, T130N, R67W, McIntosh County about 15 miles east-northeast of Ashley. The Project would require a crossing of Pheasant Lake, an impoundment of the Elm River.

Approximately, 12 of the 30 miles are going to be new right-of-way from the Interconnect Substation east to the intersection of State Highway 56 and Montana-Dakota's existing Ashley to Ellendale 41.6 kV transmission line in Section 3, T129N, R66W. The remaining 17.4 of 30 miles will be double-circuited transmission system with MDU's existing Ashley to Ellendale 41.6 kV transmission line.

While final engineering and design has not been completed, the transmission line will likely be constructed from wood H-frame structures (Diagram 1). The double-circuited transmission system may require taller structures with shorter spans between structures. Typical H-frame structures will be approximately 70-90 feet in height with an average span of about 800 feet (500 feet for the double-circuit line) and a maximum span of approximately 1,000 feet under some circumstances. The right-of-way required for the new line is planned to be 120 feet wide. The double-circuited line will occur within Montana-Dakota's existing Ashley to Ellendale 41.6 kV transmission line right-of-way.

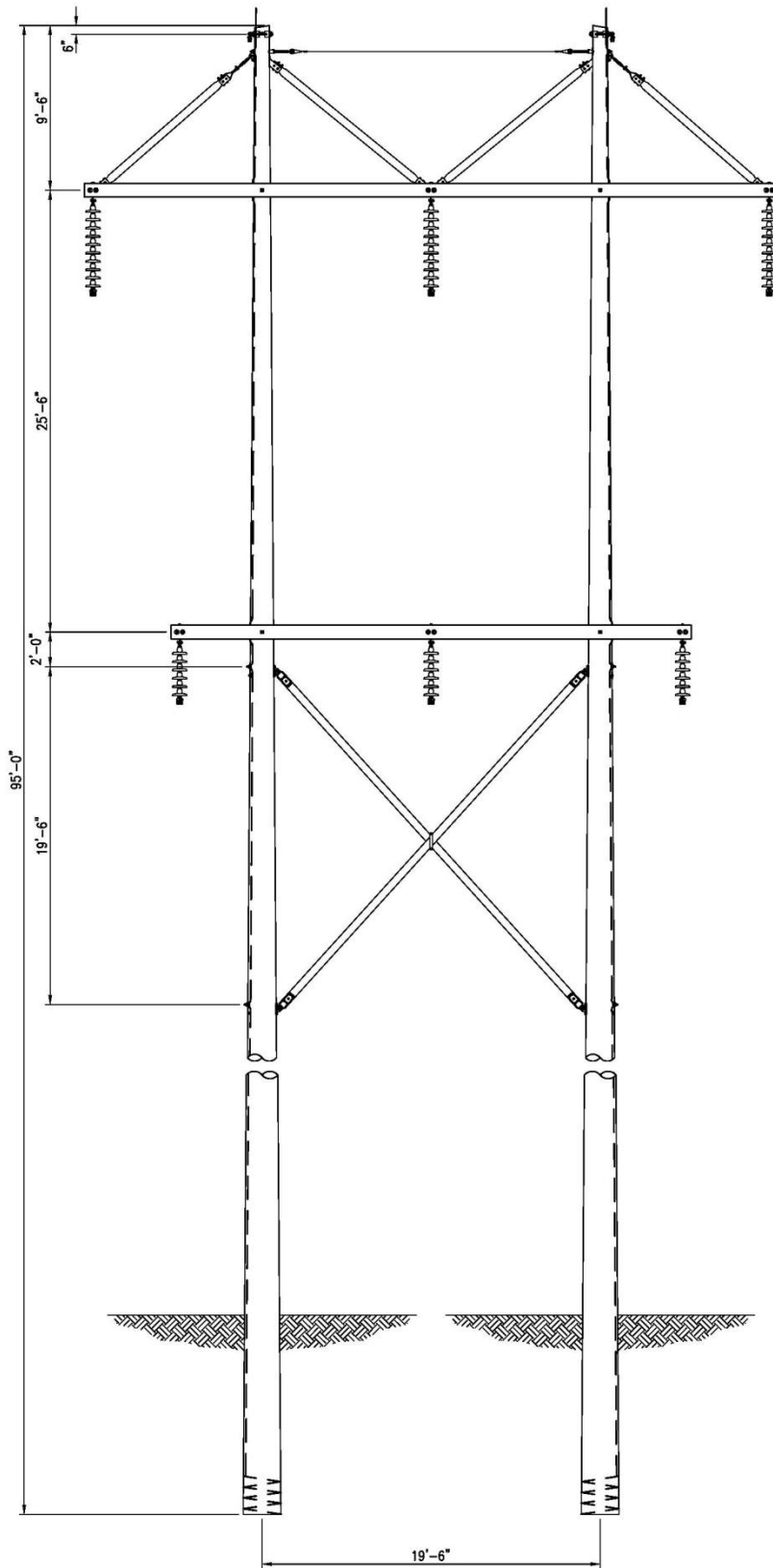
The conductor would be 954 MCM ACSR, 45/7, Rail. Two shield wires, also known as lightning protection wires, are planned. One shield wire would be fiber optic ground wire (OPGW) on one side and extra high strength (EHS) steel cable as the installed shield wire on the other side for the entire 30-mile-long transmission line length. No fiber optic regeneration stations are proposed for this Project.

Diagram 1. Single-Circuit H-Frame Structure



2. **Removal of the Existing Ashley to Ellendale 41.6 kV Transmission Line Structures** – Montana-Dakota is proposing to double-circuit the Ashley to Ellendale 41.6 kV Transmission Line for about 17.4 miles with the new 230 kV transmission line. This will require the existing 41.6 kV transmission line structures to be removed and replaced with the aforementioned proposed 230 kV transmission line H-frame structures. The new 230 kV transmission line will be double circuited with the 41.6 kV transmission line (Diagram 2). The existing structures are wood H-Frame structures with a height of about 50 feet with a ground conductor clearance of about 39 feet. The wooden portion of the removed structures will be offered to landowners for reuse. If a landowner does not want the wood material, Montana-Dakota will properly dispose of the material. Montana-Dakota intends to reuse the conductors on these structures. The conductors will be removed by cutting the existing arms and braces in half. The pole will then be removed by digging beside it, removing it from the ground, and then backfilling the hole with offsite fill. Appendix B includes the location of the 41.6 kV structure being removed and the location of the new structures with a distance comparison
3. **Ellendale Junction Substation Upgrades** – Montana-Dakota is proposing to upgrade the existing Ellendale Junction Substation. This would involve the addition of one 230 kV circuit breaker, one 230 kV line termination structure, one 230 kV disconnect switch, associated arresters, Coupling Capacitor Voltage Transformer (CCVTs), buswork and protective relaying, and controls required to support the circuit breaker and the system protection function. The existing 230/115 kV transformer would also be replaced with a new 230/115 kV 90/120/150 MVA auto-transformer. This new transformer requires additional protective relaying and control equipment, and replacement of the existing lightning arrestors. All upgrades would occur within the existing substation’s fenced boundary.
4. **Interconnect Substation** – A new 230 kV substation would be located adjacent to the Merricourt Wind Power Project Collector Substation. This new substation footprint, including the operations and maintenance buildings and fencing, would occupy approximately an area of approximately 5.5 acres (490 ft by 490 ft) within an approximately 11-acre parcel of land.
5. **New substation** – The new substation would be an open air design that would be constructed out of steel structures with aluminum bus conductor. The substation would consist of four 230 kV circuit breakers, 230 kV bus and line switches, buswork, associated arresters, CCVTs and protective relaying devices for four 230 kV line terminals – one to the Collector substation, one to Wishek to Ellendale 230 kV line, one to Tatanka 230 kV line, and one to connect the Project (Ellendale 230 kV line). The site would also have a control house that contains the system protection devices, a System Control and Data Acquisition (SCADA) system and a battery bank.

Diagram 2. Double-Circuit H-frame Structure



6. **Temporary Laydown Areas** – Two temporary laydown areas will be required for equipment storage before transporting to the construction sites. One laydown area will be located in T129N, R63W Section 10, near the Ellendale Junction Substation and is currently cropped. The second laydown area will be located in T130N, R66W Section 5, near the Interconnect Substation and is currently cropped (Figure1).

Need

System studies performed as part of the MISO Generator Interconnection Procedures have shown a need to increase the transfer capacity on the current transmission system in the area around the Project. This increase would provide a generation outlet for the proposed 150 MW Merricourt Wind Power Project as proposed by enXco Development Company. In addition, it may benefit future wind energy projects. This Project would, also, provide transmission grid reliability to Montana-Dakota's existing Wishek to Ellendale 230 kV transmission line. Substation construction is anticipated to begin in spring 2011 with an in-service goal of September 2011. Transmission line construction is anticipated to begin in summer 2011 with an in-service goal of December 2011.

Cost

The estimated total cost of construction is \$20,650,000. The primary operating and maintenance cost for a transmission line is the cost of inspections, usually done annually by air or ground. Annual operating and maintenance costs for transmission lines vary depending upon the setting, the amount of vegetation management necessary, storm damage occurrences, structure types, materials used and the transmission line's age. For 115 kV through 345 kV transmission lines, past experience has shown that annual costs are approximately \$300 to \$500 per mile.

Justification for Waiver

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

In determining whether the proposed Project will result in adverse impacts on the environment, Montana-Dakota evaluated the Project using the criteria set forth in Section 49-22-09 of the Siting Act (See Section 3.0 of this application); the Avoidance Area, Exclusion Area, Policy and Selection Criteria set forth in NDAC Section 69-06-08-02 (Section 3.0 of this application); and the Commission's Guidelines for Energy Conversion and Transmission Facility Siting (Guidelines) (see Table 1 and Table 2 of this application, and the Sections referenced therein). Impacts associated with the Project are summarized in Section 5.17 of the application. Based upon this evaluation and the factors set forth in the Siting Act and Guidelines, the proposed Project will have minimal adverse effects.

State and federal agencies were consulted to provide input on potential impacts of the 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 this application.

Also, Montana-Dakota's proposal takes into consideration federal and state agency concerns and thereby further mitigates any adverse effects associated with the Project. The designated state

agencies and officers listed in NDAC 69-06-01-05 were notified about the proposed Project in June 2010 and Montana-Dakota will continue to work with the agencies to implement conditions that may be imposed.

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

1.1.2 Certificate of Corridor Compatibility

Table 1 outlines the information required to fulfill the requirements for a Corridor Certificate with the Commission using the Commission Guidelines dated November 1979 and identifying where these requirements are addressed in this document.

Table 1.
Corridor Certificate Completion Checklist

| State Authority | Description | Section |
|-----------------|---|-------------------|
| Chapter 49-22 | PSC Guidelines: Energy Conversion and Transmission Facility Siting | 1.1 |
| Section A | Description | 1.2 |
| 1. | 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 |
| 2. | Estimated span lengths; | 4.2.1 |
| 3. | Anticipated type of structure; | 4.2.1 |
| 4. | Approximate length of facility | 4.2 |
| 5. | Voltage; and | 4.2.2 |
| 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; | 1.1.2 |
| b. | Route Application; | 1.1.3 |
| c. | Route Permit; | 1.1.3 |
| d. | Construction start date; | 1.3 |

| State Authority | Description | Section |
|-----------------|--|---|
| 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 E |
| Section C | Need for Facility | |
| 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. | Select a study area, which includes the corridor, of sufficient width to enable the Commission to evaluate the factors addressed in Section 49-22-09, NDCC. | 3.0 |
| 2. | Identify and map the criteria that led to the corridor location within the study area. | 3.0 |
| 3. | Discuss the relative value of each criteria and how the corridor location was selected giving consideration to all criteria. | 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 |
| b. | Avoidance areas; | 3.2 |
| c. | Selection criteria; | 3.3 |
| d. | Policy criteria; | 3.4 |
| e. | Design and construction limitations; and | 3.5 |
| f. | Economic considerations. | 3.6 |
| 5. | Discuss the general mitigation measures that will be taken to minimize adverse impacts that result from a route location in the 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, 5.10.2, 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 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 |

| State Authority | Description | Section |
|------------------|--|---------|
| 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. | 1.1.1. |
| 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. | Problems raised by federal agencies, other state agencies, and local entities | 8.11 |

1.1.3 Route Permit Application

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

**Table 2.
Route Permit Completion Checklist**

| State Authority | Description | Section |
|-----------------|---|------------|
| Chapter 49-22 | PSC Guidelines: Energy Conversion and Transmission Facility Siting | |
| Section A | Description | |
| 1. | Type: Describe the type of transmission facility proposed. | 4.2 |
| 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. | 4.2.1 |
| 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; | 1.1.3 |
| b. | Right-of-way 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 evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state or local agency. | Appendix E |
| Section C | Need for Facility | |
| 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. | Discuss the utility's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives. | Appendix C |
| 2. | Discuss the factors listed in Section 49-22-09, NDCC to aid the Commission's evaluation of the proposed route. | 1.1 |
| 3. | Identify and map the criteria that led to the proposed route location within the designated corridor. | 1.2 |

| State Authority | Description | Section |
|------------------|---|---|
| 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. | The criteria to be evaluated shall include at a minimum all of the following which are within the designated corridor: | |
| a. | Exclusion areas; | 3.1 |
| b. | Avoidance areas; | 3.2 |
| c. | Selection criteria; | 3.3 |
| d. | Policy criteria; | 3.4 |
| e. | Design and construction limitations; and | 3.5 |
| f. | Economic considerations. | 3.6 |
| 6. | Discuss the mitigative measures that will be taken to minimize adverse impacts which result from the location, construction, and operation of the proposed facility. | 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, 5.10.2, 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 | |
| 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. | NA – See Section 1.1.1. |
| c. | Furnish one (1) set of uncontrolled 9x9 inch stereo-pair aerial photographs, separate from the application, with acceptable resolution showing the designated corridor, proposed route and location of any new associated facilities, 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. | |
| 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 |

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

1.2 PROJECT SUMMARY

The Project consists of approximately 30 miles of 230 kV transmission line from the existing Ellendale Junction Substation, located 1.5 miles west of Ellendale to the proposed Merricourt Wind Power Project Interconnect Substation located about 15 miles east northeast of Ashley (figure 1). The transmission line would likely be constructed using wooden H-frame structure which will typically be 70-90 feet in height with an average span length of 800 feet and a maximum span length of 1,000 feet in some circumstances. The transmission line and substation construction will occur within the corridor identified in Section 1.2.1. A description of the proposed facility is provided in Section 4.2. A route was selected after addressing the factors identified in NDCC 49-22-09 and evaluating the criteria in NDAC 69-06-08-02. Below is a description of the Study Area, the corridor, and the proposed route for the new 230 kV transmission line and new substation.

1.2.1 Study Area and Corridor

Figure 2 presents exclusion and avoidance areas in the Study Area that were analyzed to select the corridor. The Study Area covered an area that was approximately 12 miles wide and 24 miles long. The Study Area was bordered on the west by 62nd Avenue, on the north by 90th Street, on the east by U.S. Highway 281, and on the south by the North Dakota-South Dakota border. In addition to the

exclusion and avoidance areas, the corridor was developed considering other existing linear features such as power line and roadway corridors to maximize the potential to parallel and minimize the amount of new corridor. The western terminus of the corridor would be located near the Merricourt Wind Power Project and the eastern terminus of the corridor would be located at the Ellendale Junction Substation.

The corridor was selected in the Study Area after considering the exclusion and avoidance criteria outlined in NDAC 69-06-08-02. In addition to ensuring the Project's purpose and need would be met, the route was developed limiting the length to the extent feasible, co-locating with existing linear features and field lines and available access. Linear features in the Study Area were identified to evaluate whether they would be acceptable areas to construct the new transmission line. There are two existing Montana-Dakota-owned transmission line corridors: Wishek to Ellendale 230 kV transmission line which runs in a southwesterly direction across the northern portion of the corridor and the Ashley to Ellendale 41.6 kV transmission line which runs in an east-west direction along the southern portion of the corridor. North Dakota State Highway 56 runs in a north-south direction in the western portion of the corridor and North Dakota State Highway 11 runs in an east-west direction in the southern portion of the corridor. Several other paved and gravel roads also exist in the corridor. The Study Area otherwise is generally rural and intensively farmed or is pasture land interspersed by small incorporated and non-incorporated communities, rural homesteads, open land, wind breaks, and distribution lines.

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 corridor. Montana-Dakota sought to avoid residential areas, irrigated land, recreational areas, waterfowl production areas (WPAs), and wildlife management areas (WMAs) to the extent practicable. Montana-Dakota also considered utilizing existing transmission corridors and interconnecting with existing infrastructure where possible. The route is proposed to be double-circuit with MDU's existing 41.6 kV transmission line. This double-circuit segment of the route crosses the Leola State Bank LSB WPA. The United States Fish and Wildlife Service (USFWS) indicated that they do not maintain easement authority over Montana-Dakota's existing 41.6 kV right-of-way, as Montana-Dakota's easements were acquired prior to USFWS's acquisition of easements and fee title land (LSB WPA). Montana-Dakota believes that there will be fewer impacts to the resources by upgrading the existing corridor and not creating a new corridor in the area. Montana-Dakota advocates that there are no reasonable alternatives to avoid the LSB WPA that would reduce environmental impacts. Montana-Dakota is working with the USFWS for route concurrence and to avoid impacts. This is consistent with NDAC Policy Criteria for transmission corridors and routes (§§69-06-08-02-2e; 69-06-08-02-4i; 69-06-08-02-4g) which encourages applicants to avoid places of residence, maximize benefits by utilizing existing and proposed route corridors, and coordinating facilities.

The corridor is three miles wide and the legal land descriptions are provided in Table 3 and represented on the Figures 2a, 2b, and 2c. The selected corridor complies with NDCC 69-06-04-02, which states that the width of the corridor must be 10 percent of the length of the line, not less than one mile and not more than six miles in width.

**Table 3.
Corridor Legal Land Descriptions**

| Township Name | Township | Range | Sections |
|-----------------------|----------|-------|----------------------------------|
| German | T131N | R66W | 29-34 |
| Unorganized Territory | T131N | R67W | 25-29, 32-36 |
| Spring Valley | T130N | R66W | 2-11, 14-17, 20-23, 25-29, 32-36 |
| Unorganized Territory | T130N | R67W | 1-5, 8-12 |
| Grand Valley | T130N | R65W | 29-36 |
| Albion | T130N | R64W | 31-36 |
| Elden | T130N | R63W | 31-35 |
| Albertha | T129N | R66W | 1-5, 9-12 |
| Lorraine | T129N | R65W | 1-18 |
| Elm | T129N | R64W | 1-18 |
| Ellendale | T129N | R63W | 2-11, 14-18 |

1.2.2 Proposed Route

Montana-Dakota identified a proposed route within the corridor after considering the exclusion and avoidance criteria outlined in NDAC 69-06-08, as outlined in Section 3.0 of this application, and after considering public input as described in Section 6.0 of this application. Figures 2a, 2b, and 2c identify the proposed route relative to the corridor and exclusion and avoidance criteria. Legal descriptions of the route location are provided in Table 4.

**Table 4.
Route Location Legal Descriptions**

| Township Name | Township | Range | Sections |
|-----------------------|----------|-------|--------------------------|
| Spring Valley | T130N | R66W | 4-6, 9, 16, 21, 27-28,34 |
| Unorganized territory | T130N | R67W | 1-3 |
| Albertha | T129N | R66W | 1-3 |
| Lorraine | T129N | R65W | 1-6, 8-12 |
| Elm | T129N | R64W | 1-12 |
| Ellendale | T129N | R63W | 3-10 |

The proposed route will generally be adjacent to or double-circuit the existing transmission line and road right-of-way for its entire length. Table 5 below identifies the adjacent right-of-way type, the number of miles of adjacent right-of-way and the percentage of the proposed transmission line adjacent to existing right-of-way.

Table 5.
Existing Right-of Way adjacent to New Transmission Line

| Existing Right-of-way Type | Number of Miles (approximate) | Percentage of transmission line |
|--|-------------------------------|---------------------------------|
| MDU 230 kV transmission line (parallel segment) | 6 | 18 |
| MDU 41.6 kV transmission line (double-circuit segment) | 17.4 | 52 |
| ND Highway 56 (parallel segment) | 2.2 | 6 |
| 92 nd Street in Spring Valley Township | 0.5 | 2 |

1.2.3 Product

The transmission line will transmit the energy generated by enXco’s proposed Merricourt Wind Power Project in McIntosh County to the existing Ellendale Junction Substation, located near Ellendale, North Dakota. The transmission line is intended to carry 230 kV, three-phase alternating current (AC) electric transmission line. The maximum capacity of the transmission line will be 375 MW and is expected to operate at 100 MW.

1.3 PROJECT SCHEDULE

Montana-Dakota’s construction schedule will be set by satisfactorily reaching a number of milestone agreements and obtaining required approvals. The in-service date is dependent upon permitting and development activities. Montana-Dakota is targeting construction to begin on the Interconnect Substation in March 2011 and on the transmission line in June 2011, provided that Montana-Dakota can secure all ownership terms and it has received all pre-construction permits and approvals. No Project expansions or additions are anticipated at this time.

1. **Certificate of Corridor Compatibility:** Montana-Dakota anticipate the Corridor Certificate will be approved in March 2011.
2. **Route Permit Application:** The route permit application is included herein.
3. **Route Permit:** Montana-Dakota anticipates the Route Permit will be approved concurrent with the Corridor Certificate in March 2011. It is critical for Montana-Dakota to receive the Route Permit and Corridor Certificate as soon as possible, as completing this step will allow Montana-Dakota to move forward with other commitments associated with the Project, including ordering long-lead time equipment and securing other permits and approvals.
4. **Right-of-Way Acquisition:** Montana-Dakota is responsible for all right-of-way acquisition and is in the process of obtaining the necessary easements from landowners. MDU has secured survey permission for the proposed route and has begun securing easements of the route. The land acquisition is expected to be complete by the end of February 2011.
5. **Equipment Procurement, Manufacture, and Delivery:** Montana-Dakota will order the transmission and substation components as soon as practicable. Once the components have been ordered delivery is anticipated to occur to allow completed construction in September 2011 for the Interconnect Substation and December 2011 for the transmission line.

6. **Construction:** Project construction is expected to begin in spring 2011, subject to road restrictions and weather. Total construction will take approximately nine months to complete.
7. **Test and Operations:** Montana-Dakota expect system testing will occur in fall 2011.
8. **In-Service Date:** The expected in-service date will be September 2011 for the Interconnect Substation and December 2011 for the transmission line.

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2.0 NEED FOR FACILITY

2.1 NEEDS ANALYSIS

MISO's System Impact Study, Queue # 38073-01, has shown a need to increase the transfer capacity on the current transmission system in the area around the Project. This increase would provide a generation outlet for the proposed 150 MW Merricourt Wind Power Project as proposed by enXco. In addition, it may benefit future wind energy projects. This Project would, also, provide transmission grid reliability to Montana-Dakota's existing Wishek to Ellendale 230 kV transmission line. The 230 kV line allows enXco to tie directly into Montana-Dakota's 230 kV facilities at the Ellendale Junction Substation, which will enable the delivery of energy to the electric grid.

2.2 ALTERNATIVES

The corridor and route were selected using the Commission's criteria in addition to other constraints such as engineering, cost, and landowner participation. The route was developed considering the location of avoidance and exclusion areas. Section 3 discusses the corridor and route criteria considered in determining the final route.

Montana-Dakota focused on providing efficient delivery of electricity from the proposed wind generation facility. A MISO system impact study performed as a part of the generator interconnection procedures determined a 230 kV line is required for the electric system to accommodate the addition of the 150 MW wind farm.

2.3 TEN-YEAR PLAN

Montana-Dakota filed a Ten-Year Plan with the Commission on July 16, 2010. This Project is consistent with the Ten-Year Plan on file with the Commission.

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3.0 TRANSMISSION FACILITY CORRIDOR AND ROUTE CRITERIA

Montana-Dakota evaluated a Study Area to determine the best location for corridor and route. Within this Study Area, a three-mile-wide Corridor was selected that complies with NDAC Section 69-06-04-02 which include a requirement that, ~~(b)~~ The width of a corridor must be at least ten percent of its length, but not less than one mile [1.61 kilometers] or greater than six miles [9.66 kilometers] unless approved by the commission.”

Within this corridor, and approximately 30-mile long route was selected to connect the Ellendale Junction Substation to the proposed Merricourt Wind Farm Substation. The proposed route is the same and the proposed 120-foot-wide right-of-way for the proposed 230 kV transmission line.

The corridor and route were selected according to an inventory and suitability analysis based on the criteria listed in NDAC Section 69-06-08-02. This includes an assessment of exclusion and avoidance area criteria; selection criteria that relate to minimizing potential land use and environmental impacts; policy criteria that relate to maximizing public benefits; and design and construction limitations. Montana-Dakota also included economic considerations as part of the Corridor and Route selection process.

The proposed Corridor meets the criteria set forth in NDAC 69-06-08-02 which states that ~~exclusion~~ and avoidance areas may be located within a corridor, but at no given point shall such an area or areas encompass more than 50 percent of the corridor width unless there is no reasonable alternative.”

Within the corridor, the route also avoids these exclusion and avoidance areas whenever feasible. Exclusion and avoidance areas within the Corridor are shown in Figures 2 a, 2b, and 2c.

The specific criteria and considerations made by Montana-Dakota for this Project are outlined in the following subsections.

3.1 EXCLUSION AREAS

In accordance with NDAC Section 69-06-08-02-1, ~~the~~ following geographical areas (Table 6) shall be excluded in the consideration of a route for a transmission facility, and shall include a buffer zone of reasonable width to protect the integrity of the area. Natural screening may be considered in determining the width of the buffer zone.”

Exclusion areas are mapped for the Corridor and Route on Figures 2a, 2b, and 2c.

Table 6.
Exclusion Areas

| Exclusion Area | Present within Corridor? | Greater than 50 percent of Corridor Width? | Route Buffer Zone Width | Section Addressed |
|--|---|--|---|-------------------|
| Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas | No | No | None proposed, as no features identified within corridor | 5.7, 5.8, 5.15 |
| Designated or registered state: parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves | No | No | None proposed, as no features identified within corridor | 5.7, 5.8 |
| County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions | No | No | None proposed, as no features identified within corridor | 5.8 |
| Areas critical to the life stages of threatened or endangered species | No designated critical habitat | No | None proposed, as no features identified within corridor | 5.16 |
| Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged | No areas containing animal or plant species that are unique or rare to the state would be irreversibly damaged within the corridor. | No | None proposed, as no features identified within corridor. Montana-Dakota will continue to work with applicable federal and state agencies | 5.16 |

3.2 AVOIDANCE AREAS

In accordance with NDAC Section 69-06-08-02-2, ~~the~~ the following geographical areas (Table 7) shall not be considered in the routing of a transmission facility unless the applicant shows that under the circumstances there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the Commission may consider, among other things, proposed management of adverse impacts; orderly siting of facilities; system reliability and integrity; efficient use of resources; and alternative routes. Economic considerations alone shall not justify approval of these areas. A buffer zone of a reasonable width to protect the integrity of the area shall be included unless a distance is specified in the criteria. Natural screening may be considered in determining the width of the buffer zone.” Avoidance areas are mapped for the corridor and route on Figures 2a, 2b, and 2c

**Table 7.
 Avoidance Areas**

| Avoidance Areas | Present within Corridor? | Greater than 50-percent of Corridor Width? | Route Buffer Zone Width | Section Addressed |
|---|--|--|--|-------------------|
| Designated or registered national: historic districts; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands | Five WPAs are partially located within the corridor (Bovey, West Wishek, Wishek, Ernst, Lazy M) Seven WPAs are completely located within the corridor (Clay, Knapp, Rustchke, Erlenbusch, Zahn, LSB, Heine) | No | The LSB WPA is located within the route in Alberta Township. The route is proposed to be double-circuited with Montana-Dakota's existing 41.6 kV transmission line. This double-circuit segment of the route crosses the LSB WPA. The USFWS indicated that they do not maintain easement authority over Montana-Dakota's existing 41.6 kV right-of-way, as Montana-Dakota's easements were acquired prior to USFWS's acquisition of easements and fee title land (LSB WPA). Montana-Dakota believes that there will be fewer impacts to the resources by upgrading the existing corridor and not creating a new corridor in the area. Montana-Dakota advocates that there are no reasonable alternatives to avoid the LSB WPA that would reduce environmental impacts. Montana-Dakota is working with the USFWS for route concurrence and to avoid impacts. | 5.8 |
| Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests, forest management lands; and grasslands | Johnson's Gulch WMA | No | The route is approximately 1.5 miles from Johnson's Gulch WMA. Additionally, the route follows an existing 41.6 kV transmission line alignment. | 5.12, 5.14 |
| Historical resources which are not specifically designated as exclusion or avoidance areas | Yes | No | Montana-Dakota does not anticipate impacts to identified cultural resources within the route. In consultation with the SHPO, a professional archaeologist would establish a buffer appropriate to resources discovered during the Class III Survey. | 5.7 |
| Areas that are geologically unstable | None identified | No | None proposed, as no features identified within corridor | 5.11 |
| Within 500 feet of a residence, school, or place of business | Yes | No | There are eight locations that the route is within 500 feet of an occupied structure. All locations are also the proposed 41.6 kV double-circuit. Montana-Dakota will work with landowners to obtain a waiver of the 500-foot setback requirement. | 5.9 |

| Avoidance Areas | Present within Corridor? | Greater than 50-percent of Corridor Width? | Route Buffer Zone Width | Section Addressed |
|---|--|--|--|-------------------|
| Reservoirs and municipal water supplies | None identified | No | None proposed, as no features identified within corridor | N/A |
| Water sources for organized rural water districts | None identified | No | None proposed, as no features identified within corridor | N/A |
| Irrigated land. This criterion shall not apply to an underground transmission facility. | None identified | No | None proposed, as no features identified within corridor | 5.9 |
| Areas of recreational significance which are not designated as exclusion areas | Present The Maud Evans Riding Arena | No | The Maud Evans Riding Arena is located within the corridor. No impacts are anticipated. This riding arena is located about 0.5 miles north of the existing 41.6 kV ROW where the Project is proposed to be double-circuited. In addition, this riding arena is buffered by a treed windrow that will not be impacted. No buffer width is proposed. | 5.8 |

3.3 SELECTION CRITERIA

Per NDAC Section 69-06-08-02-3, —a corridor or route shall be designated only when it is demonstrated to the Commission by the applicant that any significant adverse effects resulting from the location, construction and maintenance of the facility, as they relate to the following, will be at an acceptable minimum or that those effects will be managed and maintained at an acceptable minimum” (Table 8).

**Table 8.
Selection Criteria**

| Selection Criteria | Potential Adverse Effects | | Section Addressed |
|--|--|---|-------------------|
| | Corridor | Route | |
| The impact upon agriculture: | | | |
| Agricultural production | About 30 percent of the corridor is in cropland land use. Facility structures may temporarily and permanently impact small areas of cropland within the corridor. | Approximately .26 acres of land will be permanently impacted due to facility structure placement along the route and approximately 5.5 acres of land will be permanently impacted by the new substation. | 5.9 |
| Family farms and ranches | Land area used for the transmission line structures will have a minimal adverse effect to family farms. No family farms will be displaced due to construction of a route in the corridor. | Land area used for 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. Montana-Dakota will work with landowners to obtain a waiver of the 500-foot setback requirement as necessary. | 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 | No owner has expressed concerns related to economically suitable irrigation on their land. | 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 | Residences within the corridor may be considered noise sensitive land uses. Residences within the corridor are widely scattered. Montana-Dakota will work with landowners to obtain a waiver of the 500-foot setback requirement as necessary. | Noise impacts are nominal. The nearest sensitive receptor to the proposed route is approximately 105 feet. Montana-Dakota will work with landowners to obtain a waiver of the 500-foot setback requirement as necessary. | 5.5 |
| The visual effect on the adjacent area | The transmission line will be visible to landowners and residents who live near the line. Montana-Dakota will minimize visual impacts to the extent practicable. | Visual impacts will be most evident to landowners and residents in close proximity to the route and drivers traveling along adjacent roadways. Montana-Dakota will minimize impacts by double-circuiting their existing 41.6 kV ROW and paralleling their existing 230 kV transmission line corridor. Montana-Dakota proposes to use wood H-frame structures are currently used on the landscape. Structures will also avoid sensitive areas to the extent practicable. | 5.6 |

| Selection Criteria | Potential Adverse Effects | | Section Addressed |
|---|--|---|-------------------|
| | Corridor | Route | |
| Extractive and storage resources | Eight gravel pits are located within the corridor; no adverse effects are anticipated to occur to these resources. | There is one gravel pit adjacent to the route. The landowner has been contacted by Montana-Dakota and the route alignment was designed with landowner input. | 5.11 |
| Wetlands, woodlands, and wooded areas | There are numerous wetlands and occasional wooded areas within the corridor. Wetland resources will be avoided to the extent practicable. Montana-Dakota will utilize line designs to avoid and minimize impacts to wetlands in the corridor. Woodlands are primarily associated with homes in the form of windbreaks and at the Pheasant Lake crossings. 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. | Montana-Dakota conducted wetland delineations in the fall 2010 to assist with route planning and preliminary engineering. A review of route indicates that all wetlands can be spanned using the proposed transmission line design. In the event a delineated wetland is too large to span Montana-Dakota may seek a minor route variation to avoid the wetland, or will obtain coverage and mitigate impacts for pole placement according to applicable state and federal requirements. A 2010 tree and shrub inventory documented 409 trees and 2,584 shrubs within the right-of-way. | 5.9, 5.13 |
| Radio and television reception and other communication or electronic control facilities | There are two cellular phone towers and two antenna structures located within the corridor. No impacts to these communication resources are anticipated. | No impact to radio and television reception or other communication or electronic control facilities is anticipated due to the construction of the line in the proposed location. | 5.3 |
| Human health and safety | No impacts to human health and safety are anticipated from the operation of the transmission line. | No impacts to human health and safety are anticipated from the operation of the transmission line. | 5.4 |
| Animal health and safety | No impacts to livestock are anticipated from the operation of the transmission line. Raptors, waterfowl, and other bird species may be affected by the construction and placement of the transmission lines. Avian collisions are a possibility after 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. Mitigation 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. Mitigation measures, as outlined in section 5.15.3, will minimize these impacts. | 5.9, 5.15 |

| Selection Criteria | Potential Adverse Effects | | Section Addressed |
|--------------------|---|--|-------------------|
| | Corridor | Route | |
| Plant life | The corridor is a mixture of cropland, planted grassland, native grassland/prairie, and wetlands. Construction of the transmission line within the corridor will likely require a relatively small acreage of impacts to both native and introduced plant life. | Approximately .26 acres of permanent impacts are anticipated, which includes approximately 0.01 acres of native grassland/prairie. Nearly all of this native grassland/prairie is currently being used as pasture. | 5.9, 5.14 |

3.4 POLICY CRITERIA

Per NDAC Section 69-06-08-02-4, “the Commission may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a proper case may require the adoption of such policies and practices. The Commission may also give preference to an applicant that will maximize interstate benefits.” (Table 9)

**Table 9.
Policy Criteria**

| Policy Criteria | Suitable Policy or Practice of Applicant | Section Addressed |
|---|---|-------------------|
| Location and design | Montana-Dakota’s policy is to locate and design the proposed transmission line to minimize environmental impacts and utilize existing corridors where practical. | 1.1 |
| Training and utilization of available labor in this state for the general and specialized skills required | Montana-Dakota will use local labor to the extent practicable. | 5.1 |
| Economies of construction and operation | Montana-Dakota will utilize local contractors to the extent practicable. | 5.1 |
| Use of citizen coordinating committees | Montana-Dakota has and will continue to work with landowners on development of the Project. | 6.0 |
| 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 facility. | 1.2.1, 1.2.2 |
| Monitoring of impacts | Montana-Dakota and the construction contractor will employ Best Management Practices (BMPs) during construction to minimize environmental impacts and will maintain commitments made in this application and applicable permit conditions, including the Commission’s Order. Montana-Dakota will monitor tree and shrub replacement, if needed. | 5.10, 5.14, 5.15 |
| Utilization of existing and proposed rights of way and corridors | One of the primary goals in locating the route was to maximize use of existing transmission and roadway corridors and ROWs. The proposed transmission line location is consistent with this policy and is the best location when considering the factors identified by the Commission, Montana-Dakota’s policies, and Project design. | 1.2.1, 1.2.2, 3.5 |

| Policy Criteria | Suitable Policy or Practice of Applicant | Section Addressed |
|--|---|-------------------|
| Other existing or proposed transmission facilities | The corridor includes existing transmission and railroads corridors. Segments of the route parallel Montana-Dakota's existing 230 kV transmission line and State Highway 56 to the extent practical. Over half of the route is double-circuited with Montana-Dakota's existing 41.6 kV transmission line ROW. | 1.2.1, 1.2.2, 3.5 |

Montana-Dakota's practices and policies are guided by its mission, which is:

Montana-Dakota will operate efficiently to meet the needs of the present without compromising the ability of future generations to meet their own needs. Montana-Dakota's environmental goals are:

- To minimize waste and maximize resources;
- To support environmental laws and regulations that are based on sound science and cost-effective technology; and
- To comply with or exceed all applicable environmental laws, regulations and permit requirements.

Transmission and energy conversion facilities will be designed and located in such a manner as to maximize operational efficiency and economic benefits and to minimize impacts on agriculture, extractable resources, health and safety, plant and animal life, communications, and the visual effect on the surrounding area. Transmission and energy conversion facilities will be sited in compliance with the federal, state, and local laws and with the Public Service Commission's rules and regulations.

Montana-Dakota complies with all federal, state, and local environmental regulations and requirements at its wholly-owned and jointly-owned generating facilities. Montana-Dakota's environmental policies are consistent with the Commission policy criteria outlined in NDAC Section 69-06-08-02-4.

3.5 DESIGN AND CONSTRUCTION LIMITATIONS

Design and construction limitations associated with the Project are primarily associated with the location of the transmission line. The points of termination largely dictate the location of the transmission line. The line must originate at the Interconnect Substation and terminate at the existing Ellendale Junction Substation near Ellendale since the purpose of the proposed 230 kV transmission line is to transmit energy from the proposed wind Project to the utility grid. Montana-Dakota is paralleling and double-circuiting existing corridors and rights-of-way where practicable. The proposed route is the most direct route while minimizing impacts to the criteria identified in Section 69-06-08-02.

For this Project, Montana-Dakota will attempt to span all wetlands along the route. Wetlands more than 1,000 feet in length may require that transmission structures be placed within wetlands. As stated above, Montana-Dakota intends to span all wetlands to the extent practicable and Montana-Dakota intends to mitigate unavoidable impacts as required by the United States Army Corps of Engineers (USACE).

The USFWS owns the LSB WPA that is crossed by the double-circuit segment of the proposed route. The route is proposed to be double-circuit with Montana-Dakota's existing 41.6 kV transmission line.

As stated above, Montana-Dakota is working with the USFWS for route concurrence and to avoid and minimize potential impacts to the WPA. The USFWS indicated that they do not maintain easement authority over Montana-Dakota's existing 41.6 kV right-of-way, as Montana-Dakota's easements were acquired prior to USFWS's acquisition of easements and fee title land (LSB WPA). In addition, the USFWS administers wetland and grassland easements on private property as part of their National Wildlife Refuge System. There are limitations to construction on easement lands and direct impacts to the land, water, and wetlands within a grassland easement and wetlands within wetland easements will result in the need for a compatibility assessment by local USFWS staff. The process considers the magnitude of the impact, the type or quality of the habitat that is impacted, and the feasibility of avoiding the impact. If compatibility is found, a right-of-way permit will be issued for the impact. For this Project, Montana-Dakota sought to obtain route concurrence from the USFWS for the double-circuit segment that crosses easements and avoid USFWS easement lands with the new line. Figures 2a, 2b, and 2c identify the USFWS easements and WPAs within the corridor and vicinity.

The existing Ellendale Junction Substation layout largely dictates where new lines may enter. The configurations of the existing substation equipment and high voltage overhead transmission lines restrict where a new transmission line may enter the substation. The proposed 230 kV transmission line will enter the north side of the Ellendale Junction Substation in order to be compatible with the existing configuration. Montana-Dakota will use wood two-pole H-frame for tangent structures and guyed wood multiple pole H-frame for angle structures. Some sections of the 230 kV transmission line may be double-circuited with Montana-Dakota's existing 41.6 kV transmission line requiring taller structures with shorter spans between structures. The use of wood H-frame structures has design limitations. Following geotechnical exploration, it may become necessary to utilize special structures to avoid sensitive environmental features or to accommodate for 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 MISO System Impact Study determined a 230 kV line is required for the electric system to accommodate the addition of the 150 MW wind farm.

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 right-of-way costs. Corner structures increase the cost of projects since special structures and engineering are typically required. The selection of materials and structure types also affects the cost of a transmission line. Montana-Dakota proposes to use wood H-frame structures to minimize the cost of the transmission facility.

The route effectively balances the economic considerations of overall length of the transmission line and the number of angle structures required with impacts on the environment, agricultural lands, and landowners. Montana-Dakota attempted to minimize these economic factors while considering exclusion areas, avoidance areas, selection criteria, policy criteria, and other factors.

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4.0 ENGINEERING AND OPERATIONAL DESIGN

4.1 PREFERRED ROUTE DESCRIPTION

The following is a description of the route from west to east starting at the Interconnect Substation to the Ellendale Junction Substation. The route proceeds south from the Interconnect Substation for approximately 0.1 miles to MDU's existing Wishek to Tatanka 230 kV transmission line, then turns to parallel the north side of the Wishek to Tatanka 230 kV transmission line for about 6 miles to State Highway 56. The route turns south to parallel State Highway 56 on the west side of the highway for approximately one mile the route then turns west and follows the south side of 92nd street for approximately a half mile. The route then turns south and follows the half section lines of T130N, R66W of sections 16 and 21 in Spring Valley Township for approximately two miles. The route then turns in a southeasterly direction crossing T130N, R66W of Section 28 in Spring Valley Township for approximately one mile where it crosses to the east side of State Highway 56 and parallels it in a south direction for approximately two miles. The route will be double-circuited with Montana-Dakota's existing Ashley to Ellendale 41.6 kV transmission line for the remainder of the approximate 17.4 of 30 miles to the Ellendale Junction Substation.

The existing 41.6 kV transmission line structures will be replaced with new 230 kV transmission line structures that are slightly larger in size, although the structures would be wood H-frame as currently used. The impacts are expected to be minimal because construction will occur in a previously disturbed corridor and will not create a new transmission line corridor in the area.

4.2 DESCRIPTION OF PROPOSED FACILITY

The purpose of the proposed facility is to transmit the energy generated by the Merricourt Wind Power Project to the Ellendale Junction Substation. Electrical energy from the Merricourt Wind Power Project will be transmitted via the existing AC transmission system as available. The Project will consist of approximately 30 miles of 230 kV transmission line and upgrades to the existing Ellendale Junction Substation, which will be inside the existing fenced footprint. A new Interconnect Substation located adjacent to the Merricourt Wind Power Project Collector Substation in McIntosh County T130N, R67W Section 3 (Figures 3a, 3b, and 3c). This infrastructure is necessary so the energy can be transmitted from the Merricourt Wind Power Project.

4.2.1 Transmission Structures and Right-of-Way Design

A design data report is attached as Appendix C.

4.2.1.1 *Transmission Structures*

Montana-Dakota is proposing to construct a three-phase, alternating current 230 kV transmission line. The Project will be constructed using single- and double-circuit wood H-frame structures. The new line portion of the Project will use single-circuit wood H-frame structures. The Project will be double-circuited with Montana-Dakota's existing 41.6 kV for approximately 17.4 miles. The existing 41.6 kV transmission line structures will be removed and replaced with the new double-circuit wood H-frame structures. The sections of the line will be double-circuited with the existing Montana-Dakota 41.6 kV transmission line will require taller structures with shorter spans between structures.

The Project's H-frame single- and double-circuit structures will support 230 kV three phase transmission circuits and two shield wires. Diagrams 1 and 2 depict the typical structures that will be

used for the transmission line. The structures will be erected and will be directly embedded into the ground. The structures will be approximately 70-90 feet in height with an average span between each structure of 800 feet (500 feet for double-circuit) and a maximum span of approximately 1,000 feet under some circumstances. Final design and geotechnical investigations may warrant the use of special structures to avoid sensitive areas, reasonable landowner desires, or accommodate special engineering circumstances. Structure specifications will be submitted to the Commission once the plan and profile have been completed, at least seven days prior to the Public Hearing anticipated for this Project.

The proposed 230 kV conductor will be 954 kcmil Aluminum Conductor Steel Reinforced (ACSR). The existing 41.6 kV conductor is 60 years old and will be replaced with 4/0 ACSR. The actual size of the conductor will be confirmed once the final design is complete. Two shield wires consisting of 3/8-inch extra hard steel (EHS) with a diameter of 0.360 inches and a RTS of 14,400 lbs will be used in conjunction with one optical ground wire (OPGW) to provide lightning protection and communication capability on the transmission line. Locations of each structure will be submitted to the Commission once the plan and profiles have been completed, at least seven days prior to the Public Hearing anticipated for this Project.

Table 10 below identifies the 230 kV transmission conductor and the 41.6 kV transmission conductor.

Table 10.
230 kV Transmission Conductor and 41.6 kV Transmission Conductor

| Circuit | Conductor Type | Weight | Diameter | Strength Rated Tensile Strength (RTS) |
|----------------------|--------------------|--------------|--------------|---------------------------------------|
| 230 kV Transmission | 954Kcmil ACSR 45/7 | 1.075 lbs/ft | 1.165 inches | 25,900 lbs |
| 41.6 kV Transmission | 4/0 ACSR 6/1 | 0.291 lbs/ft | 0.563 inches | 8,350 lbs |

The vertical overhead design clearance is based on the conductor's final sag at the maximum design operating temperature. Table 11 identifies the minimum design clearances for the 230 kV transmission line.

Table 11.
Minimum design Clearance for 230 kV Transmission Line

| Land Use | Height in feet |
|---|----------------|
| Over Roads | 30 |
| Over State Highways | 30 |
| Cultivated Fields | 28 |
| Pasture | 26 |
| Existing Power 115 kV transmission line | 13.5 |

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 Montana-Dakota 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 120-foot-wide right-of-way is planned for the approximately 30-mile-long 230 kV transmission line. The proposed Project will parallel approximately 6 miles of Montana-Dakota's existing 230 kV transmission line where the Project's centerline is proposed to be from 120 feet to 150 feet offset from the existing 230 kV transmission line centerline. The Project will parallel approximately 3 miles of State Highway 56 where the Project's centerline is proposed to be about 87 feet offset from the centerline of the highway. Over 17 miles of the proposed transmission line will be double-circuited with Montana-Dakota's existing 41.6 kV transmission line. Montana-Dakota will use their existing right-of-way for the double-circuit portion of the Project.

The transmission line will be located within the 120-foot-wide right-of-way, but the location within that right-of-way will be dependent on terrain, the presence of other existing facilities and rights-of-way, and landowner concerns. Right-of-way impacts and calculations for this application are based upon a 120-foot-wide right-of-way. Montana-Dakota has been in contact with all landowners along this route. The property owners have been contacted to gain access to properties and acquire easements to construct the transmission line.

North Dakota Century Code 49-22-05.1 states that "Except for transmission lines in existence before July 1, 1983, areas within five hundred feet [152.4 meters] of an inhabited rural residence must be designated avoidance areas. The five hundred foot [152.4 meter] avoidance area criteria for an inhabited rural residence may be waived by the owner of the inhabited rural residence in writing." Appendix D includes a table identifying the property owners that have provided signed waivers and the individual waivers signed by the property owners.

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

4.2.2.1 *Right-of-Way Preparation*

The proposed route crosses areas that are primarily agricultural land. There are various locations where tree and shrub growth may require right-of-way clearing. Where safety requirements permit, trees and low growing shrubs may remain (generally less than 15 feet). A 120-foot-wide portion of the corridor will be cleared of tall woody vegetation for the approximate 30-mile length of the transmission line. Significant amounts of grading are not anticipated for preparation of the transmission right-of-way.

4.2.2.2 *Transmission Construction Procedures*

Construction of the transmission line will begin once all approvals are obtained and easement acquisition is substantially complete. A detailed construction schedule will be developed based upon availability of materials, equipment, and construction labor. The schedule will consider anticipated weather conditions.

Construction of the transmission line will require minimal preparation of the right-of-way 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. No extensive grading or leveling is anticipated at this time. Once construction is completed, the graded areas will be restored and blended with the pre-construction contours to the extent practicable.

Structures components will be delivered either to the staked location or to a Project laydown area. If the structures are delivered to the location where they will be installed, they will be placed on the right-of-way out of the clear zone of any adjacent roadways or designated pathways. Insulators and other hardware will be attached while the structure is on the ground. After the right-of-way is prepared, structures will be assembled and erected at the structure site using a crane or similar heavy-duty equipment. Each pole will be directly embedded and will require a hole dug 9 to 12 feet deep and 3 feet in diameter. The poles will be set into the excavated hole and backfilled with soil or crushed rock. Structures in poor or wet soil conditions may require specially engineered foundations such as a steel culvert or cast in place reinforced concrete foundations.

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 temporarily disturbed area in the vicinity of each structure is expected to be confined to an area of about 120 feet wide by 100 feet long or 12,000 sq ft. No permanent access roads will be constructed for the Project. However, temporary construction access roads will be needed within the ROW to access pole locations. Temporary construction access roads will utilize existing public and private roads where possible and will be 20 feet wide for the length of the ROW.

Removal of the existing 41.6 kV transmission structures is proposed along the double-circuit segment. The structures will be removed by cutting the conductor arms, digging alongside the pole, removing it from the ground, and then backfilling the hole with offsite fill.

Once the structures have been erected, conductors will be installed by establishing stringing setup areas within the right-of-way. These areas are usually established every two miles along the route. Conductor stringing operations will require brief access to each structure to secure the conductor wire to the insulators or to install shield wire clamps once final sag is established. Stringing equipment generally consists of sheaves or stringing blocks, wire pullers, tensioners, rope and wire trailers, and a bulldozer used for sagging. Stringing operations involve pulling lightweight cables or ropes through the stringing sheaves located at every structure site. This cable or rope 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 or clearance poles will be installed as needed over existing distribution or communication lines, streets, roads, highways or other obstructions, after any necessary notifications are made and permits obtained. This ensures that conductors will not obstruct traffic or contact existing energized conductors or other cables. After pulling the conductor, shield wire, and OPGW to the proper tensions, construction crews access each structure to secure or “*tip*” the conductors to the insulators and clamp the shield wire and OPGW to the supporting hardware.

Modifications to the existing Ellendale Junction 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. These modifications will generally be implemented within the existing fenced substation area.

4.2.2.3 **Restoration Procedures**

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

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

4.2.2.4 **Maintenance Procedures**

Montana-Dakota will periodically use the right-of-way to perform inspections, to maintain equipment and to make repairs over the life of the transmission line. Montana-Dakota 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**

Montana-Dakota has consulted with all landowners to discuss the Project and has secured approval to conduct necessary engineering, environmental, cultural surveys, and soil investigations. Once all right-of-way has been obtained, and during the construction phase, individual property owners will be advised of construction schedules, needed access to the site, and any vegetation clearing required for the Project. The right-of-way will be cleared of the amount of vegetation necessary to construct, operate, and maintain the proposed transmission line.

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

Montana-Dakota has purchased the land required for the Interconnect Substation.

4.2.4 **Associated Facilities**

Ellendale Junction Substation Upgrades – Montana-Dakota proposes to upgrade the existing Ellendale Junction Substation. This would involve the addition of one 230 kV circuit breaker, one 230 kV line termination structure, one 230 kV disconnect switch, associated arresters, CCVTs, buswork and protective relaying, and controls required to support the circuit breaker and the system protection

function. The existing 230/115 kV transformer would also be replaced with a new 230/115 kV 90/120/150 MVA auto-transformer. This new transformer requires additional protective relaying and control equipment, and replacement of the existing lightning arrestors. All upgrades would occur within the existing substation's fenced boundary.

Interconnect Substation – A new 230 kV substation would be located adjacent to the Merricourt Wind Power Project Collector Substation. This new substation footprint, including the operations and maintenance buildings and fencing, would occupy an approximately 5.5 acres (490 ft x 490 ft) on an approximate 11-acre parcel of land.

The new substation would be an open air design that would be constructed out of steel structures with aluminum bus conductor. The substation would consist of four 230 kV circuit breakers, 230-kV bus and line switches, buswork, associated arresters, CCVTs and protective relaying devices for four 230 kV line terminals – one to the Collector substation, one to Wishek to Ellendale 230 kV line, one to Tatanka 230 kV line, and one to connect the proposed Project (Ellendale 230 kV line). The site would also have a control house that contains the system protection devices, a SCADA system, and a battery bank.

5.0 ENVIRONMENTAL ANALYSIS

This section describes the environmental setting as it relates to the corridor and route and is divided into subsections that discuss the resources within the corridor, potential impacts from a transmission line within the corridor and around a designated route, and proposed mitigation measures.

Conservative impact estimates were developed based on an approximate 30 (29.9) mile transmission line route utilizing wooden H-frame pole structures with an average span length of 800 feet and a maximum span length of 1,000 feet.

The corridor within this Application is proposed to be 3 miles wide, but may be modified by the Commission if deemed necessary. The right-of-way (ROW) for the 230 kV transmission line is proposed 120 feet wide, or about 60 feet on either side of the structure centerline. The transmission line is proposed to be placed about 75 to 125 feet from the centerline of the nearest existing transmission line structure, section line, and/or roadway.

General information on the environmental setting and resources (i.e. land use and vegetation) within the corridor and route were estimated using publicly available Geographic Information System (GIS) data (i.e. Gap Analysis Data from the U.S. Geologic Survey). Quantification of resource impacts within the 3-mile-wide corridor was estimated using the corridor limits, whereas the impacts for the route were estimated using the proposed 120-foot-wide ROW.

The Project has been designed to minimize the environmental impact of the proposed facilities. Proposed temporary and permanent impacts are described in this section for each resource, along with mitigation measures to minimize the potential impacts. In most cases, impacts to the corridor are indirect and generalized, while more detailed impact descriptions are provided for the route. Temporary impacts from the Project are expected during the construction phase and these impacts will be restored following construction. Permanent impacts are those that will remain throughout the operational life of the facility. Only a minor amount of permanent impacts are expected to occur on this Project and are due to land use changes from permanent structure and substation placement. Because land uses are affected differently by the proposed structures, permanent impact assumptions have been differentiated based on land use. Greater impacts per structure are assumed within cropped or hayed lands because of lost usable area between the individual poles and/or guy wires, whereas impacts to grazed lands are limited to the actual pole footprint since it is thought that cattle may graze near the structure. Impacts described in this section are based on the following assumptions:

Impact Calculation Assumptions

- Average structure spacing distance of 800 feet.
- Maximum structure spacing distance of 1,000 feet.
- Most structures will have two poles, except for running angle and dead-end structures (three poles).
- Structures with guy wires will have a larger permanent impact in areas of cultivated land.
- Each pole will be 18 inches in diameter; therefore, an individual pole footprint will be 1.77 square feet.
- The ROW will be 120 feet wide.

- The existing 41.6 kV line structures will be removed.
- One temporary access road is proposed to be located within the ROW for the length of the proposed transmission line.

Temporary Impacts

- Merricourt Interconnect Substation – 764 feet long x 573 feet wide.
- Temporary access road – 20 feet wide x length of ROW. Note that the area required to remove the existing 41.6 kV structures is included within the temporary access road impact.
- Two laydown areas –10 acres each.
- Area required for construction at each proposed structure location – 120 feet wide x 100 feet long.

Permanent Impacts

- Merricourt Interconnect Substation – 490 feet wide x 490 feet long
- Area of new structures in cropland
 - No guy wire (two-pole structures) – 100 square feet (4 feet wide x 25 feet long)
 - Guy wire
 - 7 Running Angle Structures (three-pole structures)– 3,125 square feet each (125 feet long x 25 feet wide)
- Area of new structures in pasture
 - No guy wire (two-pole structures)– 3.5 sq ft
 - Guy wire
 - 7 Running Angle Structures (three-pole structures) – 5.3 sq ft each
 - 8 Dead-end Structures (three-pole structures) – 5.3 sq ft each

5.1 DEMOGRAPHICS

5.1.1 Description of Resources

The corridor encompasses portions of Dickey and McIntosh counties, including 11 townships in North Dakota (Table 3). The Project is generally located within a sparsely populated rural area in southeastern North Dakota. There are no known plans for new residential developments or other new construction within the corridor or route. Information on demographics and housing for this section was taken from North Dakota State Data Center, the 2000 U.S. Census, and 2010 U.S. Census estimates.

Dickey County had an estimated population of 5,217 in 2009, slightly lower than 5,757 in 2000. The population of McIntosh County has decreased to an estimated population of 2,582 in 2009, slightly lower than 3,390 in 2000 (U.S. Census Bureau, 2010). The median household income for Dickey County is \$29,231 and McIntosh County is \$26,389, both lower than the statewide average of \$45,390. The racial composition of McIntosh County in 2009 was 98.7 percent white, higher than the overall average for North Dakota of 91.1 percent, with the remaining non-white races distributed

among American Indian and Alaska Native (0.2 percent), Asian (0.5 percent), Hispanic or Latino (1.3 percent) and persons reporting two or more races (0.6 percent). The racial composition of Dickey County in 2009 was 97.4 percent white, with the remaining non-white races distributed among black (0.2 percent), American Indian and Alaska Native (0.8 percent), Asian (0.6 percent), Hispanic or Latino (2.2 percent), and persons reporting two or more races (1.1 percent). Table 12 summarizes the population and economic characteristics within North Dakota and Dickey and McIntosh Counties.

According to the 2000 U.S. Census, Agriculture is the largest industry employing residents of Dickey and McIntosh Counties (U.S. Census Bureau, 2000). Land based economies is discussed in Section 5.9.

Table 12.
Population and Economic Characteristics (2009)

| Location | Population | Median Household Income | Percentage of Population Below Poverty Level |
|-----------------|------------|-------------------------|--|
| North Dakota | 646,844 | \$45,390 | 13.2 |
| Dickey County | 5,217 | \$29,231 | 12.4 |
| McIntosh County | 2,582 | \$26,389 | 12.4 |

5.1.2 Impacts

5.1.2.1 *Corridor*

Short-term impacts to socioeconomic resources with the corridor from the Project facilities will be relatively minor. Permanent agricultural land conversion associated with the transmission line structure placement and the new substation 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.

Construction of the transmission line and new substation will provide temporary increases to the total personal income of the area by providing housing, lodging, food services and general supplies to the major contractors. Opportunity exists for sub-contracting to local contractors for gravel, fill and civil work. Additional personal income will also be generated by circulation and recirculation of dollars paid out by Montana-Dakota as business expenditures and state and local taxes. Labor relations will not be affected.

As noted in the Section 9.7, development of the Project, which includes the transmission line and substation, has strong potential to contribute to economic growth in the corridor and vicinity by providing an outlet for the proposed wind generation project in the area.

5.1.2.2 *Route*

Based on a review of structure types and locations relative to existing land use, approximately 160 acres of agricultural land will be temporarily removed from production during project construction, including potential impacts due to temporary access and removal of the 41.6 kV transmission line structures. Permanent agricultural land conversion associated with the Project will be approximately 0.26 acres for the transmission line structures and about 5.5 acres for the substation. Landowner

compensation for crop damages will be negotiated during individual easement agreements. Agricultural areas surrounding transmission line structures will still be able to be farmed following construction of the Project.

Approximately 142 H-frame structures within the existing 41.6 kV transmission line ROW will be removed. The wood material from the removed structure will be offered to the landowners for personal use (i.e. fencing materials). If the property owner does not want the wood material Montana-Dakota will dispose of it properly. As noted above, the removal of these structures was considered a temporary impact.

Project construction will not cause impacts to other industries in the Study Area. 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 or new substation will be placed in an area occupied primarily by any minority group.

5.1.3 Mitigation

5.1.3.1 Corridor

Socioeconomic impacts associated with the Project will be primarily positive due to an influx of wages and expenditures made at local businesses during Project construction and an increase in the counties' tax bases from the operation of the transmission line. Montana-Dakota will use local labor and contractors to the extent practicable. Impacts to landowners will be minimized to the extent practicable by establishing good lines of communication, negotiating easements that are at or above market rates, and maintaining landowner communications throughout the Project. The Project is not anticipated to impact minority or low-income populations, therefore, no mitigation measures are necessary.

5.1.3.2 Route

The same discussion in Section 6.1.3.1 applies for mitigation associated with the route.

5.2 LAND USE

5.2.1 Description of Resources

The corridor is located in Dickey and McIntosh counties in southeastern North Dakota, which are primarily dominated by rural agricultural land use, i.e., pasture or cropland and nearby farmsteads. Less common types of land use in the greater vicinity of the corridor includes small farm-based towns, utility scale wind power generation, utility ROWs, aggregate mining, and wild game production and livestock production. One incorporated community, the city of Ellendale, is located within the 3-mile-wide corridor. The route parallels the existing transmission and roadways and upgrades existing transmission for the majority of its length.

Land Use

Based on a review of aerial photographs, North Dakota Gap Analysis Program (GAP) land use and land cover database information, USFWS and USGS database information, and a windshield survey of the corridor and route, the majority of the land area within the corridor and route is agricultural land (Figures 4a, 3b, and 3c) used for crops and cattle grazing. The most widely grown crops in the corridor are soybeans, spring wheat, corn (grain), sugar beets and sunflowers. Smaller portions of land area use comprise grasslands, wetlands and other minor uses (e.g., utilities, roads). Mapping was

completed using the ArcInfo license of ESRI® ArcMap™ 9.3. Table 13 identifies current land use in the corridor and route based on the GAP database. Existing land uses are depicted on Figures 4a, 4b, and 4c.

Table 13.
Current Land Use

| Habitat | Corridor | | Route* | |
|---|----------|---------------------|---------|------------------|
| | Acreage | Percent of Corridor | Acreage | Percent of Route |
| Cropland | 17,986 | 30 | 69 | 16 |
| Planted Herbaceous Perennials/Undisturbed Grassland (including CRP) | 14,201 | 23 | 107 | 24 |
| Native Grassland/Prairie (Pasture) | 17,198 | 28 | 185 | 42 |
| Shrublands (upland) | 3,426 | 6 | 32 | 7 |
| Woodlands | 383 | <1 | 1 | <1 |
| Wetlands | 7,047 | 12 | 44 | 10 |
| Developed (Farmsteads, Roads, etc.) | 271 | <1 | 2 | <1 |

*For land use acreage calculations, the route includes the Interconnection Substation.

The corridor is primarily used for agricultural purposes. Agricultural land use in the corridor includes approximately 30 percent cropland and 23 percent planted herbaceous perennials/undisturbed grassland. Undisturbed grassland is previously disturbed or previously cropped upland that has been seeded back into some type of grass mixture, but is currently undisturbed. The undisturbed grassland is frequently enrolled in a United State Department of Agriculture (USDA) program, such as the Conservation Reserve Program (CRP). See section 5.9, Land Based Economies, for more information on the CRP lands. This undisturbed status is often temporary in nature and after the contracts expire, it is possible that the land may become cropland again. Native grasslands comprise 28 percent of the corridor and are primarily used for grazing livestock. The native grasslands include remnant native prairie of various quality, dependent on grazing pressure and herbicide applications to control weed species. Approximately 12 percent of corridor is wetland, lake, open water, or riparian area. Woodlands and shrublands are relatively uncommon and primarily associated with wind breaks, streams and current or former homesteads. Farmsteads are widely distributed, but are typically located along rural roads running along section lines.

Along the route, agricultural land use comprises 82 percent of the land use. The agricultural land uses include approximately 16 percent cropland, 24 percent planted herbaceous perennials and 42 percent native grasslands/pasture. The native grasslands may include remnant native prairie of various quality, dependent on grazing pressure and herbicide applications to control weed species. Ten percent of the route crosses land that is wetland, lake, open water or riparian areas.

Human Settlement

Farmsteads are widely distributed, but are typically located along rural roads running along section lines. In general, farmstead density increases as the corridor moves from west to east, towards Ellendale, North Dakota and Pheasant Lake. North Dakota has established a 500-foot setback from

occupied houses (NDCC Rules 69-06-08-02). There are 95 occupied residences within the corridor, and no homes within the route. There are 8 homes located within less than 500 feet from the route.

Existing Infrastructure

Developed infrastructure in the corridor includes federal, state, county, and township roads; utility ROWs; and airports. In some cases, existing infrastructure along the corridor is a compatible land use, while other infrastructure, such as airports, is not. One public airport is located approximately one mile east of the corridor in Township 129N, Range 63W, Section 1 and one private air strip is located in Township 130N, Range 67W, Section 11 (see Table 14 below). Eight locations within the corridor are currently, or were previously, mined for aggregate resources. These resources are described in Section 5.11. An existing gas pipeline crosses the eastern portion of the corridor and route (Figures 4a, 4b, and 4c).

Table 14.
Area Airports

| Airport | Type | Within Corridor | Within Route |
|-----------------------------|---------|-----------------|--------------|
| Ellendale Municipal Airport | Public | No | No |
| Private Airstrip | Private | Yes | No |

There are no existing wind farm developments within the corridor. Wind farm development is increasing in North Dakota. The exact size and location of future wind farm developments are unknown, although according to landowners in the corridor, wind development companies are actively discussing potential projects with them, and many have signed wind easements.

Existing ROWs (transmission lines, pipelines, railway, or roads) in the corridor present opportunities for paralleling as these features are typically disturbed corridors and are considered compatible with the construction and operation of a new transmission line. In some cases, these ROWs may present siting challenges or have to be spanned.

Zoning in the corridor is regulated by Dickey and McIntosh Counties, and generally supports the agricultural and residences associated with the agricultural lands in the corridor.

Conservation Areas

Several WPAs managed by the USFWS are located within the corridor. The LSB WPA is crossed by the route. A discussion about WPAs is included in Section 6.8. In addition to the WPAs, the USFWS has grassland and wetland easements throughout the corridor and along the route on private lands, which are described in Section 6.8. Natural Resource Conservation Service NRCS CRP and Conservation Reserve Enhancement Program (CREP) parcels are present in the corridor. These areas have been assigned various levels of legal protection, which generally prohibit development. These areas are intended to serve as wildlife habitat, to protect rare natural features or to preserve water quality. USFWS and NRCS easements typically retain private ownership contracts and are generally considered confidential by these agencies. As such, information about the location and scope of potential impacts to these resources is limited.

State Surface Tracts

The North Dakota State Land Department (NDSLDD) manages the State Surface Tracts and School Trust lands in North Dakota, which were granted at statehood for the support of primary and secondary education. Several Surface Tracts are located within the corridor, but none are located within the route. Some of these tracts have identifiable assets in addition to the current pastureland use, such as aggregate deposits, potential for wind tower placement, or cultivated land. NDLD provided comments on a majority of State Surface Tracts within the Project corridor. The agency discussed tracts not recommended for the electric transmission line and tracts that can accommodate the electric transmission line. Three State Surface Tracts are located within the corridor and are shown on Figures 4a, 4b, and 4c.

5.2.2 Impacts

5.2.2.1 *Corridor*

Land Use

Land use in the corridor is not expected to change as a result of construction of the proposed transmission line facilities. Land used for crops is abundant within the corridor. Pasture land use is also not expected to be impacted by the proposed transmission line located within the corridor. The majority of the area under or adjacent to the transmission line can still be used for agricultural practices following construction of the line.

Human Settlement

Short-term impacts to residents and local business owners in the corridor primarily will be related to disruption caused by temporary construction activities, such as elevated noise levels and increased vehicle traffic.

The National Electric Safety Code (NESC) requires certain clearances between transmission line facilities and buildings for safe operation of the transmission line. Montana-Dakota will develop a route sufficient to maintain clearances required to safely operate the transmission line.

Ninety-five homes are located within the corridor. Montana-Dakota will develop a route to avoid these structures by maximizing the setbacks to the extent practicable or obtain a waiver from the affected landowner to route the transmission facility within 500 feet of the residence. Assuming the route will avoid these houses or Montana-Dakota obtains a waiver to site the transmission line within 500 feet of a house, long-term affects upon residences will be visual in nature.

Existing Infrastructure

Transmission lines and roadways are present within the corridor. Existing corridors for transmission line and road ROWs will be utilized for siting the route. Use of existing roads, nearby airports/airstrips, and the operation of other facilities such as aggregate mining and the gas pipeline will not be disrupted by a route within the corridor. Montana-Dakota will discuss a route with landowners to avoid impacts to existing and future mining activities. Montana-Dakota will coordinate with the gas transmission pipeline owner to coordinate the ROW crossing and ensure that poles avoid the pipeline. No impacts to existing infrastructure are anticipated.

Conservation Area

USFWS maintains WPAs and grassland and wetland conservation easements within the corridor. A grassland easement would be impacted by placement of a structure within the easement. A wetland easement would be impacted by placement of a structure within a wetland under easement, but placement of a structure in the uplands of a wetland easement does not constitute an impact. Montana-Dakota will work with the USFWS and landowners to determine the exact location and size of WPAs and easements and to avoid or minimize impacts by a route.

NRCS maintains CRP easements in the corridor; however, this data is not publically available because the contracts are considered confidential. Following approval of a route for the Project, Montana-Dakota will work with local NRCS and landowners to determine the location of CRP easements and to remove the area of the structure from the CRP easement.

State Surface Tracts

A route within the corridor will avoid State Surface Tracts, therefore no impacts are anticipated.

5.2.2.2 *Route*

Land Use

The majority of the land use impacted by the construction of the transmission line is used for agriculture (cropland and pasture). Agricultural land use is abundant along the route and is not expected to be significantly impacted by the proposed facilities. The majority of the route will remain in agricultural use since the land under or adjacent to the transmission line can still be used by the landowner. During construction of the route, additional areas may be temporarily disturbed for laydown areas. Approximately 160 acres of agricultural land will be temporarily disturbed during construction for installation of new structures, Interconnect Substation, temporary access roads, two laydown areas, and removal of the existing 41.6 kV transmission line structures. About 0.26 acres of agricultural land will be permanently removed from production for the new transmission structures. This consists of 0.25 acres of cropland (including planted herbaceous perennials/undisturbed grassland) and 0.01 acres of pasture. An additional 5.5 acres of cropland will be permanently converted to use by the proposed new substation.

Human Settlement

No homes or businesses will be displaced by the Project. There are 8 homes within 500 feet of the route. Montana-Dakota's goal is to obtain executed waivers from all of the landowners.

Existing Infrastructure

The route will parallel or double-circuit existing transmission lines and roadways for the majority of its length (85 percent). One existing gravel pit is crossed by the route. Impacts to the gravel pit/aggregate resources are discussed in Section 5.11 – Geologic and Groundwater Resources.

There is one public airport that is close enough to the route that FAA consultation is required. In addition, a private airstrip is located within the corridor, but outside of the route. As discussed in Section 5.2.2.1, Montana-Dakota will coordinate with the gas transmission pipeline owners to ensure that no impacts occur to the gas pipeline.

Conservation Area

The route is proposed to be double-circuited with Montana-Dakota's existing Ashley to Ellendale 41.6 kV transmission line. This double-circuit segment of the route crosses the LSB WPA and USFWS grassland and wetland easements. The USFWS indicated they do not maintain easement authority over Montana-Dakota's existing 41.6 kV ROW, as Montana-Dakota's easements were acquired prior to USFWS's acquisition of easements and fee title land (LSB WPA) and easements. Montana-Dakota believes that there will be fewer impacts to the resources by upgrading the existing route and not creating a new corridor in the area. Montana-Dakota advocates there are no reasonable alternatives to avoid the LSB WPA which would reduce environmental impacts. Montana-Dakota is working with the USFWS to obtain route concurrence and to avoid impacts.

The non-double-circuited segment of the transmission line avoids WPAs and easements, therefore no impacts are anticipated.

Following approval of a route for the Project, Montana-Dakota will work with local NRCS and landowners to determine the location of CRP easements and to remove the area of the structure from the CRP easement.

State Surface Tracts

The route will avoid State Surface Tracts, therefore no impacts are anticipated.

5.2.3 Mitigation

5.2.3.1 *Corridor*

Land Use

Montana-Dakota will work closely with the landowners in finalizing transmission structure locations within the ROW and temporary access to structure locations in order to minimize land use disruptions to the extent possible. Disturbed areas will be returned as near as possible to pre-construction condition and non-agricultural areas will be reseeded with native vegetation based on site characteristics. The two laydown areas are located in cultivated fields and will be restored to pre-construction condition following their use, unless specified with the landowner agreement.

Human Settlement

Montana-Dakota will work closely with the landowners in finalizing the location of structure sites, the ROW, and other disturbed areas will be determined with landowner's input. Construction will be limited to the ROW, unless access permission across adjacent property is obtained from the landowner(s). Disturbed areas will be returned as near as possible to pre-construction condition and non-agricultural areas will be reseeded with native vegetation. Landowner compensation will be established in conjunction with easement acquisition.

Existing Infrastructure

Montana-Dakota will contact the FAA to study impacts and potential disruptions to the public airport that is near the corridor and will work with the FAA to ensure that there are no disruptions to this airport. The private airstrip is near the section of the line that parallels the existing Wishek to Tatanka 230kV line. The existing 230kV line is between the airstrip and the new line, therefore, there should be no additional conflicts. No impacts to other existing infrastructure is anticipated, therefore no mitigation is proposed.

Conservation Area

Montana-Dakota has developed conservation measures and a line marking plan for the Project. The USFWS is currently reviewing the line marking plan. Montana Dakota will continue to work with the USFWS until concurrence is reached on the on the plan.

Montana-Dakota will work with local NRCS and landowners to determine the location of CRP easements and to remove the area of the structure from the CRP easement.

State Surface Tracts

No impacts are anticipated, therefore no mitigation is proposed.

5.2.3.2 Route

The same discussion in Section 5.2.3.1 applies for mitigation associated with the route.

5.3 PUBLIC SERVICES

5.3.1 Description of Resources

Local Services

The Project is located in rural southeastern North Dakota. Within this area, there are established transportation and utility networks that provide access and necessary services to light industry, small cities, homesteads, and farms existing in and near the corridor. The westernmost municipal boundary of the community of Ellendale is located within the 3-mile-wide corridor. Sanitary sewer, water, cable television, DSL, and telephone, are located in the corridor. Schools are located within the corridor and around Ellendale. Emergency services, including volunteer fire departments, ambulance service, hospitals, and police are provided in the vicinity of the corridor. There are also local retail service facilities in communities within and surrounding the corridor. A summary of local services is provided in Table 15.

**Table 15.
 Services and Institutions Within 10 Miles of Route**

| Institution | Name | Location | Within the Corridor* | Within the Route |
|---------------------------|--|----------------------------------|----------------------|------------------|
| Hospital | Dickey County Memorial Hospital | City of Ellendale, Dickey County | No | No |
| Ambulance Service | Ellendale Community Ambulance Service* | City of Ellendale, Dickey County | No | No |
| Volunteer Fire Department | Ellendale Fire Protection District | City of Ellendale, Dickey County | Yes | No |
| Volunteer Fire Department | Forbes Rural Fire Department | City of Forbes, Dickey County | No | No |
| Police | Ellendale Police | City of Ellendale, Dickey County | Yes | No |
| School | Ellendale Public High School | City of Ellendale, Dickey County | No | No |
| School | Ellendale Cooperative Nursery School | City of Ellendale, Dickey County | No | No |
| School | Whitestone School | Dickey County | No | No |

| Institution | Name | Location | Within the Corridor* | Within the Route |
|-------------|--------------------------------|----------------------------------|----------------------|------------------|
| School | Farming Valley School Number 2 | Dickey County | No | No |
| School | Farming Valley School Number 3 | Dickey County | No | No |
| School | School Number 16 | Dickey County | No | No |
| School | School Number 2 | Dickey County | No | No |
| School | School Number 3 | Dickey County | No | No |
| School | School Number 4 | Dickey County | No | No |
| School | Trinity Bible College | City of Ellendale, Dickey County | No | No |

*While not located in the corridor, services are provided to individuals within the corridor or route.

Electrical Service

There are multiple transmission line facilities located within the corridor. Montana-Dakota owns and maintains the Ellendale Junction Substation. Montana-Dakota’s Wishek to Tatanka 230kV transmission line traverses the corridor from northwest to southeast towards the Ellendale Junction Substation. Montana-Dakota’s Ashley to Ellendale 41.6kV transmission line crosses east-west across the southern portion of the corridor. The proposed route parallels Montana-Dakota’s 230 kV transmission line for about 6 miles and double-circuits Montana-Dakota’s 41.6 kV transmission line for about approximately 17 miles. Western Area Power Association (WAPA) owns two 115 kV transmission lines within the corridor; (1) a line passing north-south through the Ellendale Junction Substation and (2) a line that runs southeast from the Ellendale Junction Substation. Ottertail Power Company has a 230 kV transmission line that heads northwest from the Ellendale Junction Substation. A NWPS 115 kV transmission line runs south from the Ellendale Junction Substation then east.

Roads

County and township (section line) roads characterize the existing roadway infrastructure in and around the corridor. State Highway (SH) 11 is oriented east to west through the corridor and SH 56 trends north-south across the corridor. US Highway 281, oriented north to south, passes through Ellendale, North Dakota.

Traffic

The average daily traffic (ADT) volumes on the area’s county highways are documented in Table 16 and Figure 5. Average daily traffic on SH 11 was 1,250 vehicles just west of Ellendale, North Dakota, and the ADT of US 281 north of Ellendale was 1,445 in the year 2007 (NDDOT website, 2008). General estimates of traffic capacity are used in this permit application 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 ADT. In general, the state highways in and near the corridor and route carry higher levels of traffic than what is average for rural North Dakota, but represent only a fraction of the capacity of the roadway. Additional county and township roads run through the corridor, but have no count data available.

Table 16.
Existing Daily Traffic Levels

| Roadway Segment | Average Daily Traffic (year) | Average Daily Truck Volumes (year) |
|--|------------------------------|------------------------------------|
| South of Ellendale on US 281 | 1435 (2007) | 220 (2007) |
| West of Ellendale on State Highway 11 | 1250 (2007) | 110 (2007) |
| North of Ellendale on US 281 | 1445 (2007) | 265 (2007) |
| East of Ellendale on State Highway 11 | 1075 (2007) | 145 (2007) |
| North of Ellendale on US 281 b/w 94 th /92 nd Street | 1070 (2007) | 230 (2007) |
| South of intersection of State Highway 11 & 56 | 320 (2007) | 70 (2007) |
| West of State Highway 56 on State Highway 11 | 310 (2007) | 60 (2007) |
| North of State Highway 11 on Highway 56/95 th Street | 110 (2007) | 25 (2007) |

Most roads in North Dakota traverse east to west and north to south, and the route follows this trend from the proposed Interconnect Substation to the existing Ellendale Junction Substation.

Water Supply

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

Telephone, Fiber Optic, Microwave, Television and Radio Communications

The locations of existing communication towers were assessed for a 10-mile-wide area of the route. Table 17 lists the existing communication facilities within 10 miles of the route. 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 be expected to eliminate the problem.

Table 17.
Communication Facilities within the 10-Mile-Wide Corridor

| Communication Facility Type | Number within 10-Mile-Wide Corridor |
|-----------------------------|-------------------------------------|
| ASR | 10 |
| Cellular Phone | 2 |
| FM | 1 |
| Lm- Commercial | 3 |
| Lm- Private | 68 |
| Microwave | 3 |

5.3.2 Impacts

5.3.2.1 *Corridor*

Local Services

No negative impacts to local services are anticipated.

Electrical Service

No impacts are anticipated to the existing transmission systems within the corridor. The new transmission line facilities and Ellendale Junction Substation improvements may increase overall service reliability, especially at the Ellendale Junction Substation where there will be interconnections with existing electrical transmission systems.

Roads

Constructing the transmission line will require temporary access along the route, which is approximately 30 miles in length. One access road will be installed at approximately 20-foot-wide; no major grading or filling is anticipated since the access road will only be needed during construction. Public and private roads will be used to all possible extent with no new permanent roads constructed. Where necessary, temporary access roads may be used to access individual pole locations. Where temporary access roads are required, access will be approved by each landowner in advance and access will be routed through uplands to avoid passing through sensitive features such as wetlands. The route will cross the above listed roads, but will not interfere with traffic operations.

An existing field access off SH 11 will be used to access the laydown area south of the Ellendale Junction Substation. Montana-Dakota will work with the North Dakota Department of Transportation (NDDOT) to avoid impacts at the access point along SH 11.

Traffic

The maximum construction workforce is expected to generate an average of approximately 50 additional vehicle trips per day on local roadways. Using any combination of state and county highways and other township roads throughout the Project site, the traffic impacts are considered negligible. Since many of the area roadways have minimal traffic currently, the addition of 50 vehicle trips represents a large percentage increase and may be perceptible; however, no significant impact to traffic is expected.

Truck access to the corridor would be served by SH 11, SH 56, and US 281. Specific additional truck routes will be dictated by the location required for delivery. Additional operating permits will be issued by the state, county, and/or township for over-sized truck movements.

Water Supply

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

Telephone, Fiber Optic, Microwave, Television and Radio Communications

No impacts to communication resources are anticipated.

5.3.2.2 *Route*

The same discussion in Section 5.3.2.1 applies for impacts associated with the route.

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 Project will not impact local services, and no mitigation is required.

Electrical Service

Construction of the Project may improve transmission system service, and no mitigation is necessary.

Roads

Use of public and private roads for delivery of equipment and materials, and by construction personnel, is not expected to affect the road conditions. Construction equipment and material weights will generally be no greater than the existing large farm equipment common in the Study Area. Use of temporary access roads across agricultural lands may result in compaction of agricultural soils and loss of crops. Where necessary, compacted soils will be disked following construction, and landowners will be compensated for crop losses. Montana-Dakota will work with the NDDOT to avoid impacts at the access point along SH 11.

Traffic

No traffic impacts are anticipated, and no mitigation is necessary.

Water Supply

In the event wells are abandoned, they will be sealed as required by North Dakota law. If temporary dewatering of groundwater is required during construction activities, appropriate National Pollutant Discharge Elimination System (NPDES) permits will be obtained and discharges conducted according to permit requirements.

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 that the proposed facilities cross or otherwise may affect existing telephone or fiber optic lines or equipment, Montana-Dakota will negotiate agreements with service providers so as to avoid interference with their facilities.

Since no impacts to communication systems are anticipated, no mitigation is proposed.

5.3.3.2 *Route*

The same discussion in Section 5.3.3.1 applies for mitigation associated with the route.

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 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).

Considerable research has been conducted throughout the past three decades to determine whether exposure to power-frequency (60 Hz) EMF cause biological responses and health effects. 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 (EIS) (Arrowhead-Weston 5-21). Both studies have similar conclusions of no discernible health impacts from power lines. Both of these studies recommend the general precaution of minimizing unnecessary contact and advise prudent avoidance to EMF exposure.

As noted above, current passing through any conductor, including a transmission wire, produces a magnetic field in the area around the wire. The magnetic field associated with high voltage transmission lines surrounds the conductor and decreases rapidly with increasing distance from the conductor. The magnetic field is typically expressed in milliGauss (mG). The magnetic fields of some home appliances are greater than from transmission lines. Table 18 shows the magnetic fields of some common household appliances.

Table 18.
Magnetic Fields of Common Electric Appliances

| Appliance | Distance from Source | | |
|-----------------|---------------------------|--------|--------|
| | 6 inches | 1 foot | 2 feet |
| | Magnetic Field Level (mG) | | |
| Hair Drier | 300 | 1 | -- |
| Electric Shaver | 100 | 20 | -- |
| Can Opener | 600 | 150 | 20 |
| Electric Stove | 30 | 8 | 2 |
| Television | NA | 7 | 2 |
| Portable Heater | 100 | 20 | 4 |
| Vacuum Cleaner | 300 | 60 | 10 |
| Copy Machine | 90 | 20 | 7 |
| Computer | 14 | 5 | 2 |

Source: *EMF In Your Environment (EPA 1992)*.

Florida (150 mG) and New York (200 mG), which have established exposure limits at the edge of the ROW, are the only two states with magnetic field exposure standards in the country. The general standard among the other states is prudent avoidance.

5.4.1.2 **Human Safety**

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

The proposed transmission line will be equipped with protective devices such as breakers and relays at the substation to safeguard the public from the transmission line if an accident occurs or if a structure or conductor falls to the ground. The protective equipment at the substation will de-energize the line should an accident occur. In addition, the new substation will be fenced and access 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 to exposure. Based on the research on electromagnetic fields, the Project will have little impact to public health and safety due to EMF. The addition of transmission facilities is not expected to add significantly to the presence of EMF exposure in the corridor.

5.4.2.2 *Route*

Human Health

Electric forces and magnetic fields have been modeled from single circuit 230 kV transmission lines. Electric fields have been predicted to decrease to background levels of approximately 0.1 kilovolt per meter (kV/meter) within 200 feet of the transmission line. Based on the H-frame 230 kV design, magnetic fields are predicted not to exceed levels of 200 mG when the line is conducting 375 MW of electric power. At distances of 50 feet away from the pole it is expected that the level of the magnetic field will be approximately 40 mG. This distance is less than one-half the proposed ROW width the Montana-Dakota is seeking to obtain. At these levels, the exposure level at the edge of the ROW is significantly less than that of common household appliances and less than the standards set in Florida and New York. The nearest potential receptors to the route are at least 190 feet away from the transmission line, where EMF 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, Montana-Dakota has limited human exposure to EMF to the extent practicable. No additional mitigation is needed.

Human Safety

With the proper safeguards and protective measures implemented as described above, no additional mitigation is proposed.

5.4.3.2 *Route*

The same discussion in Section 5.4.3.1 applies for mitigation associated with the route.

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 the electricity ionizing the moist air near the wires. During heavy rain the general background noise level is usually greater than the noise from a transmission line. In addition, very few people are out near the transmission line. For these reasons audible noise is not noticeable during heavy rain. During light rain, dense fog, snow, and other times when there is moisture in the air, the proposed transmission lines will produce audible noise higher than rural background levels but

similar to household background levels. During dry weather, audible noise from transmission lines is 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 19 shows noise levels associated with common, everyday sources, and places the magnitude of noise levels discussed here in context.

Table 19.
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

Generally, background noise levels in rural areas vary between 40 and 50 dBA, while in suburban areas these levels increase to 50 to 60 dBA. In urban areas noise levels vary between 60 and 70 dBA (FRA 2005). Most of the corridor has background levels consistent with rural areas. The windy conditions in this region tend to increase ambient noise levels compared to other rural areas. Additionally, higher levels exist near roads and other areas of human activity. The western portion of the corridor where it parallels SH 56 has higher noise levels.

5.5.2 Impacts

5.5.2.1 Corridor

There will be few people out near the transmission line or substation on a routine basis in the corridor because it crosses through primarily rural and agricultural areas. Those individuals that are within the corridor may experience a small amount of noise near the transmission line or substation during some conditions, as described in Section 5.5.1. The noise levels will be greater for those closer to the route as described in Section 5.5.2.2. Typically, the attenuation rate for linear noise sources (i.e. the transmission line) is approximately -3 dB per distance doubled. In other words, the farther from the generation outlet a person is, the less noise they will hear.

5.5.2.2 Route

During construction activities, there will be noise associated with the construction equipment. The noise will be temporary at any given location, lasting only for a few days to one week along given segments of the route, and is not expected to be significant.

Per Commission criteria, the transmission line was sited to be at least 500 feet from occupied houses where possible. This will minimize the noise any individual will hear along the route. The 500 foot avoidance criteria may be waived by the owner of the occupied house if stated in writing. There are eight locations where the route will be closer than 500 feet to an occupied house.

The proposed transmission line route was modeled using the Bonneville Power Administration Corona and Fields Interactive 1989 Experimental (CFI8X) model to evaluate audible noise from high voltage transmission lines. Where possible, the CFI8X 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 CFI8X model and assuming a wet environment.

Table 20 presents modeling results for the proposed line in dBA on an L50 basis. L50 means the sound level, expressed in dBA, which is exceeded 50 percent of the time for a given time period.

These levels are predicted to occur at a point five feet above the ground and during wet conditions.

**Table 20.
Common Noise Sources and Levels**

| | Distance from Center of Transmission Line Corridor (feet) | | | | | | | | | | |
|---|---|------|------|-----|-----|----|----|----|-----|-----|-----|
| | -300 | -200 | -100 | -50 | -30 | 0 | 30 | 50 | 100 | 200 | 300 |
| Audible Noise L50 (dBA) from Proposed Line | 30 | 32 | 35 | 37 | 36 | 38 | 37 | 36 | 35 | 32 | 30 |

As can be seen in Table 20, noise from the transmission line is expected to be below rural background noise levels at all residences.

5.5.3 Mitigation

5.5.3.1 Corridor

Montana-Dakota will continue to work with the potentially affected residences to either avoid the residences by 500 feet or get a signed waiver from the people owning the residences. All other occupied houses and structures will be farther than 500 feet from the transmission line and substation. At this distance, noise from the transmission line is predicted to be below background levels.

During construction, noise levels will be minimized by ensuring that construction equipment is equipped with mufflers that are in good working order. Construction activities will generally be limited to the hours of 7 a.m. to 7 p.m. and not likely to occur during earlier morning or later evening hours. No additional mitigation measures are necessary since there will be nominal noise impacts from the Project.

5.5.3.2 Route

The same discussion in Section 5.5.3.1 applies for mitigation associated with the route.

5.6 VISUAL IMPACTS

5.6.1 Description of Resources

The topography of the eastern half of the Study Area corridor is mostly flat. A sharp topographic transition occurs near the middle of the corridor at the edge of the Missouri Coteau, where the elevation climbs approximately 400 feet within one mile. West of this transition, the terrain is rolling, with about a 200 foot elevation range. Elevations in the corridor range between 1,470 feet above sea level (abs) near Pheasant Lake and 2,180 feet abs near the proposed Interconnect Substation. A topographic map of the Study Area is shown in Figures 3a, 3b, and 3c.

The corridor and route parallel SH 11 and 56 and segments of Montana-Dakota's existing 230 kV and 41.6 kV transmission lines as described in Section 4.1. These existing facilities are present in the immediate vicinity of the route. There are also existing distribution lines and other manmade features within the Study Area. On either side of the state highways and transmission lines, the dominant land use is row crop agriculture with some grazing.

Woodland and wetland areas are scattered sporadically throughout the corridor. A mix of deciduous and coniferous trees planted for windbreaks typically surround existing and abandoned farmsteads. Generally, these wooded areas are isolated groves or windrows established by the landowner/farmers to prevent wind erosion and shelter dwellings. Trees also occur in scattered wooded draws and riparian areas. Typical woody species include hawthorn, chokecherry, box elder, green ash and cottonwood. There are scattered lands that have been put into grassland or wetland reserve easements along the route. These lands consist of native tall grass prairie and wetland species and contrast from the surrounding agricultural land use. Throughout the corridor there are scattered isolated wetland areas. Wetland areas are dominated by cattails, sedges, rushes and willows. Two lakes are crossed by the corridor, including Pheasant Lake (an impoundment of the Elm River), and an unnamed lake located about one mile west of the LSB WPA. Both lakes have rocky shorelines surrounded by rolling grasslands.

Figures 4a, 4b, and 4c show typical landscape characteristics in the Study Area.

5.6.2 Impacts

5.6.2.1 Corridor

The proposed transmission line and substation will be visible to landowners and community residents who live near the proposed Project within the corridor. The H-frame structures generally will be adjacent to existing transmission line facilities which are already visible; therefore, visual impacts from these structures are expected to be minimized by consolidating infrastructure views with existing infrastructure. Where the proposed line is collocated with the existing 41.6 kV transmission line, the H-frame structures will replace the existing H-frame structures, minimizing the net change in visual impacts.

5.6.2.2 Route

While the proposed transmission line will be located outside of Ellendale, it may be visible to some residents in or traveling to this community. Visual impacts will be most evident to drivers traveling north and south on SH 56 as well as those traveling east and west on SH 11. The transmission line will impact landowners and residents that live in close proximity to the route.

With the exception of the approximately 6-mile-long segment of the transmission line along the existing Wishek to Tatanka 230 kV transmission line (about 120-150 feet offset) and the 17-mile-long segment of the transmission line that will be double-circuited with the existing Ashley to Ellendale 41.6 kV transmission line, about 7 miles of H-frame structures will be new visible features. However, because they will be mostly adjacent to SH 56, visual impacts are expected to be minimized since there are existing transmission lines on the landscape. The majority of the route will also be crossing agricultural land. The impact to aesthetics will be minimized due the presence of existing transmission infrastructure and the route through rural areas. Montana-Dakota has proposed to use H-frame structures similar to existing transmission line structures within the corridor. The sections of the line that will be double-circuited with the existing Montana-Dakota 41.6 kV transmission line will require taller structures with shorter spans between structures. The change in structure height from existing to new structures is not expected to be discernible after the Project is completed. Diagrams 1 and 2 depict the typical structures that will be used for the transmission line.

The proposed new Interconnect Substation would be located south of the existing Merricourt Wind Project Collector Substation. The new substation footprint, including the operations and maintenance buildings and fencing, would occupy approximately 5.5 acres within an approximate 11-acre parcel of land. The Interconnect Substation will be visible to travelers along 62nd Avenue South. No residents live within 1 mile of the substation location. Therefore, impacts are expected to be minimal.

5.6.3 Mitigation

5.6.3.1 Corridor

The proposed corridor contains existing roadways and transmission line infrastructure and impacts are anticipated to minimal, thus no mitigation proposed.

5.6.3.2 Route

Although the transmission line will contrast with the surrounding land uses, these areas have already been impacted visually by the existing roadways and transmission lines. The new transmission line will be sited within close proximity to existing transmission lines and roadways in order to keep the infrastructure within the same corridor. More than 17 miles of the proposed line will be double-circuited with an existing transmission line and 6 miles was sited adjacent to an existing transmission line, which will minimize the net change in visual impacts. Care is being taken to avoid structure placement, as much as possible, in biologically sensitive areas such as wetlands and high quality native prairies.

5.7 CULTURAL RESOURCES

5.7.1 Description of Resources

In May 2010 HDR contacted SHPO on behalf of Montana Dakota to request a review of potential Project-related impacts on a proposed 230 kV transmission line located near Ellendale, North Dakota. The request to SHPO asked for comment for known or suspected cultural resources located within a preliminary 8-mile-by-27-mile corridor. SHPO responded with a letter (ND SHPO REF: 10-1440) (Appendix E) in May 2010 recommending that Montana-Dakota sponsor an archival records search for the corridor to determine the nature of previous cultural resource investigations and the location of known cultural resources in the proposed Study Area. SHPO also stated that there is a potential for

unrecorded cultural properties to exist in the corridor and recommended a Class III survey with review and comment by SHPO.

A Class I Literature search was completed before a route had been selected within the transmission line corridor. The corridor has been determined and the legal description of the current three mile corridor is included in Appendix G of the application. The Project route has also been selected within the corridor. Montana-Dakota will need to update its Class I Literature Search report to include the defined corridor and route. This will be completed as a part of its Class III Inventory Report. Sections needing review are:

- Township 131 North Range 66 West Section 29, 30-35 and,
- Township 131 North Range 67 West Section 25-29, 32-36

In addition, the current route traverses United USFWS grassland easement for one mile in the northeast $\frac{1}{4}$ of Section 2 T129N R66W and in the northwest $\frac{1}{4}$ of Section of 1 T129N R66W. At this time, this mile section has not been surveyed because of continued negotiations with one land owners regarding access to the property. The USFWS stated in October 2010 that this action by Montana-Dakota does not constitute a federal action because the easement for the transmission line existed before the USFWS grassland easement. Montana-Dakota realizes that an archaeological survey and USFWS approval is needed before preconstruction or construction can begin in this easement.

Montana Dakota reviewed cultural resources information on file at SHPO for the preliminary proposed corridor and prepared an archival records search report which is provided in Appendix E.

Montana-Dakota is proposing to construct 17 miles of the 230 kV transmission line in the existing 41.6 kV transmission line route. The existing 41.6 kV transmission line will be removed and new 230 kV double circuit structures will be constructed in the existing route. It is anticipated that approximately 17 miles of the proposed 230 kV line will be shared with the existing 41.6 kV line. Montana-Dakota is not aware of any cultural surveys that may have been completed on the 41.6 kV route. Montana-Dakota will be surveying the entire route to identify any potential archaeological resources.

Montana-Dakota will continue to coordinate with SHPO concerning the archaeological field investigations of the route. These investigations will be conducted by a professional archaeologist permitted by the State of North Dakota per NDCC 55-03-01. Montana-Dakota will provide the SHPO and USFWS a report for review following its investigations and if needed, will consult upon report recommendations with SHPO staff.

5.7.2 Impacts

5.7.2.1 *Project Corridor*

64 cultural resource sites and 19 cultural resource site leads have been identified within the corridor (Appendix G). None of the sites have been identified for inclusion in the National Register of Historic Places (NRHP). In addition, HDR reviewed Government Land Office Maps completed in the late 1800s, data from this review is presented in Appendix G.

The probability of encountering intact cultural resources is largely dependent on landforms and previous land use activities. Regardless of pole numbers or spacing, the placement of poles on moderate to high potential landforms increases the chance of impact to cultural resources. Moderate

to high potential areas are defined as location near water, location near or on high prominent landform, locations where specific resources can be gained, or locations offering protection from the elements. Areas utilized for agricultural or mining activities will generally contain a lower probability for containing intact cultural resources, although it is understood by Montana-Dakota that agricultural activity does not always compromise site integrity.

5.7.2.2 *Route*

Montana-Dakota does not anticipate adverse impacts to identified cultural resources within the route as Montana-Dakota is developing construction plans that avoid identified cultural resource sites. As archaeological resource survey work is completed the construction plans will be revised to avoid newly identified sites. In the event that an impact would occur, Montana-Dakota would determine the nature of the impact and discuss with SHPO on whether or not the resource was eligible for listing on the 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.

5.7.3 *Mitigation*

5.7.3.1 *Project Corridor*

Montana-Dakota does not anticipate adverse impacts to NRHP eligible or potentially eligible cultural resources within the corridor. There has been no NRHP eligibility status determination made on the 83 cultural resource sites and/or cultural resource site leads identified during the background and literature review. If any additional potentially eligible sites are identified throughout the course of the Project or survey, or if any of the previously identified properties cannot be avoided because of engineering constraints, they will be considered on a case by case basis and discussed with SHPO.

The archival records search identified zero previously identified NRHP-eligible cultural resources within the corridor. Because of the unknown significance of the sites found during survey or identified via the archival records search, Montana-Dakota is proposing to avoid impacts to these sites. In order to avoid accidental impact to these identified resources, Montana-Dakota plans to fence off identified sites, that construction personnel may reasonably encounter, and instruct personnel not to encroach or harm areas behind the fenced in boundary.

Montana-Dakota realizes that finalizing the route will require additional background research at SHPO and will as part of the Class III Inventory Report update and review sites. Montana-Dakota will work with SHPO to understand if Project construction or operation will have an effect on these sites. Montana-Dakota also understands that further survey work is needed before construction or operation of the transmission line can begin.

5.7.4 *Route*

Montana-Dakota does not anticipate impacts to identified NRHP eligible sites or any other identified cultural resources within the proposed Project route. If potential eligible sites are identified during field investigations that will be impacted by Montana-Dakota activity, a professional archaeologist in coordination with the SHPO would establish appropriate buffers around the resource or resources, or develop other necessary treatment, to protect resource integrity.

Montana-Dakota will consider impacts to identified NRHP eligible or potentially eligible cultural resources to the extent practical. Montana-Dakota will accomplish this by constructing the transmission line to avoid or span sensitive areas. In the event that an impact would occur, Montana-Dakota would determine the nature of the impact and discuss with SHPO on whether or not the resource was eligible for listing on the NRHP. If the resource was determined eligible, mitigation could include an effort to minimize Project impacts on the resource and/or collection of additional documentation through data recovery.

Montana-Dakota will develop a discovery plan should previously unknown cultural resources or human remains be inadvertently encountered during the Project construction or maintenance. The plan would outline the framework for handling such discoveries in an efficient and legally compliant manner. If human remains were identified procedures would be followed with the appropriate authorities that would be in accordance with local and state guidelines, such as NDCC 23-06-27.

5.8 RECREATIONAL RESOURCES

5.8.1 Description of Resources

Recreational opportunities in McIntosh and Dickey Counties include camping, hiking, biking, swimming, golfing, hunting, fishing and nature observation. Review of state and federal databases indicates that there are 12 USFWS-managed WPAs within the corridor. The state-managed Johnson’s Gulch Wildlife Management Area is located within one mile of the edge of the corridor, but beyond the corridor. Table 21 WPAs within the corridor and the distance from the edge of the route. Figures 6a, b and c display the location of managed recreation lands in the vicinity of the corridor and route.

Table 21.
Waterfowl Production Areas within the corridor and route

| Name | Location Township-Range-Section | Distance from edge of route (Feet) |
|-----------------|--|---------------------------------------|
| Bovey WPA | T130N, R67W, Sec 10, 11, 14 | 5,026 |
| West Wishek WPA | T130N, R67W, Sec 12 T130N, R66W, Sec 7, 18 | 4,422 |
| Wishek WPA | T130N, R67W, Sec 7, 8, 18 | 5,702 |
| Clay WPA | T130N, R66W, Sec 6 | 821 |
| Ernst WPA | T131N, R66W, Sec 29, 31, 32, 33 | 6,132 |
| Knapp WPA | T130N, R66W, Sec 8 | 1,173 |
| Rustchke WPA | T131N, R66W, Sec 33, 34 T130N, R66W, Sec 3, 4 | 2,796 |
| Erlenbusch WPA | T130N, R66W, Sec 10 | 116 |
| Zahn WPA | T129N, R66W, Sec 3, 4 | 372 |
| Lazy M WPA | T129N, R66W, Sec 9-11, 13-15, 23 | 6,267 |
| LSB WPA | T129N, R66W, Sec 1 T130N, R65W, Sec 31 | 0 |
| Heine WPA | T130N, R64W, Sec 36 | 5,213 |

Private Lands Open to Sportsmen (PLOTS) is a voluntary program offered to landowners by the North Dakota Game and Fish Department (NDGF), which provides landowners with monetary compensation for allowing public access to their land for fishing or hunting. Land parcels are typically enrolled in the PLOTS program for two to three years, but some are under a long-term agreement. Within the corridor there are 5 PLOTS lands totaling 805 acres. Within the route there is a portion of one PLOTS land totaling 5.2 acres, located in Section 5, T130N, R66W. Figures 6 a, b and c display the location of PLOTS within the corridor.

As discussed in the Land Use Section 5.2, USFWS also holds easements on private lands for the protection of wetland and grasslands resources. The purpose of wetland easements is to preserve the wetland areas, whereas the grassland easements preserve the wetland areas and adjacent grassland buffers. The habitat preserved by these easements supports the reproduction and growth of wildlife species, particularly waterfowl and gamebirds.

The corridor and route cross Pheasant Lake, which is a recreation resource for fishing, boating, and nature observation.

The Maud Evans Riding Arena is located within the corridor in Township 129N, Range 64W, and Section 5.

5.8.2 Impacts

5.8.2.1 Corridor

In general, recreational impacts will be visual in nature and limited to individuals using public or private property in the corridor for hunting, fishing, or nature observation. See Section 5.6 for detailed discussion of anticipated visual impacts and proposed mitigation measures.

5.8.2.2 Route

Recreational impacts will be primarily visual in nature and limited to individuals using public or private property for hunting, fishing, or nature observation. The route is proposed to be double-circuited with Montana-Dakota's existing 41.6 kV transmission line. This double-circuit segment of the route crosses the LSB WPA and USFWS easements. Montana-Dakota's easements were acquired prior to USFWS's acquisition of easements and the LSB WPA. The non-double-circuit segment does not cross USFWS WPAs or easements. All other WPAs identified in Table 21 will be avoided by the route.

Within the LSB WPA, four existing 41.6 kV structures removed and four new double-circuit 230/41.6 kV structures will be installed. Temporary impacts are estimated at 2.1 acres for removing the 41.6 kV structures and installing the double-circuit structures. Although the double-circuit structures are slightly larger (larger diameter pole), there would still be four structures located within WPA and the permanent impact of the larger diameter structure would be negligible. Montana-Dakota will utilize the previously impacted ROW and maintain four structures within the WPA that will minimize impacts. The route will result in no net increase in the number of poles within the WPA.

Pheasant Lake will be crossed by the route on the double-circuit segment. Recreational uses of the lake may have temporary impacts during construction, such as noise. No structures are proposed to be

located within the lake. Permanent impacts will be avoided by replacing the existing 41.6kV crossing with a double-circuit crossing adjacent to the existing crossing.

One PLOTS parcel will be crossed by the route. Individuals using PLOTS lands will have access under the transmission line to access the property. The transmission line will not impact recreational opportunities on PLOTS lands.

The Maud Evans Riding Arena is located about 0.5 mile north of the existing 41.6 kV ROW where the Project is proposed to be double-circuited. In addition, this riding arena is buffered by a treed windrow that will not be impacted. No impacts to the Maud Evans Riding Arena 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 Route

The route will follow existing transmission and roadway corridors for the majority of its length, and has been routed to minimize impacts to recreational areas.

Montana-Dakota advocates that there are no reasonable alternatives to avoid the LSB WPA and USFWS easements that would reduce environmental and recreational impacts, than to double-circuit the existing 41.6 kV transmission line. Montana-Dakota believes that there will be fewer impacts to the recreational and environmental resources by upgrading the existing route and not creating a new route or corridor in the area. Any reasonable alternative that would avoid the LSB WPA and easements would require creating new transmission line route which would result in new permanent impacts to another area. Montana-Dakota is working with the USFWS for route concurrence and to avoid impacts.

Permanent impacts to Pheasant Lake will be avoided by replacing the existing 41.6 kV crossing with a double-circuit crossing adjacent to the existing crossing. There will be no structures placed within the lake; no other mitigation measures are proposed.

If a structure is located in PLOTS Montana-Dakota will work with the landowner and NDGF to remove the structure area from PLOTS. Individuals using PLOTS lands will have access under the transmission line to access the property. No other mitigation proposed.

No impacts to the Maud Evans Riding Arena are anticipated, therefore no mitigation proposed.

5.9 EFFECTS ON LAND BASED ECONOMIES

5.9.1 Description of Resources

Agriculture/Farming

The majority of the corridor is cultivated farmland and grasslands as summarized in Table 23 and shown on Figures 7a, 7b, and 7c. Approximately 17,985 acres of the corridor and 69 acres of the

route are composed of cultivated land. Planted grassland makes up approximately 14,201 acres of the corridor and 106 acres of the route. Native grassland makes up approximately 17,198 acres of the corridor and 178 acres of the route. Woodlands make up approximately 383 acres of the corridor and 0.8 acres of the route.

According to the 2007 Census of Agriculture, there are 545 farms in Dickey County and 513 in McIntosh County. Since the 2002 Census of Agriculture, farm units have increased by 2 percent in Dickey County (up from 533 units) and have declined by 2 percent in McIntosh County (down from 526 units). Average farm size is 1,280 acres (Dickey) and 1,072 (McIntosh) acres, which ranks 22nd and 40th relative to the 53 North Dakota counties. The majority of this farmland is used as cropland (Dickey 77 percent, McIntosh 68 percent), with pastureland being more frequent to the west (McIntosh 28 percent, Dickey 19 percent).

In 2007 Dickey County sold \$162 million in agricultural products (77 percent crops, 23 percent livestock) and McIntosh County sold \$76 million (66 percent crops, 34 percent livestock). Of agricultural production of the 53 North Dakota counties, Dickey County is ranked 13th in market value, and McIntosh County 39th. Corn and soybeans are the most widely grown crops in Dickey County, accounting for about 75 percent of county crop sales; other notable crops include wheat and forage. In McIntosh County, wheat is the primary crop (about 35 percent of county sales), followed by forage, soybeans, sunflower seeds, and corn. Cattle is the primary livestock inventory in both counties, with Dickey County also being ranked 4th in the state in hog production (USDA, 2007).

Prime farmland soils are discussed in Section 5.10.

Based on a review of aerial photography, there are no center-pivot irrigated parcels within the corridor or route.

GPS navigation systems are becoming more common on farm equipment. GPS units collect location data from at least three or more satellites at any given time. The accuracy of the location data is dependent on the number of satellites and the strength of the signal. Since satellites are in constant motion above the earth, GPS units are constantly picking up and dropping satellites. At times there might be instances when the GPS unit is not able to connect to enough satellites and the required accuracy is not met. In 2002, the Institute of Electrical and Electronics Engineers (IEEE) published a study that investigated the effects of overhead power lines on GPS receivers with respect to the effects of electromagnetic interference (EMI) generated by two mechanisms: corona noise and gap discharges. Measurements evaluated whether the GPS signal could be scattered by overhead conductors and if EMI could adversely affect the GPS signal received. The study reported that exposure to corona noise or gap discharge noise did not cause a loss of satellite signal lock. The study did, however, note that the receiver may lose lock due to temporary poor satellite configurations, which may happen from many different sources, including poor satellite constellation (less than four visible satellites) and/or outages to the base station or transmitter (IEEE. 2002).

Forestry

Economically important forestry resources are not found in the corridor. Woodlands are primarily associated with streams, ravines, woodlots, and windbreaks at existing or abandoned homesteads in the corridor. Woodlands along the route are depicted on Figures 4a, 4b, and 4c.

Mining

The corridor contains historic and active gravel and sand quarries as is discussed in Section 5.11.

5.9.2 Impacts

5.9.2.1 *Corridor*

Agriculture/Farming

Impacts to agriculture will be nominal. Permanent impacts will be associated with the areas surrounding the transmission line structures, where farming equipment will not be able to operate and crops will not be able to be grown. All areas underneath and surrounding the proposed transmission line will be available for agricultural use following construction. Considering the large amount of agricultural land in the corridor, potential impacts will be negligible. Temporary impacts typically include soil disturbance, possible compaction of farm soils and crop damage if construction occurs during the growing season.

Forestry

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

Mining

Impacts to mining are discussed in Section 5.11.

5.9.2.2 *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.

Based on a review of structure types, locations and workspace requirements (Section 5.0) relative to existing land use, approximately 160 acres of agricultural land will be temporarily removed from production during construction of the transmission line, not including potential impacts due to temporary access. The permanent agricultural land that will be converted due to the Project will be approximately 0.26 acres for the transmission line structures and 5.5 acres for the substation. It is possible that some of the land classified as agricultural may not be used for agricultural purposes during construction; thus the actual impacts to agriculture production cannot be determined until the transmission line location is finalized.

When considering the approximately 907,000 acres of cropland reported for Dickey and McIntosh Counties, the permanent and temporary impacts noted above represent a small amount (0.01 percent) of the available cropland (USDA, 2007). Where CRP lands are crossed and acreage is removed from production (subject to final pole placement), the landowners may have to work with the FSA to address the CRP status associated with these lands.

The effect of heavy equipment on agricultural soils may cause compaction. 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.

Regarding GPS use in agricultural activities, there could be rare occasions when a transmission line structure may cause a temporary drop in GPS accuracy due to blockage of line-of-sight to one satellite, but this will only occur if the receiver, structure, and satellite are in a line. Connection is usually restored within minutes and the GPS units return to normal function.

Forestry

Approximately 0.8 acres of woodlands will be permanently impacted by the route. The woodlands are primarily associated with homesteads and windbreaks. Relatively few trees within the ROW are expected to need removal, except where needed for safe operation of the facilities.

Mining

Impacts to mining are discussed in Section 5.11.

5.9.3 Mitigation

5.9.3.1 *Corridor*

Agriculture/Farming

Montana-Dakota will work with landowners to minimize impacts to their land. Transmission line structures will be located to minimize impacts to farming operations and prime farmland as much as possible. Only land used for the structures will be unavailable for future crop production. However, once the transmission line is constructed, all land surrounding the structures will still be able to be farmed or grazed. Landowner compensation for crop damages will be negotiated during individual lease agreements. Construction laydown areas and temporary transmission line access roads will be disked as necessary to relieve excessive compaction caused by construction or per the landowner agreement. Landowners will also be compensated for any damage that occurs to crops due to the construction of the transmission line. For impacts to CRP status (if any), Montana-Dakota will negotiate to compensate landowners for impacts.

Some landowners use GPS navigation systems on farm equipment; however, interference with such systems is unlikely and, if it does occur, will be temporary. Following construction, Montana-Dakota will provide GPS coordinates for the transmission line structures to landowners, if requested. No other mitigation measures should be necessary.

Forestry

Impacts to woodlands will be restricted to those areas necessary for the safe and reliable operation of the line. A tree and shrub inventory within the ROW was conducted in November 2010 and will be finished in the spring 2011. Montana-Dakota will replace impacted trees and shrubs per Commission replacement criteria at a ratio of 2:1 to a location where the trees will not impact the function of the transmission line.

Mining

Mitigation to mining is discussed in Section 5.11.

5.9.3.2 *Route*

The same discussion in Section 5.9.3.1 applies for mitigation associated with the route.

5.10 SOILS

Dickey and McIntosh county soil types, their characteristics and their acreage in the route are listed in Table 22.

Table 22.
Soil Types and Characteristics

| Soil Type and Description | Acreage in Corridor | Acreage in Route |
|---------------------------|---------------------|------------------|
| Barnes-Buse-Svea | 1,314.9 | 0 |
| Barnes-Svea-Tonka | 641.3 | 0 |
| Cavour-Svea-Barnes | 13,787.1 | 102.5 |
| Edgeley-Harriet-Cavour | 5,458.4 | 38.9 |
| Nutley-Williams-Farnuf | 8.8 | 0 |
| Renshaw-Arvilla-Divide | 2,945.7 | 18.9 |
| Swenoda-Barnes-Tiffany | 6,619.3 | 46.2 |
| Wabek-Manning-Zahl | 8,263.0 | 67.8 |
| Williams-Bowbells-Tonka | 2,841.8 | 20.3 |
| Williams-Zahl-Bowbells | 5,676.8 | 14.5 |
| Williams-Zahl-Parnell | 12,958.7 | 124.1 |

Prime farmland is an important factor in the crop production for Dickey and McIntosh Counties. Prime farmland is the land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops. The NRCS has two classifications for prime farmland. The first is where all areas of the soil series are classified prime farmland. The second is where only the drained areas of the soil series are prime farmland. The NRCS also identifies farmland of statewide and local importance, which is land that is important for the production of food, feed, fiber, forage and oilseed crops. Generally, additional farmlands of statewide or local importance include those that are nearly prime and that produce high yields of crops in an economic manner when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmland soils if conditions are favorable. Figures 8a, 8b, and 8c show the prime farmland soil distribution in the corridor and along the route.

Table 23 summarizes the amounts of prime farmland and soils of statewide/local significance in the corridor and crossed by the route. In Dickey County, 11,412 acres or 21.7 percent of the soil is classified as prime farmland in the corridor and 81 acres, or 21 percent, within the 125-foot ROW route is classified as prime farmland. The corridor through McIntosh County is composed of 450 acres (5.6 percent) prime farmland soils and the 120-foot ROW (including the substation) contains <1 acres (<1 percent) prime farmland soils.

**Table 23.
 Acres of Prime Farmland, Soils of Statewide/Local Importance, and Prime Farmland when
 Drained in the Corridor and along the Route.**

| County | All Areas Are Prime Farmland (acres) | Soil of Statewide/Local Importance (acres) | Prime Farmland Only When Drained (acres) | Not Prime Farmland (acres) | Percent Prime Farmland |
|------------------------------|--------------------------------------|--|--|----------------------------|------------------------|
| Corridor | | | | | |
| Dickey | 9,570 | <1 | 1,842 | 31,314 | 22 |
| McIntosh | 432 | 411 | 18 | 7,216 | 6 |
| Total | 10,002 | 412 | 1,860 | 38,530 | 20 |
| Route (including substation) | | | | | |
| Dickey | 68 | 0 | 13 | 221 | 21 |
| McIntosh | <1 | 1 | <1 | 44 | <1 |
| Total | 68 | 1 | 13 | 265 | 19 |

5.10.1 Impacts

5.10.1.1 Corridor

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

5.10.1.2 Route

Surface soils will be disturbed by site clearing, grading, and excavation activities at structure locations, pulling and tensioning sites, setup areas, and during the transport of crews, machinery, materials, and equipment over access routes (primarily along the transmission ROW). This disturbance is minimal, and is generally less invasive than typical agricultural practices such as plowing and tilling. Soil compaction is expected to occur on access roads, laydown areas, and along the transmission line ROW.

During transmission line construction, approximately 160 acres of soil may be impacted temporarily for access roads, substation, existing 41.6 kV structure removal, new structure installation, and staging areas. In isolated cases, grading may be required for access roadway construction.

The permanent impact to soils in the area will be limited to areas removed at transmission line structure locations and at the substation. These permanent impacts will be relatively minor, totaling approximately 0.26 acres for the transmission line and approximately 5.5 acres for the substation. Even if all the structures were placed within prime farmland areas, only approximately 0.26 acres of prime farmland would be impacted, or 0.06 percent of the 433 acres of prime farmland that is present within the route. Less than one acre (0.11 acre) of the proposed substation location is classified as prime farmland.

During extended periods of saturation, soils can be prone to compaction and rutting. This is primarily expected to occur during construction, but could also occur if heavy equipment is driven over ROWs for maintenance during operation of the Project. Soil compaction has a restrictive action on water penetration, root development, and the rate of oxygen diffusion into soils. Low density and change of vegetation types may be an indirect effect of soil compaction. Soil characteristics that affect soil compaction include soil texture, soil moisture, and grain size. All soil types are susceptible to compaction and will also be susceptible to rutting if construction occurs when the upper layers of these soils are moist or near saturation.

Disturbed soils can be subject to erosion, defined as the detachment and transport of individual soil grains by wind or water. Erosion by wind is related to soil moisture, soil texture, organic matter content, soil structure, vegetative cover, and climate. Wind erosion often occurs on dry, fine sandy soils when vegetation cover is sparse and strong winds are prevalent. Water erosion is related closely to a soil's infiltration capacity and the coherence of the soil particles that comprise the soil. Soil properties that influence water erosion include soil texture, percent organic matter, soil structure, soil infiltration capacity, and soil permeability. Soils containing high proportions of silt and very fine sand are most erodible. Well-drained and well-graded gravels and gravel sand mixtures with little or no silt are the least erodible soils. Water erosion is also influenced by slope length and gradient, as well as frequency, intensity, and duration of rainfall and the amount of time bare soils are exposed. Erosion could be caused by site clearing and earthmoving in addition to natural processes.

5.10.2 Mitigation

5.10.2.1 Corridor

To the extent practicable, soil disturbance and excavation activities on steep slopes will be avoided. All disturbed areas will be revegetated once construction is complete. Seed mixes will be specified based on site characteristics. Where disturbance and excavation cannot be avoided entirely, impacts will be minimized using best management practices (BMPs). Sediment and erosion control plans will be developed that specify the types of BMPs necessary. Depending on the site, BMPs may include:: temporary seeding, permanent seeding, mulching, filter strips, fiber logs, erosion blankets, grassed waterways and sod stabilization. Topsoil will be segregated if cuts are made during construction and reapplied after final contours have been graded.

5.10.2.2 Route

The same discussion in Section 5.10.3.1 applies for mitigation associated with the route.

5.11 GEOLOGIC AND GROUNDWATER RESOURCES

5.11.1 Description of Resources

Geology

Most of the corridor is underlain by Quaternary-age glacial sediments deposited by glacial ice originating from the Keewatin Ice Sheet. Glacial till of the Coleharbor Group is the dominant type of surficial sediment. Bluemle (2006) describes the till as an unsorted, unbedded mixture of boulders, gravel, and sand in a matrix of silt and clay, yellowish-brown to olive-gray in color. A one-mile long section of cross-bedded sand, also part of the Coleharbor Group, exists along the corridor at the border between Dickey and McIntosh counties. Coleharbor Group thickness averages 100 feet along

the corridor. Holocene-age (recent) sediments of the Oahe Formation, in the form of river-deposited clay and sand, exist along a two-mile section of the corridor approximately one mile east of Crab Tree Lakes. No part of the corridor is absent of glacial and post-glacial sediments and therefore bedrock does not outcrop along the corridor.

Bedrock beneath the entire corridor is dark gray shale of the Pierre Formation, formed in offshore marine environments during the Cretaceous Period. The thickness of the Pierre Formation is approximately 700 feet. Underlying the Pierre Formation is limestone and dolomite of the Red River and Madison formations (Bluemle, 1979).

Groundwater

Groundwater resources within the corridor exist in both surficial (unconsolidated) and bedrock aquifers. No major surficial aquifers exist in the corridor, although sand and gravel aquifers are interspersed in the till which may provide up to 10 gallons per minute (gpm) to wells. These types of aquifers tend to be small, and long and narrow in shape, which restricts their capacity to yield water (Armstrong, 1980). Groundwater in the Pierre Formation bedrock is also generally limited in quantity. The Pierre Formation may yield up to 50 gallons per minute (gpm) to wells from well-developed fractures where the glacial till cover is thin, although yields up to 5 gpm are more typical (Armstrong, 1980). The nearest permitted groundwater extraction is approximately 3 miles south of the corridor, at the City of Forbes, according to a search of water permits on file with the North Dakota State Water Commission.

The depth to groundwater varies widely in the corridor, and ranges from near the ground surface adjacent to streams to more than 100 feet in topographically high areas underlain by thick till sequences.

5.11.2 Impacts

5.11.2.1 *Corridor*

Geology

Sand and gravel resources within the corridor were identified and eight gravel pits were identified on GIS-based topographic maps. A route within the corridor could make isolated gravel resource areas unavailable for future development.

Groundwater

Impacts to groundwater resources will be related to dewatering activities during construction. Structure foundations might encounter shallow groundwater in surficial aquifers, but would not affect the quantity or quality of groundwater available.

5.11.2.2 *Route*

Geology

As noted in Section 5.2, sand and gravel resource areas are present in the corridor. The route is adjacent to one gravel pit identified in Township 130N, Range 66W, and Section 34 on aerial photographs and by the landowner. Montana-Dakota discussed this route with the landowner who stated that the area crossed by the route has been mined and any future gravel mining work will take place east of the existing gravel pit and route.

It is possible that other undeveloped gravel resource areas are present in the area given the nature of the surficial geology. No active gravel or sand pits will be impacted by the route. Impacts would be limited to the displacement of surficial sediments, bedrock, and groundwater during construction of structure foundations. The borings for structure foundations would be drilled into the ground, and may extend 9 to 12 feet below ground surface depending on soil conditions and structure type. Boring diameter is expected to be 3 to 4 feet. Given these values, the maximum volume of displaced soil would be about 5.6 cu yd at a structure location.

Groundwater

The same discussion in Section 5.11.2.1 applies for groundwater impacts associated with the route.

5.11.3 Mitigation

5.11.3.1 Corridor

Within the corridor, there is potential for sand and gravel resources to be made unavailable for future development. At this time, no impacts to resources areas are known, therefore no mitigation is proposed.

5.11.3.2 Route

Transmission line structure locations will not impact the use of groundwater because no permitted wells are known to exist in the corridor. Transmission line structures will be sited to avoid sand and gravel resources identified along the route. No impacts to the gravel pit in Township 130N, Range 66W, and Section 34, are expected since the landowner stated that the gravel operation will continue east; therefore no mitigation planned at the site. Where sand and gravel resources cannot be avoided, Montana-Dakota will coordinate with landowners regarding impacts and any necessary mitigation. Impacts to geologic and groundwater sources may be further mitigated by the following:

- Minimize the depth and diameter of structure foundations during the design phase.
- In the event that previously contaminated soils are discovered during construction, the contractor would stop work immediately, contact the appropriate state agency, and consult with the agency with respect to an acceptable plan of action.
- A stormwater pollution and prevention plan would be implemented, and include procedures for proper storage and disposal of all hazardous and non-hazardous wastes generated during the construction process.
- Use controlled staging areas for refueling and hazardous material loading/unloading operations, and provide adequate spill cleanup materials and equipment. In the event that a spill did occur and cause damage to soil productivity, Montana-Dakota could restore the productivity of the ROW. Any spill impacts would have to be mitigated in compliance with applicable federal, state, tribal, and local cleanup standards.

5.12 SURFACE WATER AND FLOODPLAIN RESOURCES

5.12.1 Description of Resources

Surface water and floodplain resources for the Project were identified by reviewing U.S. Geological Survey topographic maps, Flood Insurance Rate Maps (FIRM) produced by the Federal Emergency Management Agency (FEMA), current Farm Service Agency (FSA) aerial photography, USFWS

National Wetlands Inventory (NWI) data and through HDR conducting a wetland delineation of the route. The major surface waters located within the site include wetlands, (discussed in detail in Section 5.12.2), lakes, a perennial stream and several intermittent streams. These water resources are shown in Figures 9a, 9b, and 9c.

The corridor lies within the Elm River sub-basin of the James River basin, which is part of the Missouri River watershed. The Elm River flows in a southerly direction across the east side of the corridor; the river has been impounded and forms Pheasant Lake at this crossing. Intermittent streams and drainages are generally restricted to the east half of the Project. Most of these drainages originate in the middle of the Project, near the edge of the Missouri Coteau, and then flow east and south towards the Elm River (USGS, 2006). Surface waters in the west half of the Project are primarily a patchwork of isolated “prairie pothole” wetlands and shallow lakes.

Floodplains

FEMA floodplain maps have not been produced within the corridor (FEMA, 2010). It is likely, however, there are floodplains associated with watercourses within the Project, including the Elm River.

5.12.2 Impacts

5.12.2.1 *Corridor*

Rivers, Streams, and Lakes

No permanent impact to surface waters or floodplain resources within the corridor are anticipated. The transmission line and substation will be built on uplands, this will avoid intermittent streams and wetlands located in the lower positions in the landscape. The transmission line construction access road will be built to avoid temporary impacts to surface waters. Construction of the transmission line will cause some limited land disturbance along the corridor. These disturbances will typically occur outside of the bed of surface waters and the structures utilized for both the substation and transmission lines will not be prone to flood damages, and will not contribute to any possible flooding within the corridor. The transmission line structures will be placed to avoid surface waters. When access to structures require crossing wetlands, construction methods to minimize any disturbance will be used.

Floodplains

No impacts to floodplains are anticipated as floodplains will be spanned by the transmission line where ever feasible.

5.12.2.2 *Route*

Rivers, Streams, and Lakes

According to USGS mapping, the route crosses nine intermittent drainages and one lake. Streams and lakes will not be directly impacted by the route as all watercourses will be spanned by the transmission line. This includes an approximately 800-foot-wide span of Pheasant Lake, which will be crossed at the existing 41.6 kV transmission line crossing. Potential impacts to wetlands are addressed in Section 5.13.

Floodplains

No impacts to floodplains are anticipated as floodplains will be spanned by the transmission line where ever feasible.

5.12.3 Mitigation

5.12.3.1 Corridor

Rivers, Streams, and Lakes

There are no anticipated impacts within the corridor which would require mitigation. The corridor will avoid impacts to waters of the United States by allowing for pole placement in uplands that will span waters of the United States.

Construction access roads, if adjacent to intermittent streams and drainageways, can be designed in a manner to facilitate unrestricted runoff from the upper portion of the watershed to the lower portion of the watershed, and to control runoff from disturbed areas to drainageways. An NPDES permit application and Storm Water Pollution Prevention Plan (SWPPP) will be prepared by Montana-Dakota and submitted to the NDHD, as required, prior to the initiation of transmission line construction.

Floodplains

No impacts are expected, thus no mitigation is required.

5.12.3.2 Route

Rivers, Streams, and Lakes

No impacts to intermittent streams and drainage ways are anticipated, therefore, no mitigation is necessary. Mitigation for surface water impacts will meet or exceed regulatory requirements. Potential impacts to wetlands are addressed in Section 5.13.

Floodplains

No impacts to floodplains are anticipated, therefore no mitigation is proposed.

5.13 WETLANDS

5.13.1 Description of Resources

Wetlands are frequent throughout the Project, and are most dense west of the alignment, within the Missouri Coteau. Wetlands in the corridor represent typical glacial prairie pothole wetlands. The ecology of these wetlands is dictated by seasonal wet-dry cycles. Snowmelt and spring rains serve as the primary water sources, resulting in many seasonal wetlands which hold surface water early in the growing season and then dry out as the summer progresses. While some of these wetlands can be quite large (greater than 100 acres), the majority of pothole wetlands are less than 10 acres.

Wetlands within the corridor and along the route have been provisionally identified by reviewing NWI data and recent aerial photography (Figure 16). A wetland delineation within the route was completed on November 2-10, 2010, to field verify off-site data. Wetland delineations were completed according to USACE guidance; and, where USFWS land interests were present, delineations were also reviewed by USFWS staff.

Over 90 percent of the wetlands within the corridor are palustrine emergent, but there are also palustrine aquatic bed, lacustrine, and forested wetlands. No riverine wetlands were identified along

the corridor. Some wetlands in farmed areas may have been drained for agriculture purposes. The NWI wetland types and their acreages within the corridor are summarized in Table 24 and crossing locations are depicted in Figure 16.

**Table 24.
NWI Wetland Types and Acreages in Corridor**

| Cowardin Classification | Count | Acres ¹ |
|-----------------------------------|--------------|--------------------|
| Lagustrine, Limnetic and Littoral | 14 | 1,282.64 |
| Palustrine Aquatic Bed, Flooded | 182 | 484.39 |
| Palustrine Emergent, Flooded | 2,730 | 3,758.67 |
| Palustrine Forested, Flooded | 3 | 1.24 |
| Total | 2,929 | 6834.65 |

The NWI wetlands along the route are more than 90 percent palustrine emergent and aquatic bed wetlands as summarized in Table 25. Additional wetland areas identified along the route include limnetic/littoral and forested wetlands.

**Table 25.
NWI Wetland Types and Acreages Within the Route**

| Cowardin Classification | Count | Acres ¹ |
|---|-----------|--------------------|
| Lagustrine, Limnetic and Littoral (L2ABG) | 3 | 2.80 |
| Palustrine Emergent Temporarily Flooded (PEMA) | 23 | 6.58 |
| Palustrine Emergent Seasonally Flooded (PEMC) | 30 | 6.66 |
| Palustrine Aquatic Bed/Emergent Semi permanently Flooded (PEMF) | 14 | 12.02 |
| Palustrine Forested Seasonally Flooded (PFOC) | 1 | 0.26 |
| Total | 71 | 28.32 |

¹ Wetland acreage calculated using USFWS NWI data.

5.13.2 Impacts

5.13.2.1 *Corridor*

In general, the transmission line can be routed to avoid, or structures can be designed to span, and thus avoid, wetland areas. Wetlands more than 1,000 feet in length would require that transmission structures be placed in wetlands. Each structure would result in 3.5 square feet of permanent impact.

During construction there is the possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading and construction traffic. Reasonable efforts will be employed to limit any sediment movement within the Study Area. Following completion of the Project it is anticipated that there will be no additional impacts on surface water quality.

5.13.2.2 *Route*

The route avoids many of the wetlands identified in the corridor, but the ROW overlaps 71 NWI wetlands totaling 28.3 acres. A review of the route indicates there are no wetlands along the route

which cannot be avoided by the route or spanned using the proposed transmission line structures. Montana-Dakota intends to span all wetlands to the extent practical. Wetlands over 1,000 feet in length, which is the maximum span of the proposed transmission line design, may require that transmission structures be placed in wetlands. Based on the wetland delineation conducted on the route in November, 2010, no wetlands occur within the route that will require a greater than 1,000 foot span.

The Interconnect Substation will require filling portions of two isolated, non-jurisdictional wetlands, totaling about 0.75 acres of impact.

5.13.3 Mitigation

5.13.3.1 Corridor

Wetlands will be avoided to the extent practicable during the construction phase of the Project. If USACE jurisdictional wetland impacts are unavoidable, then a Section 404 and 401 permit application will be submitted to the USACE and state of North Dakota, respectively. Permanent impacts to wetlands and waters will be mitigated according to regulatory requirements.

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

5.13.3.2 Route

Impacts to jurisdictional wetlands will be mitigated according to USACE Section 404 requirements.

Montana-Dakota will also use BMPs during construction and operation of the transmission line to protect topsoil and minimize soil erosion into adjacent wetland resources

5.14 VEGETATION

5.14.1 Description of Resources

Within the corridor, the predominant vegetation categories are divided among cropland (29 percent), planted herbaceous perennials (23 percent), and prairie (28 percent). Most of the route is in pasture, with prairie (41 percent) and planted herbaceous perennials (24 percent) dominating the land cover in the route. The portion of the route in cropland is 15 percent, or approximately half of the proportion of cropland in the corridor. Wetlands, woodlands, shrubland, and developed areas comprise the remainder of the acreage within the corridor and route. The total acreage of each land cover is listed in Table 26.

Table 26.
Vegetation Types

| Vegetation Type | Approximate Acreage | |
|--|---------------------|-------|
| | Study Corridor | Route |
| Cropland. Lands tilled and planted to annual herbaceous small grain and row crops. Common small grain crops include wheat, barley, and oats. Examples of row crops include corn, sunflowers, soybeans, sugar beets, and potatoes. The land cover category includes both non-irrigated and irrigated crops. These lands have a bare soil phase during the growing season that generally occurs in early spring when most crops are planted. | 17,986 | 69 |
| Planted herbaceous perennials. Lands planted to perennial herbaceous grasses, forbs, or grass-legume mixtures. Often the species planted are introduced species such as smooth brome, crested wheatgrass, alfalfa and sweet clover although some plantings are native grass species. Most lands are used to produce forage crops for harvest or for grazing by domestic livestock. This class includes lands enrolled in retired cropland conservation programs that are planted to grass and legume species. In addition to planted fields, smooth brome has invaded and established stands in many native grasslands and some of these are likely mapped as planted grasslands. Leafy spurge invasions in native grassland may also be mapped as this class. | 14,201 | 107 |
| Mesic Tall and Mixed Grass Prairie Landscape positions include swales, depressions, and footslopes with increased water availability from runoff from adjacent lands. The species composition of this map unit is heavily influenced by grazing history and moisture availability. On the most mesic sites with light grazing, big bluestem and other tall grasses can be abundant. As water availability decreases or herbivory increases, mid grasses such as western wheatgrass, green needlegrass, and smooth brome increase in importance. Under heavy continuous grazing Kentucky bluegrass and blue grama can dominate the sites. | <1 | NA |
| Mesic Tall Grass Nearly level lowlands, depressions and lower slopes in moderately rolling uplands than receive runoff from the adjacent landscape. Soils are deep, moderately well drained with variable texture and high available water capacity. Dominant grasses are big bluestem, Indiangrass, switchgrass and little bluestem. | 154 | <1 |
| Wet-Mesic Tall Grass Prairie. Low lying lands of depressions and drainage ways with a high water table and high water availability. Characteristic native grasses include Golden-Edged Prairie Cord Grass, bluejoint, slimstem reedgrass, wooly sedge, big bluestem and switchgrass. Reed canarygrass is a common non-native species in some stands. | 816 | 8 |
| Bluestem - Needlegrass-Wheatgrass transition prairie. A transition prairie between tall grass prairie to the east and mixed grass prairie to the west generally occurring on soils derived from glacial materials. Common species are little bluestem, porcupinegrass, green needle grass, big bluestem, switchgrass, western wheatgrass, slender wheatgrass, needle and thread grass, blue grama, Kentucky bluegrass, and smooth brome. Dominance by a single species typically occurs only over small areas with most stands less than 0.1 ha in size. The complex distribution of species over short distances is believed to be largely determined by variability in plant available moisture and nutrients. An outstanding feature of glacial till parent materials is their variability due to the diverse ways by which the debris was laid down, of differences in the chemical composition of the original materials and of fluctuation in the grinding action of the ice. Soils heterogeneity occurs over short distances with textures varying from sands, silts, sand, and clays. | 9,648 | 99 |

| Vegetation Type | Approximate Acreage | |
|---|---------------------|-------|
| | Study Corridor | Route |
| <p>Wheatgrass Prairie. This vegetation occurs on nearly level to rolling landscapes with deep, well drained, medium to fine textured soils. Dominant grass species include western wheatgrass, green needle grass, needle and thread grass, and blue grama. Saltgrass and brittle pricklypear are often common and diagnostic species of sites with saline-alkali soils. Wyoming big sagebrush and silver sagebrush can occur as scattered shrubs contributing little cover in some stands in the Missouri plateau physiographic region.</p> | 1,334 | 19 |
| <p>Needlegrass prairie. Dominant grasses are needle and thread grass, blue grama, and upland western wheatgrass and prairie sandreed are abundant locally. This vegetation occurs on nearly level to rolling landscapes with shallow to deep, moderately coarse textured soils, with moderate permeability and low to moderate available water capacity.</p> | 4,523 | NA |
| <p>Sand Prairie. Dominant grasses include prairie sandreed, sand bluestem, needle and thread grass, and blue grama. These occur on poorly to moderately well-developed, well or excessively drained coarse textured sand, loamy sand, or sandy loam soils. Topography ranges from nearly level to hilly and choppy wind-worked sand dunes. There is little runoff or evaporation because of the high permeability of the soil. Soil near the surface is consequently dry throughout much of the year, but moisture is present further down, favoring deep-rooting species.</p> | 724 | 3 |
| <p>Upland Deciduous Shrubland. Upland areas dominated by shrubs typically occur on sites where available soil moisture is greater than sites with prairie land cover types and less than sites with woodland land cover types. Sites include well-drained depressions and riparian areas, north and east facing slopes, and woodland edges. Stands are typically small and vary greatly in shrub density and species composition. The following species are dominants in different stands: western snowberry occupies upland depressions, mesic swales, and flood plains; silver buffaloberry, chokecherry, Juneberry, fireberry hawthorn, silverberry, and American plum often occur as small, dense thickets in mesic swales and aspects, and the outer edges of floodplains and woodlands; smooth sumac occurs on the edges of Bur Oak woodlands in eastern North Dakota; skunkbush sumac occupies ridges, hills, and slopes associated with scoria outcrops in south western North Dakota; Eastern poison ivy often obtains greatest abundance on sandy soils.</p> | 3,426 | 32 |
| <p>Floodplain Woodland. Woodlands occurring on the floodplains of the Red River and its tributaries, the Sheyene River, James River, Souris River, Mouse River, Missouri River and its tributaries, and Little Missouri River. Dominant tree species include green ash, American elm, and eastern cottonwood. Other associated tree species include American basswood, bur oak, quaking aspen, box elder, common hackberry, and Rocky Mountain juniper. The variability and diversity of floodplain forests decreases from east to west. Structure and composition of the forest overstory are strongly related to stand age and horizontal and vertical position on the floodplain.</p> | 71 | NA |
| <p>Deciduous woodland. Woodlands dominated by mixtures of deciduous species including the native tree species green ash, bur oak, Populus tremuloides, American elm, and eastern cottonwood and a wide variety of introduced deciduous and conifer tree species planted in shelterbelts, windbreaks and tree rows.</p> | 288 | <1 |
| <p>Green Ash Woodland. Green ash - American elm woodlands are the most common type of woodland in North Dakota. Stands occur on the upland edge of floodplain woodlands, in the bottom and sides of draws and ravines, and mesic, typically north and north east facing, slopes. Box elder is a common tree species in these woodlands</p> | 10 | NA |

| Vegetation Type | Approximate Acreage | |
|--|---------------------|-------|
| | Study Corridor | Route |
| Bur Oak Woodland. Woodlands dominated by bur oak generally occur in the bottom and sides of draws and ravines, and well drained upland areas on a wide range of slope angles and aspects. Quaking aspen and green ash are associated tree species in some stands. Associated shrub species include beaked hazelnut, chokecherry, Juneberry, and western snowberry. Pennsylvania sedge is a common herbaceous understory species in the more mesic stands. | 14 | NA |
| Lacustrine wetlands. Wetlands and deepwater habitats with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel, (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage. | 1,289 | 4 |
| Palustrine temporary wetland. Wetlands dominated by persistent emergents or aquatic beds where surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface. Plants that grow both in uplands and wetlands may be characteristic of this water regime. | 1,123 | 7 |
| Palustrine seasonal wetland. Wetlands dominated by persistent emergents or aquatic beds where surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface. | 1,464 | 16 |
| Palustrine semipermanent wetland. Wetlands dominated by persistent emergents or aquatic beds where surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface. | 2,574 | 14 |
| Water. Surface water identified from analysis of Landsat Thematic Mapper imagery that was not identified as wetlands in the U.S. Fish and Wildlife Service National Wetland Inventory Data. | 597 | 3 |
| Developed - Low intensity residential. Lands consisting of a mixture of constructed materials and vegetation. Constructed materials account for 30-80 percent of the land cover. Vegetation may account for 20-70 percent of the cover. These areas most commonly include single-family housing units. Population densities are lower than in high intensity residential areas. | 10 | NA |
| Developed - Commercial/industrial/transportation. Infrastructure such as roads, railroads, airports and other highly developed areas not classified as high intensity residential. | 261 | 2 |

The North Dakota Department of Agriculture (NDDA) lists eleven state-listed noxious weeds. Five noxious weeds (absinth wormwood, Canada thistle, field bindweed, leafy spurge, and musk thistle) have been reported in Dickey and McIntosh Counties. Spotted knapweed has also been recorded in McIntosh County (NDDA, 2007). During November 2 to 10, 2010, Montana-Dakota conducted a pre-construction survey for wetlands, native prairie, trees and shrubs.

5.14.2 Impacts

5.14.2.1 Corridor

Permanent impacts to vegetation will occur at each structure location. Temporary impacts will occur around each structure and where access is needed to construct each structure.

5.14.2.2 *Route*

It is anticipated that temporary impacts will occur during construction and will include ground disturbance by construction equipment in the proposed substation location, laydown areas, around each structure and along the ROW as the line is constructed. These impacts are anticipated to total approximately 160 acres.

Temporarily disturbed areas that are not cultivated will be reseeded specified based on site characteristics to blend in with existing vegetation.

Approximately 11,444 square feet (0.26 acres) of permanent impacts are anticipated due to structure placement, with an additional 5.5 acres of impact for the substation. Less than 1.0 acres of woodland will be crossed by the proposed ROW resulting in 0.8 acres of impacts to woodlands and windbreaks.

5.14.3 **Mitigation**

5.14.3.1 *Corridor*

Montana-Dakota will work closely with landowners to minimize impacts to vegetation associated with structure placement along the route. Final structure locations will be designed to avoid impacts to wetlands, native vegetation, trees and shrubs, where feasible. Impacts to native vegetation will be minimized by spanning habitats of higher quality. Where spanning is not feasible, impacts to native vegetation will be mitigated by re-establishing similar native species once construction is complete. Areas of non-native vegetation will be re-vegetated using native species, if approved by the landowner, to the extent practical.

Where impacts to individual trees and shrubs cannot be avoided, these resources will be mitigated at a ratio of 2:1, per Commission rules. If feasible, the replacement areas will be located in the vicinity of the impacts. Where functional woodlands will be removed (such as shelter belts), mitigation will be implemented to replace the intended use of the impacted woodland.

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

5.14.3.2 *Route*

The same discussion in Section 5.14.3.1 applies for mitigation associated with the route.

5.15 **WILDLIFE**

5.15.1 **Description of Resources**

Wildlife in the corridor consists of birds, mammals, fish, reptiles, amphibians and insects, both resident and migratory, which utilize the corridor habitat for forage, migratory stopover, breeding and/or shelter. Species present in the corridor are associated with agricultural fields, pasture grasslands, and wetland areas. Characteristic wildlife found in the Study Area include ducks, geese, hawks, sharp tailed grouse, ring necked pheasant, raccoon, striped skunk, white-tailed deer, coyote, red fox, badger, and jackrabbit (Hagen et al., 2005).

The prairie pothole wetlands in the Dakotas are known for its abundant waterfowl resources. USFWS's Habitat and Population Evaluation Team (HAPET) has developed maps that predict duck pair density within North Dakota for mallard, blue-winged teal, gadwall, pintail, and shoveler.

According to the HAPET and the USFWS Kulm Wetland Management District, duck pair nesting density within the corridor is predicted to be relatively high, with typical nesting densities in the western half of the Project (in the Missouri Coteau region) being modeled in the range of 60 to greater than 100 duck pairs/square mile. Comparison to the overall HAPET nesting model indicates that these predicted nesting densities are typical for the Missouri Coteau region of North Dakota. (In North Dakota, the Missouri Coteau forms a 20 to 40 mile wide zone that spans from south-central North Dakota northwest to Canada). Predicted nesting densities in the east half of the Project, which is outside of the Coteau, range from 10 to 60 duck pairs/square mile (USFWS, 2010).

5.15.2 Impacts

5.15.2.1 Corridor

Impacts to wildlife species could occur as a result of the Project. Potential impacts include:

- Direct habitat modification and reduction associated with construction and placement of the transmission line and substation;
- Removal or disturbance of migratory bird nests (excluding bald and golden eagle nests) during the breeding season during construction;
- Introduction of sediment and fugitive dust through erosion and runoff during construction;
- Potential for displacement of ground nesting birds during construction;
- Exposure to contaminants from fuels and chemicals that are used during construction and maintenance; and
- Injury or mortality associated with collisions with construction equipment and/or overhead transmission lines. Collisions are discussed in more detail below.

Avian collisions are a possibility after the completion of the transmission line. Waterfowl may be susceptible to transmission line collision, especially if the line is placed between agricultural fields that serve as feeding areas and wetlands or open water, which serve as resting areas. The transmission line shield wire is the part of the structure that is most likely to cause an avian collision.

Additionally, large birds, such as raptors, could potentially be impacted by the transmission line 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 Route

The same discussion in Section 5.15.2.1 applies for impacts associated with the route.

5.15.3 Mitigation

5.15.3.1 Corridor

In continuing discussions with the USFWS, Montana-Dakota has developed a Project-specific conservation measures and a line marking plan. The following measures will be used, to the extent practicable, to help avoid potential impacts to wildlife along the route during generation outlet design and operation:

- Montana-Dakota has been working with the USFWS on a line marking plan to reduce the potential for avian collisions with the transmission line. The plan includes marking both shield wires of the transmission line in an alternating pattern with a spiral-type visual marking device. The USFWS is currently reviewing this plan.
- Designing and siting the transmission line and structures according to Avian Power Line Interaction Committee's (APLIC) 2006 Suggested Practices for Avian Protection on Power Lines and Mitigating Bird Collisions with Power Lines: The State of the Art in 2006.
- 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.
- Design the transmission structures to reduce the number of wire planes – the proposed Project will have two planes of wires – One (top) plane for the shield wires and a second (lower) plane for the conductors on the new section. And three planes of wires – One (top) for the shield wires and two lower planes for the conductors on the 41.6kV rebuilt section.
- Provided wetland delineation maps to the USFWS Kulm Wetland Management District and will work with USFWS to remove the existing 41.6 kV transmission line structures from wetlands under USFWS easements and site the new transmission line structures outside of wetland boundaries.
- Preconstruction surveys for wetlands and woodlands in the vicinity of the transmission line and associated facilities has been completed as part of transmission line routing in order to minimize and avoid impacts to wildlife habitat.
- To discourage active nesting within parts of the ROW expected to be temporarily or permanently disturbed by the proposed Project, tree removal, ground clearing, or mowing would occur in early spring to discourage tree and ground nesting. Typical, nesting season would be from April to August.
- If the ROW is not cleared of vegetation in early spring before the breeding season, a qualified biologist would survey the construction ROW for active ground nests and provide a construction buffer. There are no expected impacts to jurisdictional wetlands, however, if determined otherwise, any unavoidable loss of jurisdictional wetland habitat will be replaced with functionally equivalent wetlands, as required by applicable permits.
- Appropriate erosion control measures will be installed and maintained to reduce sediment transport to adjacent wetlands, streams, and river channels.
- If trees and shrubs are impacted, per the Commission's requirements, replacement of trees and shrubs will occur at a 2:1 ratio, subject to landowner approval.
- Avoid refueling vehicles within 100 feet of a waterway's edge to minimize the potential for hazardous-materials spills reaching the waterway.
- Prompt restoration and re-vegetation of disturbed areas.
- Use native plant seed stock for re-vegetation.

Montana-Dakota is committed to minimizing wildlife impacts within the Project site. Montana-Dakota continues to consult with the USFWS and NDGF regarding appropriate mitigation measures for wildlife impacts.

5.15.3.2 *Route*

The same discussion in Section 5.15.3.1 applies for mitigation associated with the route.

5.16 RARE AND UNIQUE NATURAL RESOURCES

5.16.1 Description of Resources

The USFWS, NDGF, and North Dakota Parks and Recreation Department (NDPR) were contacted to review the corridor for threatened and endangered species and unique habitats. The Endangered Species Act (ESA) of 1973, as amended, provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. USFWS reports that there are three federally-listed animal species and designated habitat that are found in Dickey and McIntosh Counties. This includes the whooping crane, gray wolf, piping plover, and designated habitat for piping plover. Table 27 provides a summary of these species, and indicates whether suitable habitat may be present within the corridor and route. The bald eagle has been recently delisted from the ESA. However, the bald eagle is also addressed in Table 28 as it is still protected by other federal laws including: the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

In response to a request for a project review, the USFWS noted that the proposed corridor lies within the migration corridor of the whooping crane. The Project is located on the eastern edge of the 95 percent sighting corridor. The USFWS also noted concern for the piping plover, which are known to use alkali lakes located to the west of the corridor.

The response received from the NDGF expressed concern over possible disturbance of native prairie and wetland areas during construction.

The state of North Dakota maintains a list of 100 species of conservation concern. Several of these species have been documented near the Project area as mentioned in the NDPR response. The NDPRD provided a response and information from the North Dakota Natural Heritage Inventory Database (NHID) which the NDPR maintains as the most complete source of data on North Dakota's rare, endangered, or otherwise significant plant and animal species, plant communities and other natural features. The NDPR provided written comment on June 11, 2010, noting the potential presence of the following species of special concern or other significant ecological communities are known to occur within a one-mile radius of the Study Area:

- First order stream
- Bur Oak Upland Woodland
- Needle-and-thread Mixed Grass Prairie
- Permanent open water
- Swamp Sparrow (*Melospiza georgiana*)
- Red-necked Grebe (*Podiceps grisegena*)

Table 27.
Federally Listed Species and Critical Habitat in Dickey and McIntosh Counties

| Species | Type | County Occurrences | Preferred Habitat | Habitat Present in Corridor | Habitat Present in Route |
|--|--------|---------------------|--|---|---|
| Endangered | | | | | |
| Whooping crane (Grus americana) | Bird | Dickey and McIntosh | Migrates through North Dakota during spring and fall. The Project falls outside of the central migration corridor, but is on the eastern edge of the 95% corridor. Prefers to roost in wetlands and stock dams with good visibility (i.e., no or minimal woody debris within wetland or on wetland fringe) with adjacent cropland for food source. | Yes, shallow wetlands | Yes, shallow wetlands |
| Gray wolf (Canis lupus) | Mammal | Dickey and McIntosh | Occasional visitor in North Dakota. Most frequently observed in the Turtle Mountains area of northern North Dakota. | Possible short-term, but Project greater than 150 miles south from Turtle Mountains | Possible short-term, but Project greater than 150 miles south from Turtle Mountains |
| Threatened | | | | | |
| Piping plover (Charadrius melodus) | Bird | McIntosh | Nests on midstream sandbars of the Missouri and Yellowstone rivers and along shorelines of saline wetlands. | No known nesting habitat | No nesting habitat |
| Designated Critical Habitat | | | | | |
| Piping plover (Charadrius melodus) | Bird | McIntosh | Alkali Lakes and Wetlands – Critical Habitat includes: (1) shallow, seasonally to permanently flooded, mixosaline to hypersaline wetlands with sandy to gravelly, sparsely vegetated beaches, salt-encrusted mud flats, and/or gravelly salt flats; (2) springs and fens along edges of alkali lakes and wetlands; and (3) adjacent uplands 200 feet above the high water mark of the alkali lake or wetland | No | No |
| Delisted | | | | | |
| Bald eagle (Haliaeetus leucocephalus) | Bird | Dickey and McIntosh | Bald eagles generally nest near coastlines, rivers, large lakes or streams that support an adequate food supply. Roost sites are usually in mature trees where the eagles are somewhat sheltered from the wind and weather. | No nesting or roosting habitat | No nesting or roosting habitat |

5.16.2 Impacts

5.16.2.1 Corridor

Due to the linear nature of the Project, impacts to potential terrestrial species habitat will be limited to the area within the ROW due to vegetation clearing and structure locations. Long-term habitat impacts will occur at permanent structure locations and at substations. Existing, adjacent habitat will be left undisturbed.

Table 21 summarizes potential impacts to federally listed species and critical habitat.

Table 28.
Potential Impacts to Federally Listed Species and Critical Habitat

| Species | Type | Impact Anticipated within Corridor | Impact Anticipated within Route | Comment |
|---|--------|------------------------------------|---------------------------------|---|
| Endangered | | | | |
| Whooping crane (<i>Grus americana</i>) | Bird | Possible | Possible | Corridor and route crosses into the 95 percent sighting corridor and includes potential whooping crane stopover habitat. Possible risk of collision with transmission line. |
| Gray wolf (<i>Canis lupus</i>) | Mammal | No | No | Greater than 150 miles from Turtle Mountains, an area that is occasionally used by gray wolf |
| Threatened | | | | |
| Piping plover (<i>Charadrius melodus</i>) | Bird | Unlikely | Unlikely | No breeding habitat as there are no documented alkali lakes or alkali wetlands within corridor or route. Unlikely risk of collision with transmission line. |
| Designated Critical Habitat | | | | |
| Piping plover (<i>Charadrius melodus</i>) | Bird | No | No | No critical habitat within corridor or route. |
| Delisted | | | | |
| Bald eagle (<i>Haliaeetus leucocephalus</i>) | Bird | No | No | No eagle nests or known roosting habitat will be impacted; the transmission line will be design with consideration of APLIC guidelines |

5.16.2.2 Whooping Crane

This region of North Dakota has seen conversion of native prairie and wetlands into agricultural land use beginning with 19th-century settlement, negatively impacting the quality and quantity of migration stopover habitat for numerous migratory birds. Construction of utility lines and roads, and the increased human disturbance in the vicinity of the corridor could negatively affect whooping cranes and migration habitat.

During preliminary discussions, USFWS commented that a new transmission line in the Study Area has the potential to affect whooping cranes during their annual spring and fall migration through North Dakota (USFWS, pers. comm. 2010). Direct impacts could occur in the event of a whooping crane collision with the transmission line.

According to USFWS, collisions with power lines are the greatest known source of mortality for fledged whooping cranes. Shield wires are the wires most often struck by birds in flight (Stehn et al., 2007). Migrating cranes are most vulnerable to collisions with structures in the early morning or late evening when light levels are diminished, as they fly at low altitudes between roost and foraging sites, or when flying at low altitude when starting or ending a migration flight, especially when thermal currents are minimal.

Impacts could also occur in the event that the Project causes loss of available stopover habitat during whooping crane migration. Short-term impacts could occur in the event that a whooping crane is displaced from available stopover habitat during Project construction. Long-term impact could occur in the event that installation of a new transmission line causes displacement of local stopover habitat.

5.16.2.3 *Gray Wolf*

While it is possible that the gray wolf may pass through the corridor, USFWS considers gray wolf an —occasional visitor to North Dakota,” being most frequently observed in the Turtle Mountains area (USFWS, pers. comm. 2010). The Turtle Mountains are located more than 150 miles north of the corridor. It is unlikely that gray wolves would be present during Project construction and operation, with the possible exception of an occasional transient animal. If gray wolves entered the Project during construction they could be struck by vehicles, but the chance of collisions is considered negligible, particularly since posted speed limits would be relatively low.

5.16.2.4 *Piping Plover*

On November 1 to 10, 2010, the corridor was reviewed for suitable breeding habitat for piping plover. No suitable breeding habitat was identified within the corridor, thus no impacts to breeding piping plovers is anticipated.

A direct impact to piping plover could occur in the event of a collision with the transmission line. In preliminary discussions, USFWS has commented that piping plovers are more susceptible to collisions with overhead lines than some other birds, due to their low wing aspect and high wing loading. Mortality of piping plover due to transmission line collisions has been documented in North Dakota (USFWS, pers. comm. 2010). A collision with a transmission line is unlikely, however, as the corridor is located outside of any known piping plover breeding habitat.

5.16.2.5 *Piping Plover Critical Habitat*

There is no designated critical habitat within the corridor, thus no impacts will occur. The closest designated critical habitat is about 4 miles southwest of the corridor, in McIntosh County.

5.16.2.6 *Route*

The same discussion in Section 5.16.2.2 applies for impacts associated with the route.

5.16.3 **Mitigation**

5.16.3.1 *Corridor*

In response to the USFWS request the following design considerations will be implemented:

- Designing and siting the transmission line and structures according to Avian Power Line Interaction Committee’s (APLIC) 2006 Suggested Practices for Avian Protection on Power

Lines and Mitigating Bird Collisions with Power Lines: The State of the Art in 2006 to minimize electrocution and collisions.

- Marking both shield wires of the transmission line with spiral-type visual markers in an alternating pattern on transmission lines within 1 mile of suitable whooping crane habitat in the whooping crane migration corridor.
- Montana-Dakota would provide the USFWS with a written confirmation that the shield wires were marked and the location of markers per the USFWS Region 6 Guidelines.
- Conducted preconstruction surveys for wetlands and avoiding direct impacts to wetlands.
- Incorporate the proposed Project into Montana-Dakota’s existing Avian Protection Plan.
- Avoidance of native prairie where ever possible and surveys by a qualified biologist of any native prairie that is unavoidable.
- If the ROW is not cleared of vegetation in early spring before the breeding season, a qualified biologist would survey the construction ROW for active ground nests and provide a construction buffer.

5.16.3.2 Route

The same discussion in Section 5.16.3.1 applies for mitigation associated with the route, in addition to the design considerations and measures that will also be implemented:

- Avoiding direct impacts to wetlands, native prairie, or wooded draws or whenever feasible.
- Conducting ground clearing outside of the nesting season, during late-summer/early winter. If ground clearing is necessary during the nesting season, ground surveys for nesting birds would take place prior to construction.

5.17 SUMMARY OF ROUTE IMPACTS

Table 29 summarizes the resources that will be impacted as a result of the construction of the Project outlet and the appropriate mitigation.

**Table 29.
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. |

| Resource | Impact | Mitigation |
|-----------------------------|--|---|
| Land Use | A total of approximately 5.76 acres of land will be permanently impacted by Project construction (0.26 acres for the transmission line and 5.5 acres for the Interconnection Substation). Approximately 160 acres of temporary impacts are anticipated. The existing land use is primarily agriculture and will remain in agriculture use since the land under or adjacent to the line can still be used by the landowner. | Montana-Dakota 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 the Montana-Dakota 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. | Montana-Dakota 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 | There are eight locations where the route will be closer than 500 feet to an occupied house. | Montana-Dakota will work with the eight residences where the route will be closer than 500 feet to get a signed waiver from the people owning the residences, or alter the route to avoid the residences by at least 500 feet. All other occupied houses and structures will be farther than 500 feet from the transmission line and substation. At this distance, noise from the transmission line is predicted to be below background levels. |
| Visual | The transmission line and Interconnect Substation will be evident to individuals traveling on adjacent roads as well as residences and landowners that live in close proximity to the transmission line and substations. No residents live within 1 mile of the substation location, therefore impacts are expected to be minimal. | The route minimizes the number of residences impacted by the line, collocates the line with existing transmission lines, including 17 miles of an existing 41.6 kV transmission line that will be double circuited on the same structures as the proposed line. |
| Cultural and Archaeological | No impacts to previously identified cultural resources are anticipated. | Montana-Dakota has completed a Class I Cultural Resources Inventory for the corridor and route. Montana-Dakota will complete the Class III inventory along the route. |
| Recreational Resources | Impacts to recreational resources are primarily visual, and limited to individuals using the resources | The route will follow an existing transmission lines, and double circuit Montana-Dakota's existing 41.6 kV transmission line for 17 miles. Visual impacts will be minimized by placement of structures away from these features to the extent possible. Access to PLOTS and WPAs will be maintained. |

| Resource | Impact | Mitigation |
|--|--|--|
| Land Based Economies | A total of approximately 5.76 acres of land will be permanently impacted by Project construction (0.26 acres for the transmission line and 5.5 acres for the Interconnection Substation). Approximately 160 acres of temporary impacts are anticipated. | Montana-Dakota will work with landowners to minimize impacts to their land. Prime farmland will be avoided to the extent practicable. Montana-Dakota will replace impacted trees and shrubs per Commission replacement criteria. |
| Soils | A total of approximately 5.76 acres of land will be permanently impacted by the transmission line and Interconnection Substation construction (0.26 acres for the transmission line and 5.5 acres for the Interconnection Substation). Approximately 160 acres of temporary impacts are anticipated. | BMPs for erosion and sediment control will be utilized to minimize wind and water erosion along the route. Only land needed for the transmission line structures and Interconnection Substation will be permanently impacted. Temporarily disturbed areas that are not cultivated will be revegetated. |
| Geologic and Groundwater Resources | No impacts to geologic and groundwater resources are anticipated. | No mitigation measures are necessary. Montana-Dakota will coordinate with landowners to avoid impacts to future sand and gravel mining areas, and use BMPs to minimize impacts to groundwater during construction. |
| Surface Water and Floodplain Resources | No impacts are anticipated to intermittent streams, drainageways or floodplain resources. | To minimize impacts during construction, an NPDES permit and SWPPP will be prepared and submitted to the North Dakota of Health. No structures will be placed within a regulatory floodway. |
| Wetlands | No impacts are anticipated. | Montana-Dakota will mitigate impacts according to USACE requirements. All additional wetlands will be avoided to the extent practicable. |
| Vegetation | A total of approximately 5.76 acres of land will be permanently impacted by the transmission line and Interconnection Substation construction (0.26 acres for the transmission line and 5.5 acres for the Interconnection Substation). Approximately 160 acres of temporary impacts are anticipated. | Montana-Dakota will work with the USFWS to minimize impacts. Montana-Dakota will avoid existing trees and shrubs as practicable, and will use BMPs during construction and operation to minimize impacts. Impacts to individual trees or shrubs will be replaced per Commission criteria at a ratio of 2:1. Temporarily disturbed areas will be reseeded per USFWS |
| Wildlife | Impacts to wildlife populations are expected to be minimal. Potential avian collisions may occur, but are anticipated to be relatively small. | A variety of mitigation 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. | Montana-Dakota will implement a variety of design considerations per USFWS request, as outlined in Section 5.16.3.1. |

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6.0 PUBLIC COORDINATION

Keeping the public informed about the Project's status is a key component to its success. Montana-Dakota pursued a public outreach effort that provided opportunities for landowners and other stakeholders early in the routing process. Montana-Dakota also engaged landowners, federal, and state agencies, and local government units. This section discusses outreach efforts in general.

6.1 PUBLIC PARTICIPATION

Montana-Dakota engaged landowners early in the route development process through a variety of tools including open houses, a website, and a toll-free Project information line. Montana-Dakota also directly communicated with landowners as part of ROW development.

Montana-Dakota voluntarily hosted open house meetings on June 16, 2010, in Ellendale, and June 17, 2010, in Ashley. Montana-Dakota used the following type of mail and media outreach to notify landowners of public open house meetings:

- Direct mail notices to landowners with property within one mile of the Study Area. A total of 131 landowners received mail notification.
- Newspaper advertisements run in the Dickey County Leader, the Ashley Tribune, and the Aberdeen American News during the period of June 1 to June 16, 2010.

At the open house meeting, Montana-Dakota staff was present and utilized informational boards and aerial maps of the Project Study Area to communicate and collect Project information.

Montana-Dakota also used a Project-specific website and a Project-specific toll-free Project information line to reach interested members of the public. Montana-Dakota hosted a website at <http://www.mdu-mwfe.com>. A summary of the website information is as follows:

- Home Page—Project overview, timeline, announcements
- Get Involved Page—Electronic comment form, toll-free information hotline number
- Event Calendar Page—List of upcoming events
- Resources Page—Project area maps, open house meeting materials
- FAQ Page—Frequently asked questions about transmission line projects

Montana-Dakota established a toll-free information line (800) 225-7587. The toll-free Project information line provided an opportunity for the public to receive general Project information, to sign-up for the mailing list, and to leave a comment.

As part of the right-of-way acquisition process, Montana-Dakota communicated directly with landowners along the route on easement agreements for the proposed transmission line. Montana-Dakota also utilized a consultant to assist in obtaining easement agreements from landowners along the route.

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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 30.

Table 30.
Possible Permits and Approvals

| Agency | Type of Approval | Status* | Need |
|-----------------------------------|--|---------|--|
| Federal Approvals | | | |
| USACE | Section 404 Permit | 3 | Permit required for fill in jurisdictional waters of the US. No impacts to jurisdictional waters or wetlands are expected on this Project. If that changes, authorization for impacts will be sought under Nationwide Permit 12. |
| Environmental Protection Agency | Spill Prevention Control and Countermeasure (SPCC) Plan | 3 | 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. |
| Federal Aviation Administration | Acknowledgement of Receipt of Notice, FAA form 7460-1 and Receipt of Study Results | 2 | Notice of construction of line is required for one public airports. FAA will conduct study and report findings within 30-45 days of Application. |
| State of North Dakota | | | |
| Public Services Commission | Waiver of Procedures and Time Schedules | 1 | Included herein. |
| | Certificate of Corridor Compatibility | 1 | Included herein. |
| | Certificate of Public Convenience and Necessity | 2 | Certificate issued by the Commission indicating public need and convenience for the generation outlet from the Merricourt Wind Farm Substation to the Ellendale Junction Substation. |
| | Route Permit | 1 | Included herein. |
| North Dakota Department of Health | 401 Water Quality Certification | 3 | Required for fill in jurisdictional waters of US. No impacts to jurisdictional waters or wetlands are expected on this Project. If that changes, authorization for impacts will be sought under Nationwide Permit 12. |
| | NPDES Permit: General Construction Storm Water Discharges | 2 | Required for disturbance of over 1 acre of land. Must apply for an NPDES permit and prepare a SWPPP. |

| Agency | Type of Approval | Status* | Need |
|---|---|---------|---|
| North Dakota Division of Emergency Management | Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II report | 2 | Required for owner/operators of facilities containing hazardous materials. A copy of the report must be filed annually by March 1 st . |
| SHPO | Permit to Investigate Effects on Cultural Resources | 1 | Compliance with NDCC 55-03 to assess the potential Project effects to cultural resources. |
| | Section 106 Compliance Approval | 3 | Compliance with Section 106 of the National Historic Preservation Act (NHPA) is required if a project is considered a federal undertaking (i.e. federal funding, USACE.) Need for this compliance is not anticipated at this time due to the lack of a federal undertaking. |
| North Dakota Highway Patrol | Overheight/Overweight Permit | 2 | Permit required for hauling construction equipment and materials on state highways. |
| North Dakota Department of Transportation | Road Approach/Access Permit | 2 | Permit required for construction of access roads from state highways. |
| | Utility Permit/Risk Management Documents | 2 | Permit required for utility crossings on state highway ROW. |
| Local Permits | | | |
| McIntosh and Henry Counties | Conditional Use Permit | 2 | Permit may be required for project construction. |
| | Building Permit | 2 | Permit may be required for substation construction and generation outlet line. |
| | Haul Road Agreement | 2 | Permit may be required for hauling construction equipment and materials on County Roads. |
| | Utility Permit | 2 | Permit may be required for utility crossings on County road ROW. |

* Status Explanation:

1 Applied – Decision Pending

2 Will Apply Once Certificate and Route Permit is Received

3 Final Layout will Determine Whether Permit/Approval is needed

8.0 FACTORS CONSIDERED

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

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

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

8.2 TECHNOLOGIES TO MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS

Montana-Dakota will utilize the most recent technologies that minimize impacts to the environment. The corridor study and consequently the route structures proposed for the Project are the most appropriate technologies to minimize adverse environmental effects. This is evident in the minimal environmental effects identified in this Application associated with the Project.

8.3 POTENTIAL FOR BENEFICIAL USES OF WASTE ENERGY

This factor is not applicable to the 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. Montana-Dakota 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

Montana-Dakota did not identify any other alternatives to the proposed corridor because the proposed corridor seemed to meet the requirements prescribed by the Commission. The corridor that was studied was selected to convey energy from the proposed Merricourt Wind Farm Facility to the Ellendale substation for integration into the power grid.

Alternatives to the route segments are being considered based on input Montana-Dakota received during the open houses and input from agency responses. Significant changes to the route have been rejected due to the exclusion and avoidance criteria within the route. The route presented in this Application minimizes and avoids impacts to the exclusion, avoidance, and selection criteria.

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

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

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

8.7 DIRECT AND INDIRECT ECONOMIC IMPACTS OF THE PROPOSED FACILITY

Direct economic impacts include the impacts associated with up to 1.4 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 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 Montana-Dakota 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 built for enXco's wind Project will contribute to improving the local economy in this area of North Dakota. The development of wind energy in this region will be important in diversifying and strengthening the economic base of central North Dakota. Additional revenues are expected from property and income taxes.

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

No conflicts are anticipated with existing state and local government and private entities' development plans. Montana-Dakota will obtain conditional use permits from local governmental units for the proposed Project facilities.

8.9 EFFECT OF ROUTE ON CULTURAL RESOURCES

Montana-Dakota has reviewed cultural resources information on file at the SHPO for the preliminary corridor and route and prepared the Class I Cultural Resources Inventory based on this data. Montana-Dakota will, as a part of the Class III Archaeological Resource Inventory, update and summarize SHPO data for the current corridor and route. A review of fourteen previous Class III survey reports and additional records at the SHPO identified 83 previously recorded archaeological resources and/or archaeological site leads within one and half miles of the proposed transmission line route (Appendix E) There are no previously identified cultural resources crossed by the route at this time.

Montana-Dakota is committed to minimize impacts to these SHPO identified resources and has engineered the transmission line, to the extent possible, to avoid these resources. If any additional resources are identified throughout the life of the Project, Montana-Dakota plans to avoid the newly found resources to the best extent possible. Montana-Dakota continues to consult with the SHPO in anticipation of the Class III Archaeological Inventory. Montana-Dakota believes many of the

resources in the area may be avoided due to the nature of transmission line construction, such as constructing the transmission line to avoid sensitive areas by moving proposed structure to span them. In the event that a resource cannot be avoided, Montana-Dakota would determine the nature of the impact and coordinate with the SHPO on whether or not the resource was eligible for listing in the NRHP. Mitigation for impacts to NRHP-eligible archaeological resources may include an effort to minimize Project impacts, additional documentation through data recovery, and/or other treatment options to be developed with SHPO on a case by case basis.

Because there is always the potential to uncover a resource during the construction process, Montana-Dakota will develop a discovery plan to be in place should previously unknown archaeological resources or human remains be inadvertently encountered during Project activity. The plan will outline the framework for handling such discoveries in an efficient and legally compliant manner. The discovery plan may include the following topics: construction contractor training, identification of resources in the field, contact information for Montana-Dakota-designated professionals to address a discovery situation, 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 (NDCC 23-06-27 and NDCC 40-02-03).

8.9.1 State Historical Society of North Dakota (SHPO)

On May 28, 2010, the SHPO recommended that a Class I Literature Review and a Class III Archaeological Resources Inventory be completed for areas that may be impacted by Project activity. Montana-Dakota has completed the Class I Literature Review. The Literature review revealed that fourteen cultural resources reports have been completed within the Study Area. In addition, review of these reports and additional records at the SHPO identified 83 previously recorded cultural resources sites and or site leads within the Project corridor (Appendix E).

Montana-Dakota is committed to minimizing impacts to these documented resources and will make all efforts to avoid these resources and any additional resources identified throughout the life of the Project. Montana-Dakota is in coordination with the SHPO in anticipation of completion of the Class III inventory. Montana-Dakota feels many of the resources in the area may be avoided due to the nature of transmission line construction such as constructing the transmission line to avoid sensitive areas by moving proposed structure locations and spanning those areas. In the event that an impact cannot be avoided, Montana-Dakota would determine the nature of the impact and coordinate with the SHPO on whether or not the resource was eligible for listing in the NRHP. Treatment for Project-related impacts on NRHP-eligible cultural resources may include an effort to minimize Project impacts on the resource and/or additional documentation through data recovery.

Because there is always the potential to uncover a resource during the construction process, Montana-Dakota will develop a discovery plan to be in place should previously unknown archaeological resources or human remains be inadvertently encountered during Project activity. The plan would outline the framework for handling such discoveries in an efficient and legally compliant manner. The discovery plan may include the following topics: construction contractor training, identification of resources in the field, contact information for Montana-Dakota-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 (NDCC 23-06-27 and NDCC 40-02-03).

8.10 EFFECT OF ROUTE ON BIOLOGICAL RESOURCES

Montana-Dakota has implemented measures to avoid and minimize effects to biological resources in the vicinity of the proposed site. The impact of the Project on wildlife is expected to be minimal. The proposed facilities will include measures to minimize impacts to avian species.

8.11 CONCERNS RAISED BY AGENCIES

Agencies were contacted to comment on the Project in a letter sent to each agency on May 26, 2010, except as noted below. A copy of the notification letter is provided in Appendix F and a summary of comments received in response are provided below. Where applicable, letters and other correspondence received from agencies are also provided in Appendix F.

8.11.1 North Dakota Game and Fish Department

NDGF reviewed the Project site for wildlife concerns. NDGF's primary concern is the possible disturbance of native prairie and wetland areas during construction. They asked that work in these areas be avoided to all extent possible, that disturbed areas be reclaimed to pre-Project conditions, and that unavoidable destruction or degradation of wetland acres should be mitigated in kind. To minimize possible avian impacts, NDGF also recommended that overhead lines be marked when placed over perennial streams or near large wetland complexes.

8.11.2 U.S. Fish and Wildlife Service

On June 24, 2010 USFWS responded with a letter addressing the following topics: migratory birds, threatened and endangered species, high value wildlife habitat, and USFWS property interests. On November 9, 2010, on-site review of the alignment was conducted by the Kulm Wetland Management District. A summary of these comments are included below.

Migratory Birds

USFWS commented that avian mortality can result from interactions with electric utility facilities (e.g., collisions and electrocutions). USFWS stated that Avian Protection Plans (APPs) can be tailored to by utilities to address possible avian issues early in the Project planning process. To minimize possible collisions or electrocutions, USFWS recommended that new or updated power lines be constructed in accordance with current APLIC guidelines. USFWS also recommended that construction take place outside of the breeding season, to the extent practicable.

Threatened and Endangered Species

There are three listed species that are found in the Study Area: piping plover, whooping crane, and gray wolf. USFWS offered specific comments regarding piping plovers and whooping cranes.

Piping plovers are known to use alkali lakes located to the west of the Study Area. USFWS mentioned that piping plovers are more susceptible to transmission line collisions than other birds and piping plovers have been documented being killed by transmission lines in North Dakota.

The Project is within the whooping crane migration corridor that includes 95 percent of all confirmed whooping crane sightings in North Dakota. USFWS stated that a new transmission line in the Study

Area has the potential to adversely affect whooping cranes during their annual spring and fall migration through North Dakota.

Possible conservation measures for whooping cranes and piping plovers include, but are not limited to: burying all new electrical transmission lines; if new transmission lines cannot be buried, mark all new overhead transmission lines within one mile of suitable whooping crane stopover habitat with visual marking devices.

High Value Wildlife Habitat

High value habitat in North Dakota includes wetlands, stream basins, native prairie, wooded draws, and riparian forests. USFWS recommended that construction through or adjacent to these areas be avoided, where possible, or measures be taken to minimize disturbance to these areas. Specific disturbance minimization measures are listed in the USFWS letter attached in Appendix F.

Property Interests

Within the Study Area, USFWS administers WPAs owned in fee title as well as wetland and grassland easements. USFWS has recommended that impacts to the areas be avoided as much as possible, which includes investigating potential alternatives to eliminated or reduce impacts. If impacts are unavoidable, USFWS asks that impacts be kept to a minimum.

November 9, 2010 On-Site Review

On November 9, 2010 the Refuge Manager of the USFWS Kulm Wetland Management District conducted a review of the proposed alignment at areas of USFWS property interests. USFWS did not identify any unavoidable issues during this review.

8.11.3 U.S. Army Corps of Engineers

The USACE responded on May 28, 2010, that permits should be requested if work will be done in navigable waters (under Section 10 of the Rivers and Harbors Act) or Waters of the United States (under Section 404 of the Clean Water Act). Utility lines are already authorized by Nationwide Permit (NWP) 12, Utility Line Activities provided that that applicable conditions are met.

8.11.4 North Dakota Geological Survey

The North Dakota Geological Survey did not provide any comments.

8.11.5 North Dakota Parks and Recreation Department

NDPR responded on June 11, 2010, that Coldwater Park, located to the southwest of the Project, is a LWCF site that is under protection of section 6(f) of the LWCF Act.

NDPR searched the North Dakota Natural Heritage biological conservation database for plant and animal species of concern and other significant ecological communities in the North Dakota. NDPR recommended the Project be accomplished with minimal impacts and that all efforts be made to ensure that critical habitats not be disturbed in the Study Area to help secure rare species conservation in North Dakota.

8.11.6 North Dakota Office of Attorney General

The North Dakota Attorney General did not respond.

8.11.7 North Dakota Department of Commerce

The North Dakota Department of Commerce did not respond.

8.11.8 North Dakota Department of Health

The NDHD responded on June 8, 2010. The NDHD believes that the environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. The NDHD provided comments and guidance on fugitive dust emissions, degradation of waterways, storm water management, and noise in their letter (Appendix F). Additionally, NDHD believes that the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

8.11.9 North Dakota Department of Transportation

On June 24, 2010, the NDDOT responded that the Project should have no adverse effect on NDDOT highways. However, any work that needs to be done on highway ROW would require the appropriate permits and risk management document from the NDDOT District Engineer.

8.11.10 North Dakota State Water Commission

On July 1, 2010, the North Dakota State Water Commission commented that it had not identified concerns associated with the Project that affect State Water Commission of State Engineer responsibilities. The full response is attached in Appendix F.

8.11.11 Natural Resources Conservation Service

On June 23, 2010 the NRCS responded that it has a responsibility with the Farmland Protection Policy Act in documenting the conversion of farmland (i.e., prime, statewide, and local importance) to non-agricultural used when federal funding is used.

The NRCS also recommended that wetland impacts be avoided. Impacts to wetlands on lands of USDA participants could result in the loss of USDA benefits. The USDA offered five guidelines that could be followed in order for impacts to wetlands to be considered minimal, thus allowing USDA participants to continue to receive USDA benefits. These guidelines are included in the NRCS response letter attached in Appendix F.

8.11.12 North Dakota State Land Department

On June 2, 2010, the NDSLDD submitted a list of School Trust lands in the Study Area and offered comments on the compatibility of each tract with the construction of an electric transmission line. These recommendations may be found in Appendix F.

The NDSLDD also commented that it favors a route that parallels or combines the proposed transmission line with the existing 41.6 kV (Montana-Dakota TL041-1 Wishek-Ellendale) transmission line as it will have the least amount of impact on the resources of the School Trust lands.

8.11.13 Aeronautics Commission

The North Dakota Aeronautics Commission did not respond.

8.11.14 North Dakota Department of Agriculture

The North Dakota Department of Agriculture did not respond.

8.11.15 North Dakota Department of Human Services

The North Dakota Department of Human Services did not respond.

8.11.16 North Dakota Department of Labor

The North Dakota Department of Labor did not respond.

8.11.17 Job Service North Dakota

On June 1, 2010, Job Service North Dakota responded that they have no comments regarding the proposed Project and have no applicable permits that are required.

8.11.18 North Dakota Department of Career and Technical Education

The North Dakota Department of Career and Technical Education did not respond.

8.11.19 North Dakota Governor

The North Dakota Governor did not respond.

8.11.20 North Dakota Indian Affairs Council

The North Dakota Indian Affairs Council did not respond.

8.11.21 North Dakota Office of Management and Budget

The North Dakota Office of Management and Budget did not respond.

8.11.22 North Dakota Soil Conservation Committee

The North Dakota Soil Conservation Committee did not respond.

8.11.23 Federal Aviation Administration

The FAA did not respond.

8.11.24 Federal Highway Administration

The FHA did not respond.

8.11.25 U.S. Geological Survey

The U.S. Geological Survey did not respond.

8.11.26 County Officials

The Dickey and McIntosh County commissioners and auditors did not respond. The City of Ellendale Mayor did not respond.

8.11.27 State Officials

The applicable state senator and representatives did not respond.

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9.0 QUALIFICATIONS OF CONTRIBUTORS TO SITING STUDY

| NAME PROJECT ROLE | EDUCATION AND PROFESSIONAL EXPERIENCE |
|---|---|
| MICHELLE BISSONNETTE Vice President, Senior Environmental Consultant | <p>Ms. Bissonnette supervises the Environmental and Resource Management Department and manages environmental assessment and permitting efforts as well as designs, manages, and conducts land reclamation and wetland restoration activities. She develops site-specific aesthetic assessments, designs visual improvement plans, and oversees revegetation plans. She is also responsible for developing computer-aided design graphics for presentations.</p> <p>As an environmental consultant, Ms. Bissonnette is responsible for researching compliance requirements for federal state and local permits. She works closely with regulatory agencies on utility and transportation related projects. She has worked on a variety of utility projects from power generation to transmission and distribution as well as wind, pipeline, and combustion turbine projects. She has also worked on a number of roadway, railroad and river corridor projects.</p> <p>B.S., Landscape Architecture, University of Minnesota, 1982 Foreign Studies/French Minor, University of Grenoble, France, 1977</p> |
| BRIAN HUNKER Environmental Project Manager | <p>Mr. Hunker is an Environmental Scientist with a diverse project background in environmental documentation and permitting. He has been involved in the preparation of Environmental Assessments, Environmental Impact Statements, and other NEPA-related and environmental permitting documents for local, state, and federal power and energy projects across the United States.</p> <p>Bachelor of Science, Environmental Sciences/Studies (Zoology and Biological Aspects of Conservation), University of Wisconsin-Madison, 1999</p> |
| KELLY GARVEY Assistant Project Manager | <p>Ms. Garvey currently is an Assistant 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.</p> <p>Associate of Applied Science, Environmental Studies, Arrowhead Comm Co Vermilion, 1981</p> |
| MIKE DERUYTER Environmental Scientist | <p>Mr. DeRuyter is a Project Manager, wetland scientist and soils specialist in HDR's Minneapolis office. His more than 16 years of industry experience has included work in wind energy permitting, comprehensive wetland-related services, expert witness testimony, environmental review documents, threatened and endangered species, and other special wildlife, plant, and soil studies.</p> <p>Bachelor of Science, Natural Resources/Environmental Studies (Soil Science Emphasis), University of Minnesota, 1995</p> |

| NAME PROJECT ROLE | EDUCATION AND PROFESSIONAL EXPERIENCE |
|---|---|
| <p>STEPHEN SABATKE Archeologist</p> | <p>Mr. Sabatke is an Archaeologist with a background in prehistoric Northern American Midwest Northern Boreal Forest and Northern Great Plains cultural resources. Because of his education and past experience he also has insight in Fur Trade, early settlement, log building, logging, mining, and rail road development in the Midwest. He has prepared numerous compliance and non compliance reports for local, state, and federal agencies and/or clients. He has managed consultants in the preparation of cultural resource reports, studies, and field work. He has lead numerous field investigations in the Midwest dealing with multiple cultural time periods and cultural affiliations.</p> <p>Master of Arts, Anthropology, focus-Great Lakes Archaeology, University of Minnesota-Minneapolis, 2006.</p> <p>Bachelor of Arts, Anthropology-focus North American Archaeology, University of Minnesota-Duluth, 2002</p> |
| <p>ANJALI MALHOTRA GIS Manager</p> | <p>Ms Malhotra is responsible for Geographic Information Systems (GIS) development in civil, environmental, and architectural areas. She works with ArcGIS, ArcView, and a variety of system support software. She provides development of GIS databases, spatial analysis, GPS data collection and analysis, and mapping services.</p> |
| <p>MIKE PARSONS</p> | <p>Mr. Parsons is a civil/ environmental professional engineer with over 13 years of experience finding creative solutions to address noise and vibration on projects throughout the United States. He has extensive experience performing noise and vibration analyses for projects involving surface transportation systems and transit, stationary and mobile sources including combustion turbines, wind farms, construction projects, mineral extraction, water delivery/distribution systems, wastewater treatment facilities, and other architectural, industrial, and infrastructure noise sources.</p> <p>B.S., Civil and Environmental Engineering, University of WI Madison, 1997</p> |
| <p>ADAM KESSLER</p> | <p>Mr. Kessler has over 11 years of experience as a geologist. His background includes managing investigations of contaminated sites, designing water wells, and groundwater modeling. He has managed field activities including pumping tests and slug tests; water, soil and soil gas sampling; and well installation and development. Mr. Kessler has also written water well construction specifications, analyzed pumping test data, and authored sampling and analysis work plans, quality assurance project plans, and operation and maintenance plans.</p> <p>B.S., Geological Sciences, University of Minnesota-Duluth, 1999.</p> |
| <p>TIM AHRENS Document Production Specialist</p> | <p>Mr. Ahrens has four years of editing and writing experience. After time spent working as a writer and copy editor for newspapers in the Midwest, he has been a part of HDR's document production team for just less than a year. Projects he has edited include the BIA Flathead Lake, Montana, Environmental Impact Statement and the PPM Dry Lake, Arizona, Environmental Assessment</p> <p>B.A., Communication and Journalism, University of Wisconsin-Eau Claire, 2004.</p> |

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- United States Geological Survey. 2006. Ecoregions of North and South Dakota. <http://www.npwrc.usgs.gov/resource/habitat/ndsdeco/nodak.htm>. Accessed January 20, 2011.

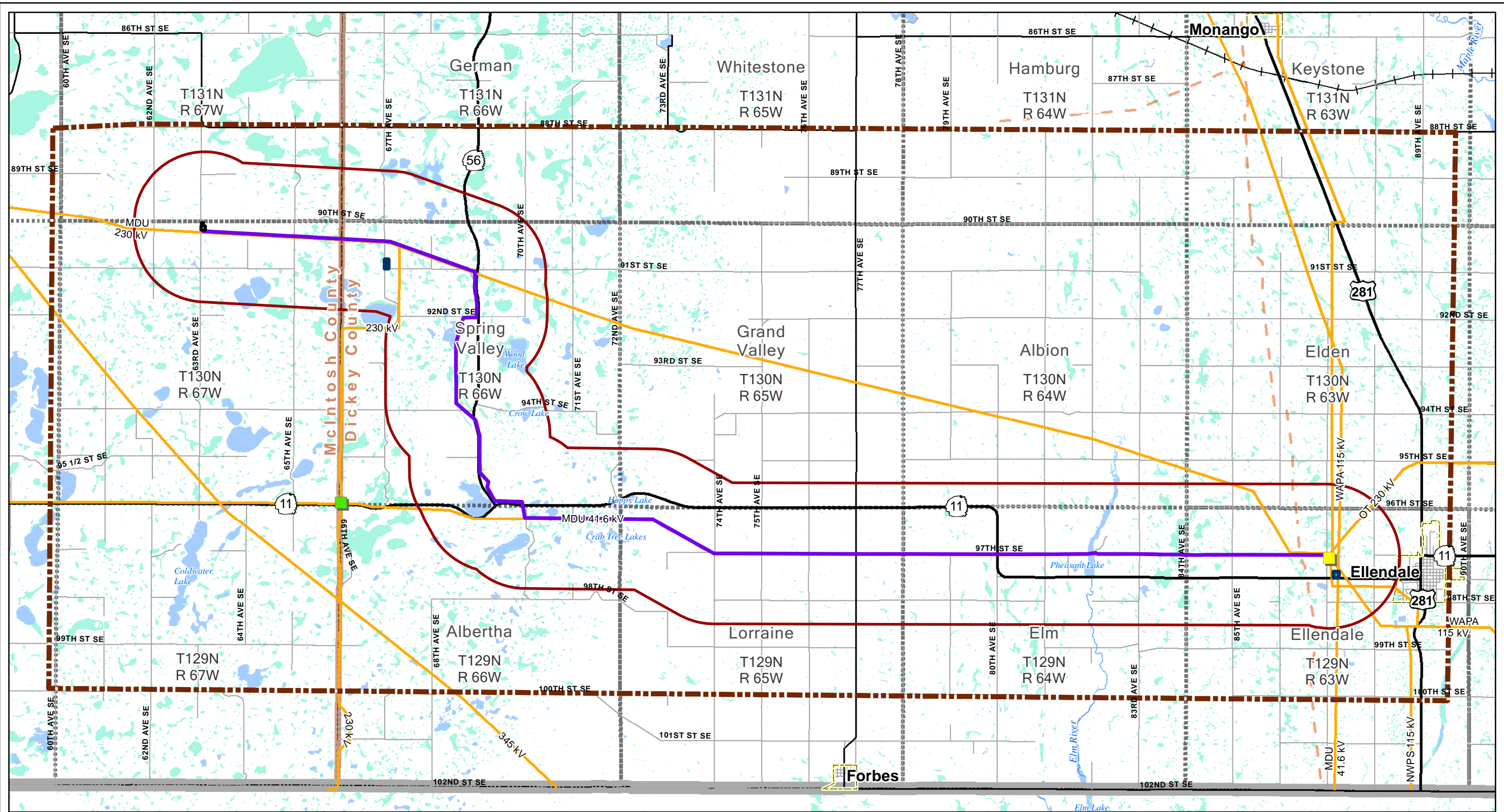
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11.0 DEFINITIONS

| Term | Definition |
|--|---|
| ADT | Average Daily Traffic |
| APLIC | Avian Powerline Interaction Committee |
| BMPs | Best Management Practices; prevents soil erosion and sedimentation |
| Capacity | The capability of a system, circuit, or device for storing electric charge. |
| Certificate | Certificate of Site Compatibility |
| CFI8X | Corona and Fields Interactive 1989 Experimental |
| Class I Cultural Resources Inventory | Existing data inventory – a large-scale review and compilation of known cultural resource data. |
| Class III Cultural Resources Inventory | Intensive field inventory – complete surface inventory of a specific area. |
| Commission or PSC | North Dakota Public Service Commission |
| Corridor | The corridor is a three mile wide area that includes the route. The corridor was selected after considering exclusion and avoidance areas existing in the study area. To comply with North Dakota rules the corridor must be 10 percent of the length of the line, not less than one mile and not more than six miles in width. |
| CREP | Conservation Reserve Enhancement Program |
| 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 | Electromagnetic Field |
| EMI | Electromagnetic Interference |
| EPCRA | Emergency Planning and Community Right-to-Know Act |
| FAA | Federal Aviation Administration |
| FEMA | Federal Emergency Management Agency |
| FIRM | Flood Insurance Rate Maps |
| FSA | U.S. Department of Agriculture Farm Service Agency |
| GAP | North Dakota GAP analysis |
| Generator | A machine by which mechanical energy is changed into electrical energy. |
| Geotechnical | A science that deals with the application of geology to engineering. |
| GLO | Government Land Office |
| HAPET | Habitat and Population Evaluation Team |
| IEEE | Institute of Electrical and Electronics Engineers |
| Interconnection | To be or become mutually connected. |
| kV | kilovolt |
| mG | milliGauss |
| MW | megawatt |
| MAPP | Mid-Continent Area Power Pool |
| MISO | Midwest Independent System Operator |
| mph | miles per hour |
| NDAC | North Dakota Administrative Code |
| NDCC | North Dakota Century Code |
| NDGF | North Dakota Game and Fish Department |

| Term | Definition |
|-------------------|--|
| NDDOT | North Dakota Department of Transportation |
| NDPR | North Dakota Parks and Recreation Department |
| NDSL | North Dakota State Land Department |
| NEC | National Electric Safety Code |
| NHID | Natural Heritage Inventory Database |
| NIEHS | National Institute of Environmental Health Sciences |
| NPDES | National Pollutant Discharge Elimination System |
| NRCS | National Resource Conservation Service |
| NRHP | National Register of Historic Places |
| NWI | National Wetlands Inventory |
| PLOTS | Public Land Open for Trapping and Shooting |
| PPA | Power Purchase Agreements |
| Project, the | The Merricourt Wind farm to Ellendale Junction Substation transmission line |
| PSC or Commission | North Dakota Public Service Commission |
| PTC | Production Tax Credit |
| Route | The route is a 120 foot area selected within the corridor. The route was selected considering the exclusion and avoidance areas. |
| ROW | Right-of-Way |
| SCADA | Supervisory Control and Data Acquisitions (communications technology) |
| SH | State Highway |
| SHPO | North Dakota State Historic Preservation Office |
| SPCC | Spill Prevention Control and Countermeasure Plan |
| Study Area | The Study Area covered an area that was approximately 12 miles wide and 24 miles long. The Study Area was bordered on the west by 62nd Avenue, on the north by 90th Street, on the east by U.S. Highway 281, and on the south by the North Dakota-South Dakota border. |
| 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 | A high voltage power line usually in excess of 69 kilovolts made up of three current conducting wires and a static shield wire. Transmission lines are used to deliver bulk power. |
| USACE | U.S. Army Corps of Engineers |
| USDA | U.S. Department of Agriculture |
| USFWS | U.S. Fish and Wildlife Service |
| USGS | U.S. Geologic Survey |
| WAPA | Western Area Power Administration |
| WPAs | Waterfowl Protection Areas |
| WMA | Wildlife Management Area |

Figures

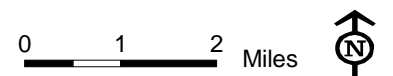


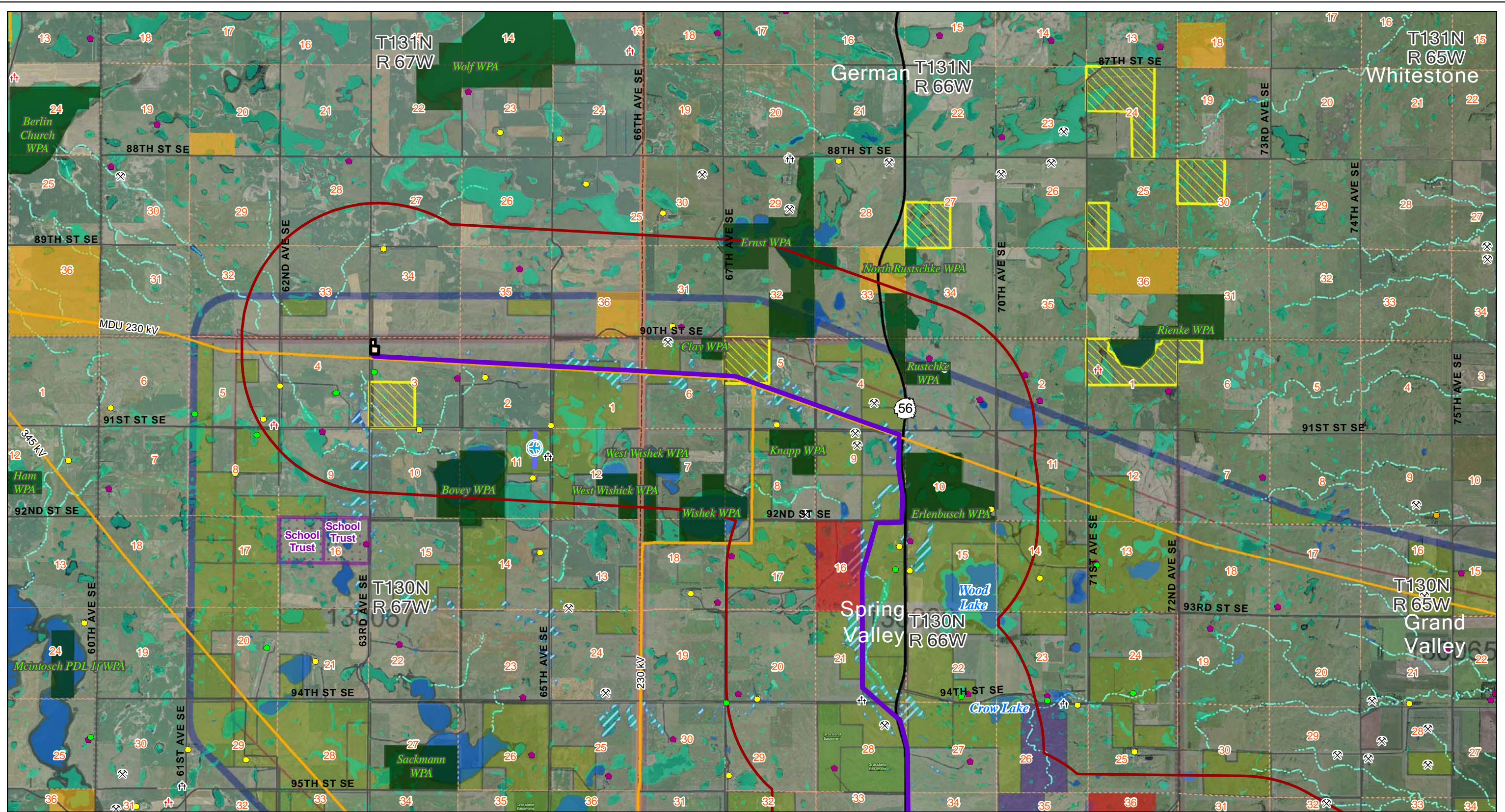
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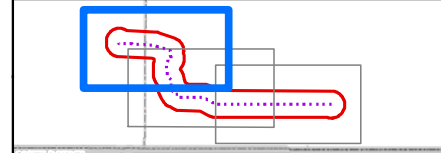
| | | | |
|-------------------------------------|--|--------------------|-----------------------|
| Study Area | Existing Gas Pipeline | US / State Highway | Stream |
| Laydown Area | Existing Forbes Substation | County Road | Lake or Pond |
| Proposed Interconnection Substation | Existing MDU Ellendale Jct. Substation | Local Road | Wetland |
| ROW (120ft)/Route | Incorporated Area | In-Use Railroad | PLS Township Boundary |
| Route Corridor (3 miles) | | County Boundary | |
| Existing Transmission Line | | | |

Figure 1: Project Area
Montana-Dakota Utilities Co.
Merricourt Wind Farm to Ellendale Project





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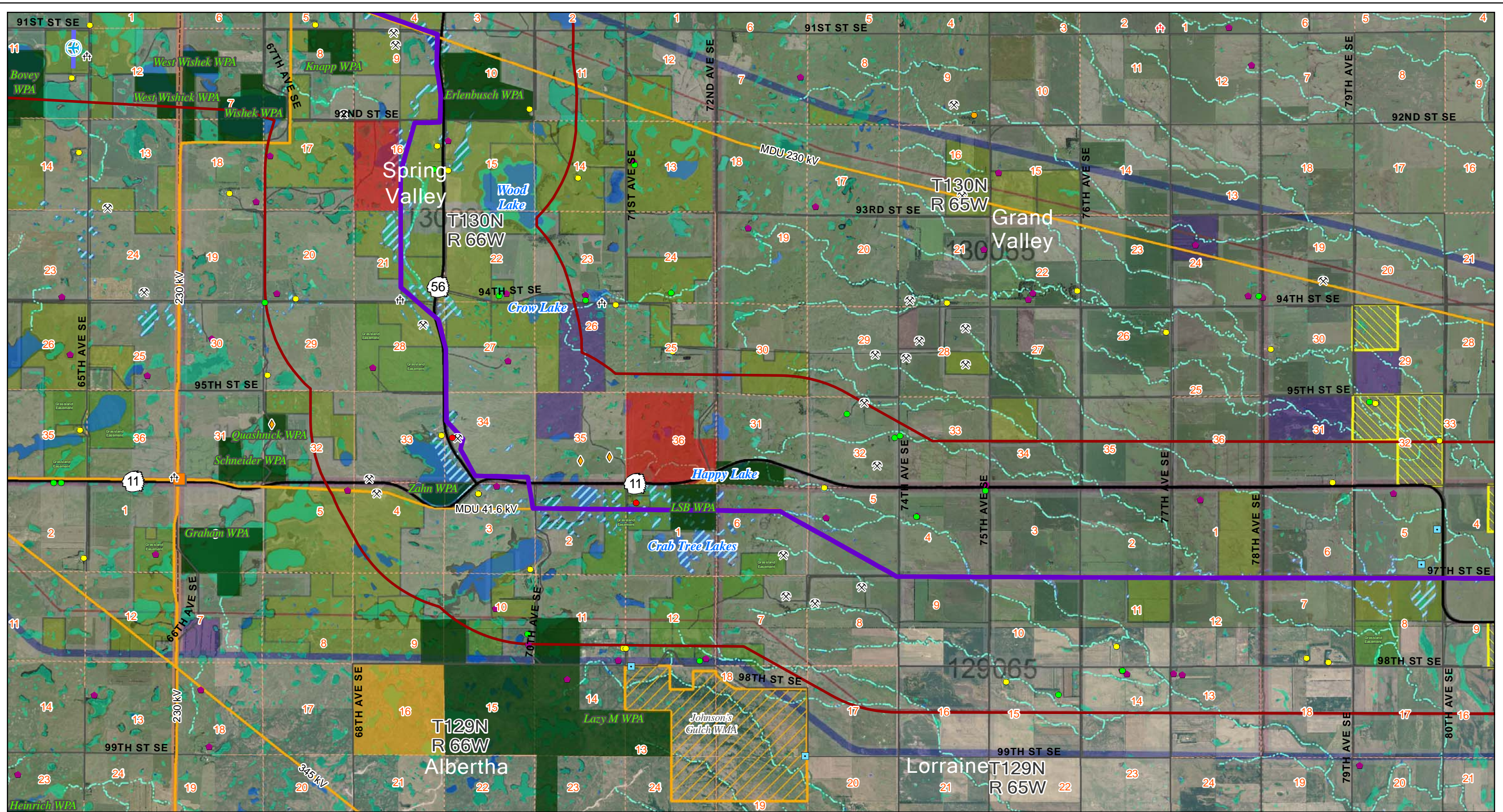


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| <ul style="list-style-type: none"> Proposed Interconnection Substation ROW (120 ft)/Route Route Corridor (3 miles) Occupied Residences within 500 ft of Route Existing Transmission Line Existing Gas Pipeline | <ul style="list-style-type: none"> Existing Forbes Substation Existing MDU Ellendale Jct. Substation Private Runway Public Airport Private Airport | <ul style="list-style-type: none"> Dwelling Occupied - Verified Dwelling Vacant - Verified Dwelling - Not Verified Church and/or Cemetery - Verified Church and/or Cemetery - Not Verified Recreation - Verified Recreation - Not Verified | <ul style="list-style-type: none"> Gravel Pit Other Structure Dump Communication Tower State Recreation Area or WMA USFWS NWR PLOTS Land | <ul style="list-style-type: none"> State Surface Tracts ND Land Dept. Not Recommended Yes Recommended No Comments Intermittent Drainage Perennial Stream Delineated Wetland | <ul style="list-style-type: none"> Lake or Pond Wetland USFWS Easements Conservation Easement Wetland Easement Grassland Easement Waterfowl Production Area |
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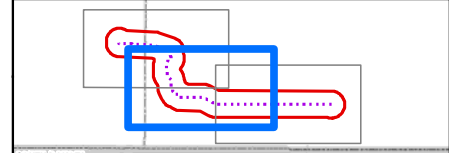
Figure 2a
 Corridor/Route Exclusion
 And Avoidance Area
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles
 0 0.5 1 2 Miles

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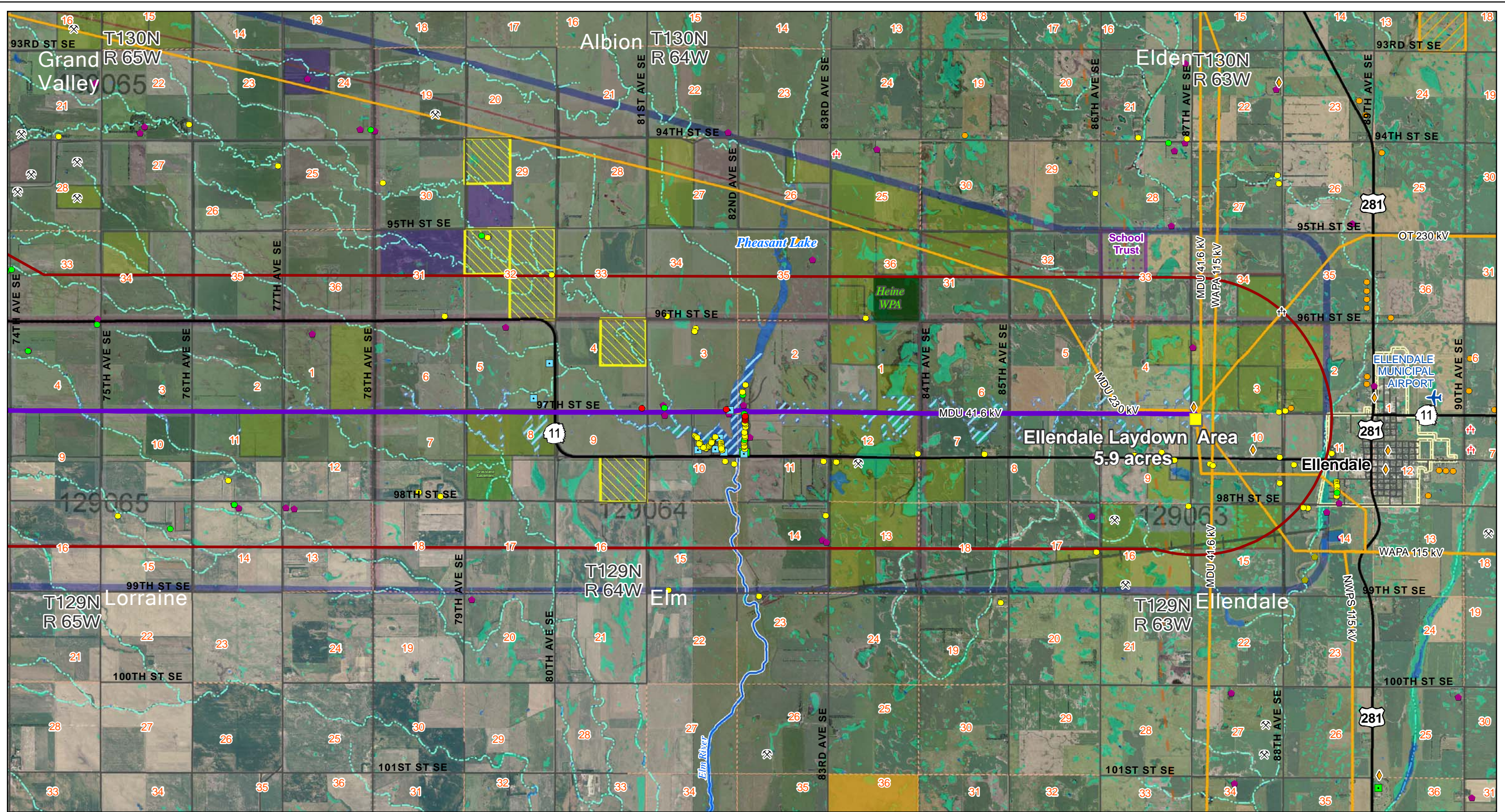


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|--|--|--|--|---|---|
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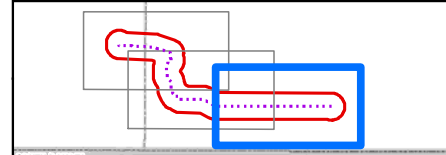
Figure 2b
 Corridor/Route Exclusion
 And Avoidance Area
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles
 0 0.5 1 2 Miles

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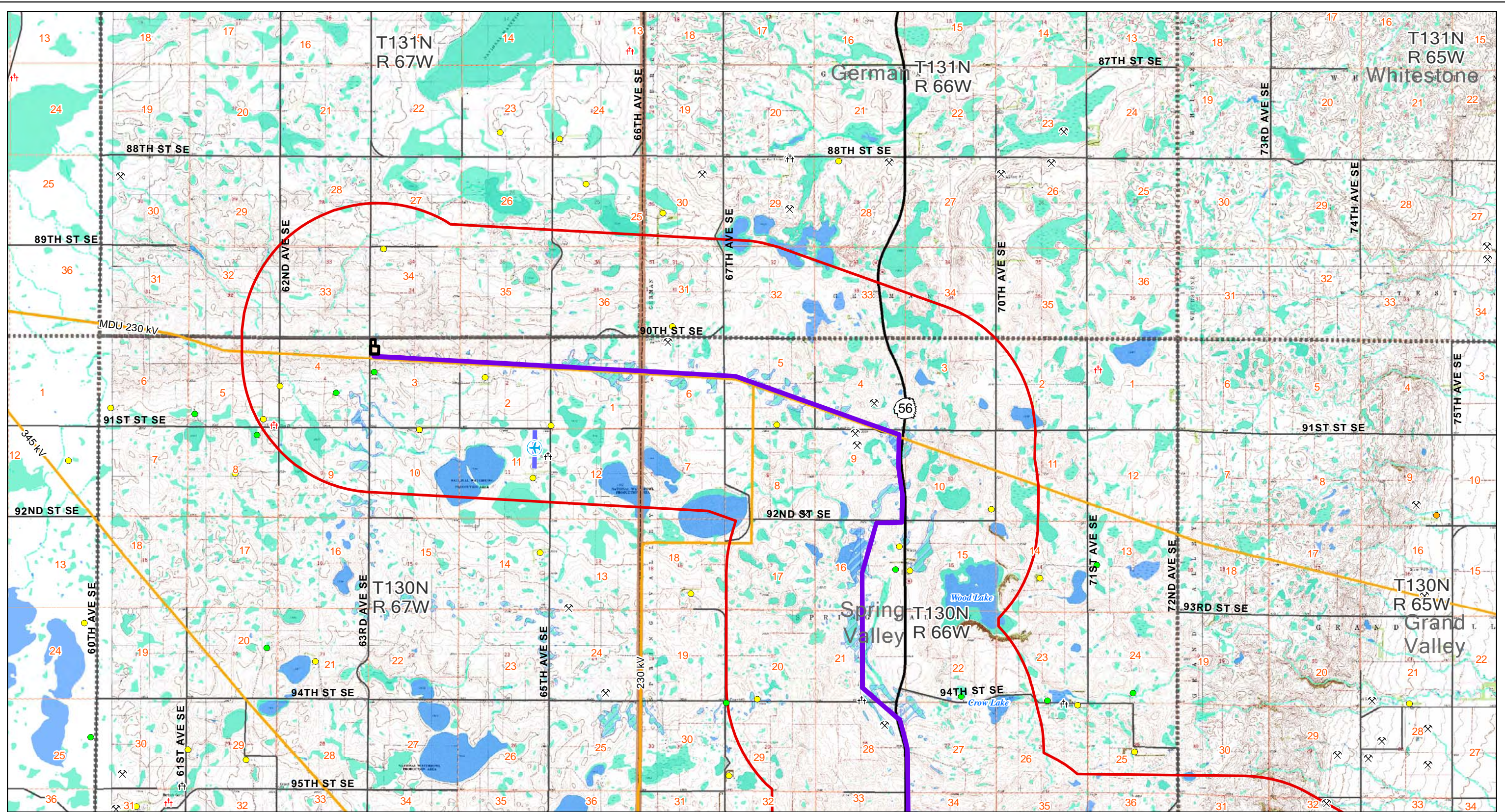
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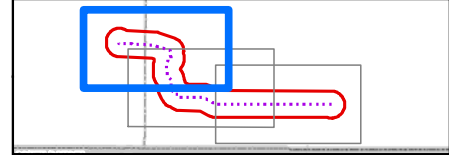
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|--|--|--|--|---|--|

Figure 2c
 Corridor/Route Exclusion
 And Avoidance Area
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles



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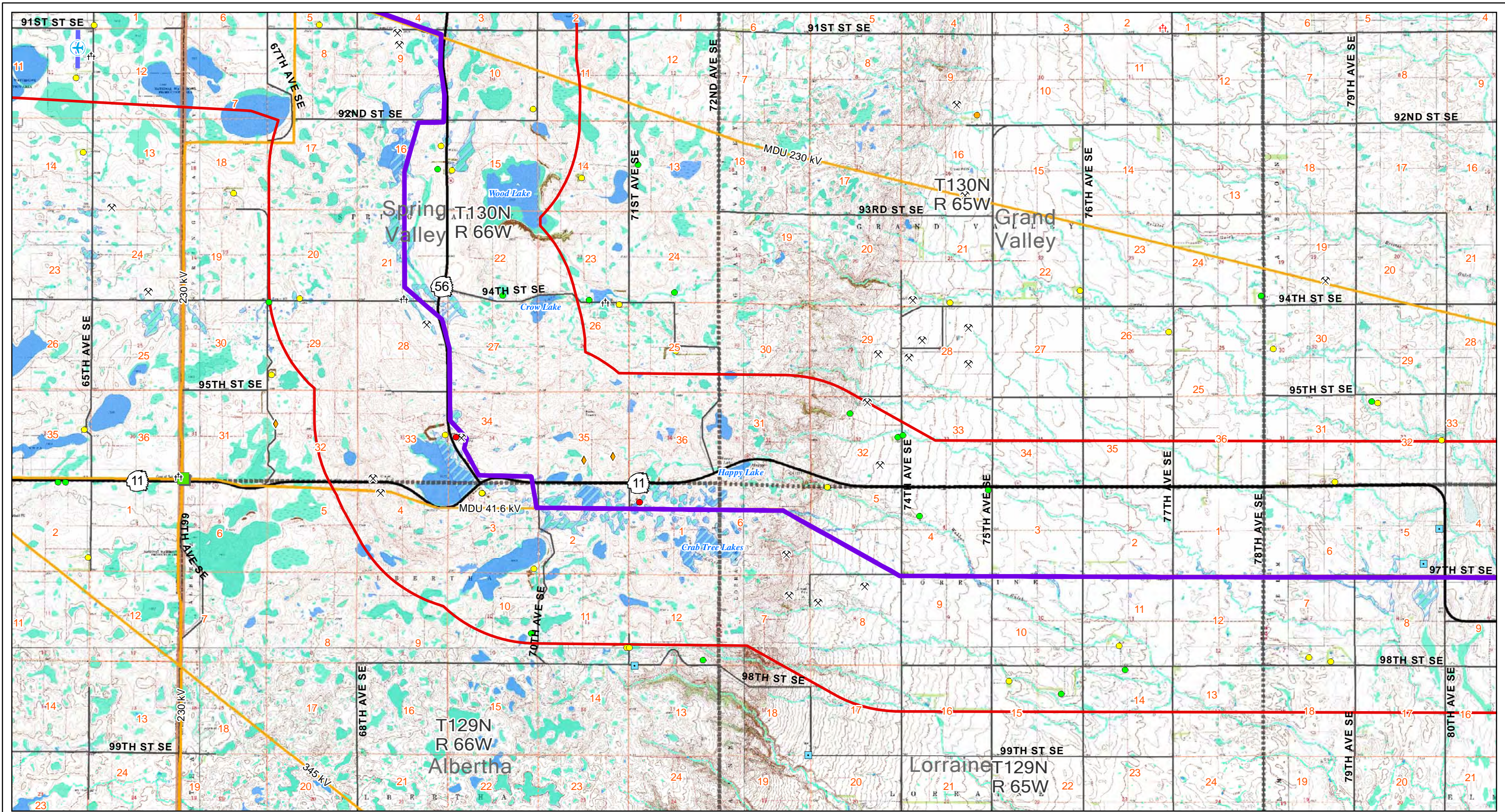


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|--|--|---------------------------------------|-----------------------|--------------------|
| Proposed Interconnection Substation | Existing Forbes Substation | Dwelling Occupied - Verified | Gravel Pit | Delineated Wetland |
| ROW (120 ft)/Route | Existing MDU Ellendale Jct. Substation | Dwelling Vacant - Verified | Dump | Lake or Pond |
| Route Corridor (3 miles) | Private Runway | Dwelling - Not Verified | Communication Tower | Wetland |
| Occupied Residences within 500 ft of Route | Public Airport | Church and/or Cemetery - Verified | Intermittent Drainage | Perennial Stream |
| Existing Transmission Line | Private Airport | Church and/or Cemetery - Not Verified | Recreation - Verified | |
| Existing Gas Pipeline | | Recreation - Not Verified | | |

Figure 3a
 Project Location Map
 (Topographical)
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles
 0 0.5 1 2 Miles

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|--|--|---------------------------------------|-----------------------|--------------------|
| Proposed Interconnection Substation | Existing Forbes Substation | Dwelling Occupied - Verified | Gravel Pit | Delineated Wetland |
| ROW (120 ft)/Route | Existing MDU Ellendale Jct. Substation | Dwelling Vacant - Verified | Dump | Lake or Pond |
| Route Corridor (3 miles) | Private Runway | Dwelling - Not Verified | Communication Tower | Wetland |
| Occupied Residences within 500 ft of Route | Public Airport | Church and/or Cemetery - Verified | Intermittent Drainage | Perennial Stream |
| Existing Transmission Line | Private Airport | Church and/or Cemetery - Not Verified | Intermittent Drainage | |
| Existing Gas Pipeline | | Recreation - Verified | | |
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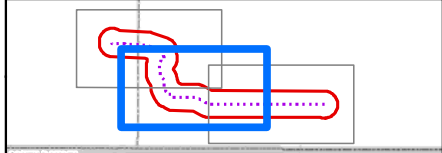
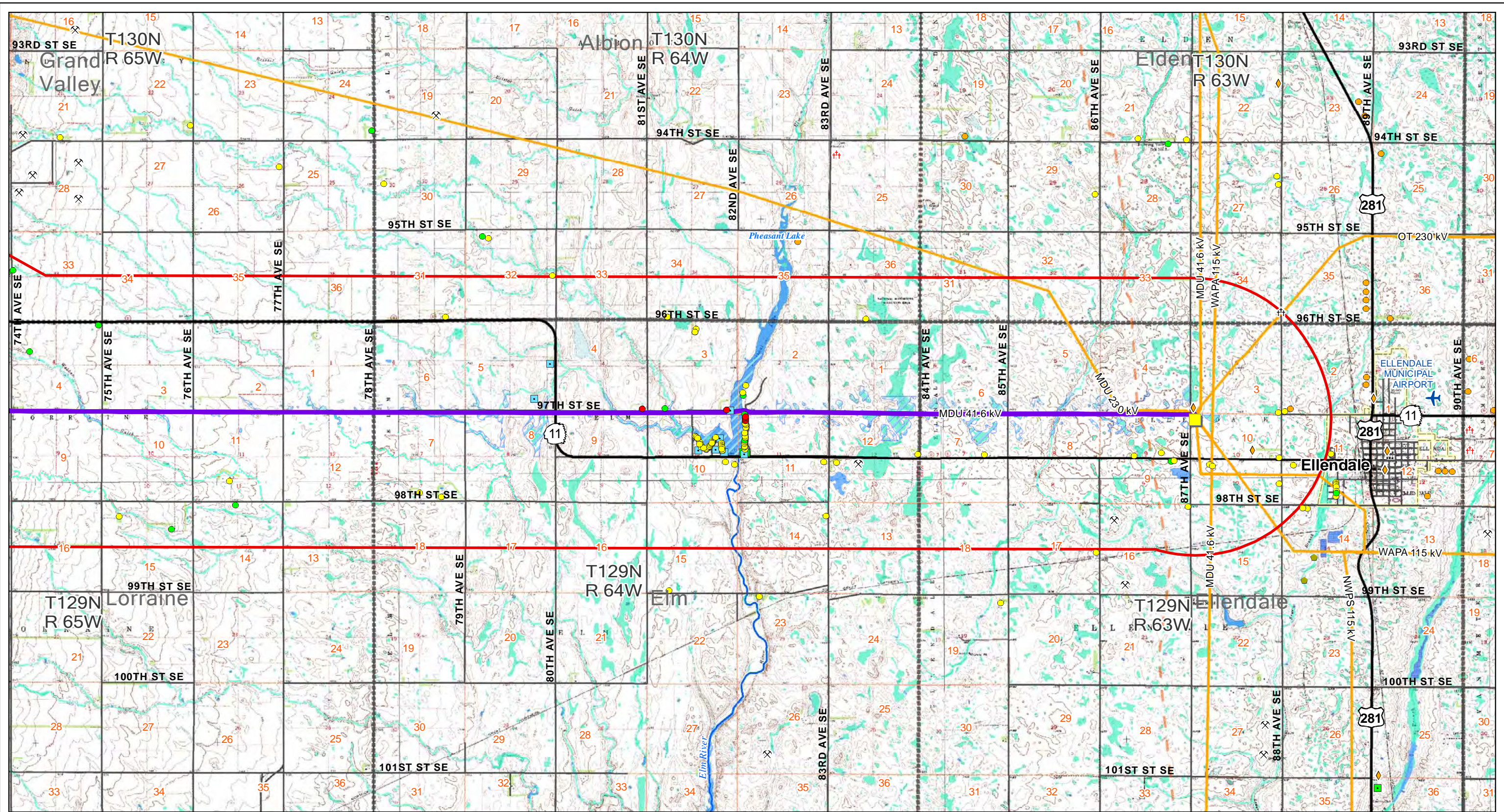


Figure 3b
 Project Location Map
 (Topographical)
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles
 0 0.5 1 2 Miles

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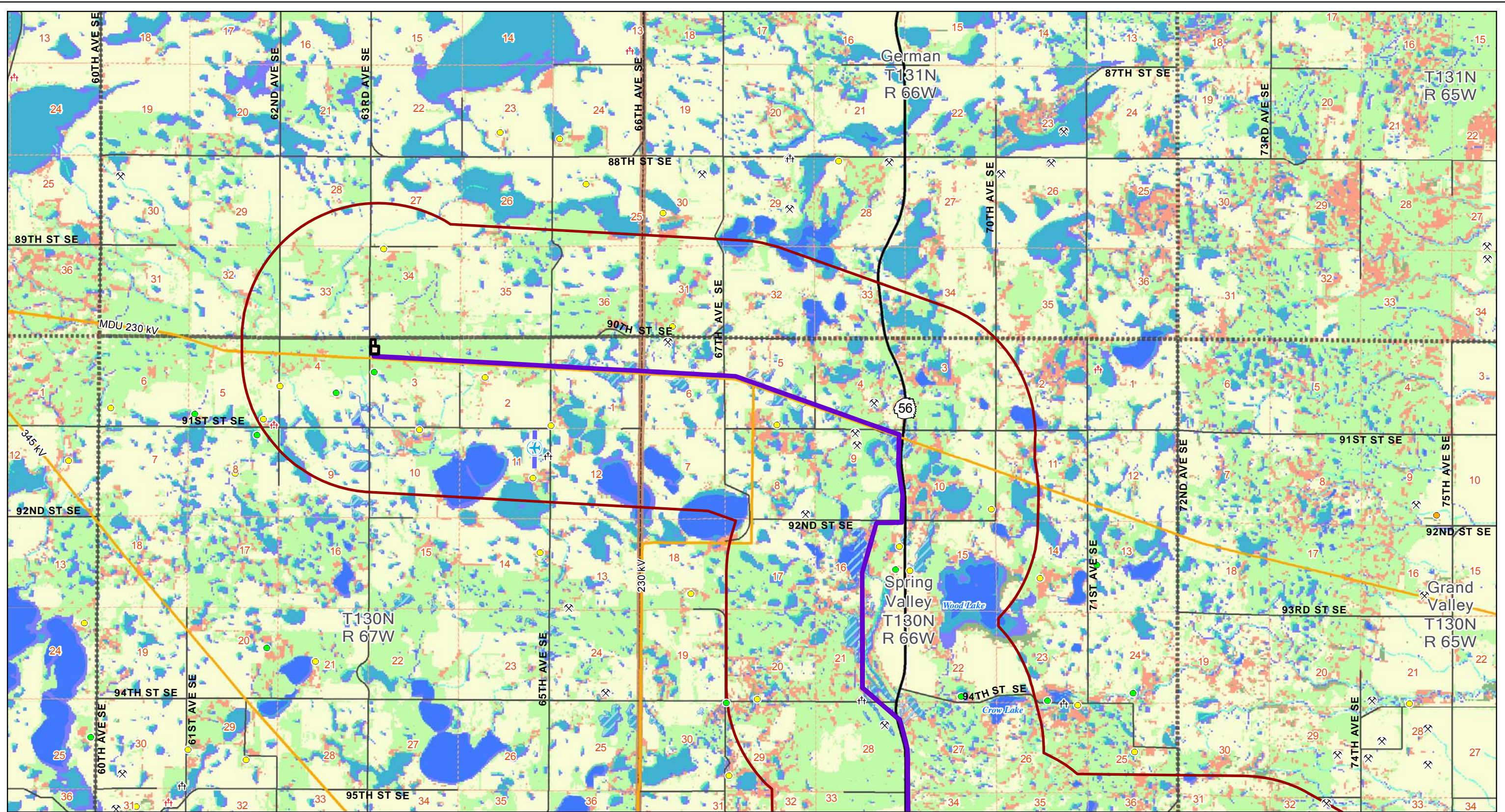
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|--|--|---------------------------------------|-----------------------|--------------------|
| Proposed Interconnection Substation | Existing Forbes Substation | Dwelling Occupied - Verified | Gravel Pit | Delineated Wetland |
| ROW (120 ft)/Route | Existing MDU Ellendale Jct. Substation | Dwelling Vacant - Verified | Dump | Lake or Pond |
| Route Corridor (3 miles) | Private Runway | Dwelling - Not Verified | Communication Tower | Wetland |
| Occupied Residences within 500 ft of Route | Public Airport | Church and/or Cemetery - Verified | Intermittent Drainage | Perennial Stream |
| Existing Transmission Line | Private Airport | Church and/or Cemetery - Not Verified | Perennial Stream | |
| Existing Gas Pipeline | | Recreation - Verified | | |
| | | Recreation - Not Verified | | |

Figure 3c
 Project Location Map
 (Topographical)
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles
 0 0.5 1 2 Miles

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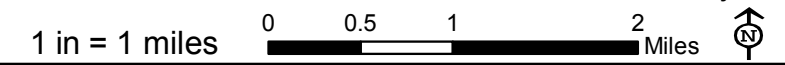


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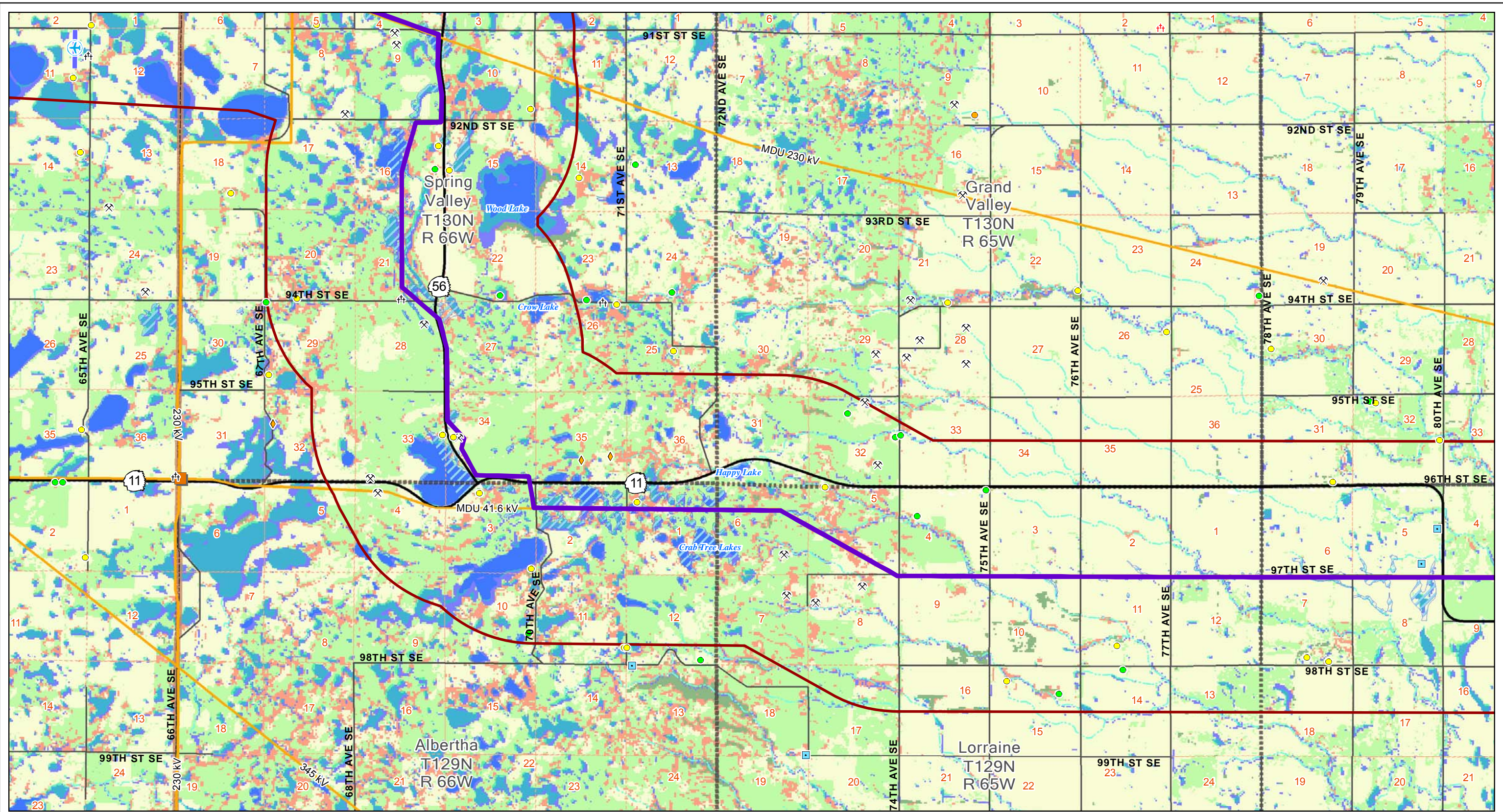
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| ROW (120 ft)/Route | Existing Forbes Substation | Dwelling Occupied - Verified | Gravel Pit | Agriculture | Intermittent Drainage |
| Proposed Interconnection Substation | Existing MDU Ellendale Jct. Substation | Dwelling Vacant - Verified | Dump | Prairie | Perennial Stream |
| Route Corridor (3 miles) | Public Airport | Dwelling - Not Verified | Communication Tower | Shrubland | Delineated Wetland |
| Existing Transmission Line | Private Airport | Church and/or Cemetery - Verified | | Lake or Pond | Wetland |
| Existing Gas Pipeline | | Church and/or Cemetery - Not Verified | | Wetland | |
| Private Runway | | Recreation - Verified | | Woodland | |
| | | Recreation - Not Verified | | | |

Figure 4a

Land Use
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project



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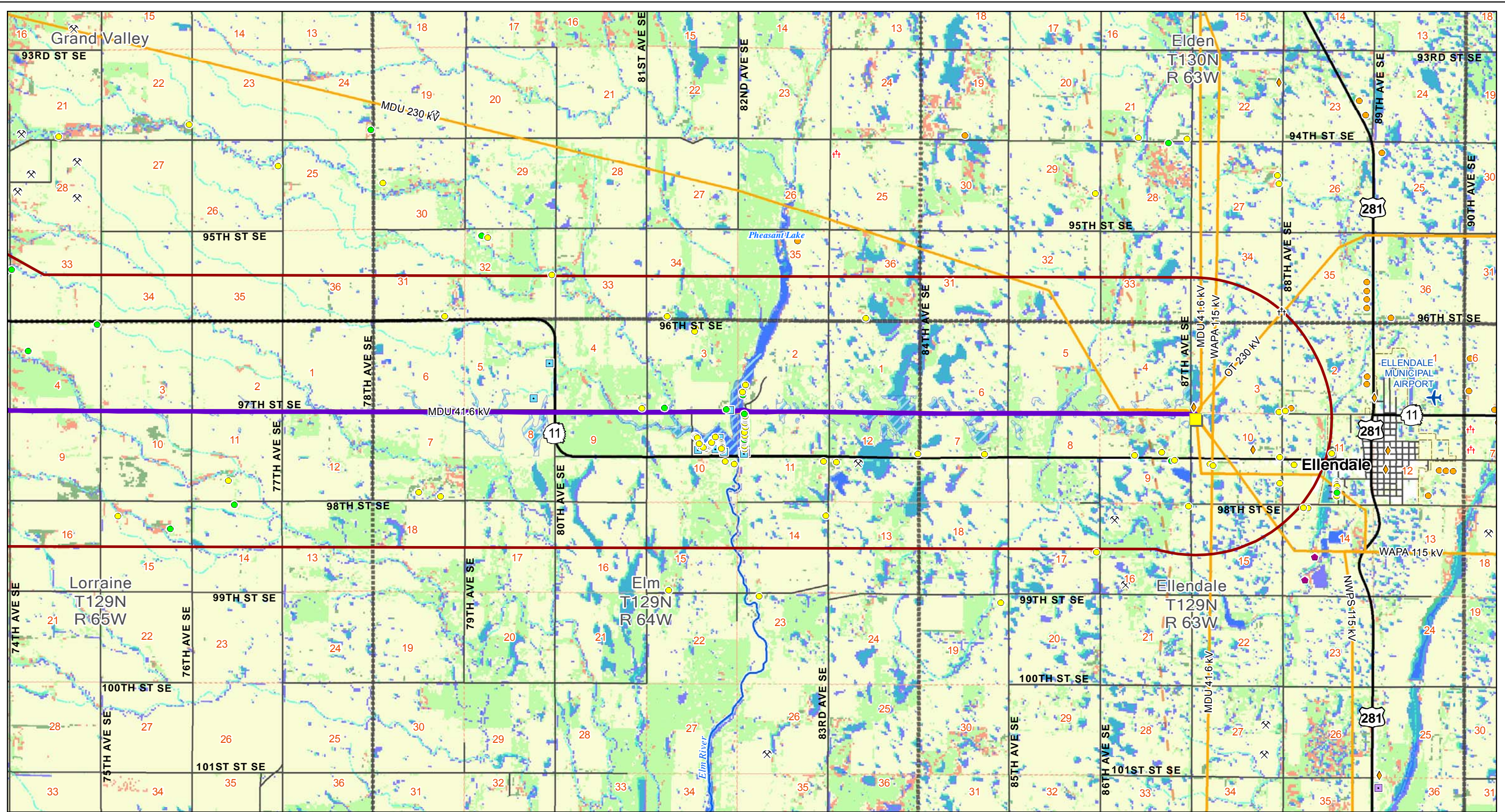
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|-------------------------------------|--|---------------------------------------|---------------------|-------------|-----------------------|
| ROW (120 ft)/Route | Existing Forbes Substation | Dwelling Occupied - Verified | Gravel Pit | Agriculture | Intermittent Drainage |
| Proposed Interconnection Substation | Existing MDU Ellendale Jct. Substation | Dwelling Vacant - Verified | Dump | Prairie | Perennial Stream |
| Route Corridor (3 miles) | Public Airport | Dwelling - Not Verified | Communication Tower | Shrubland | Delineated Wetland |
| Existing Transmission Line | Private Airport | Church and/or Cemetery - Verified | | Wetland | Lake or Pond |
| Existing Gas Pipeline | | Church and/or Cemetery - Not Verified | | Woodland | Wetland |
| Private Runway | | Recreation - Verified | | | |
| | | Recreation - Not Verified | | | |

Figure 4b

Land Use
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles

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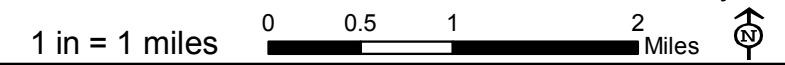


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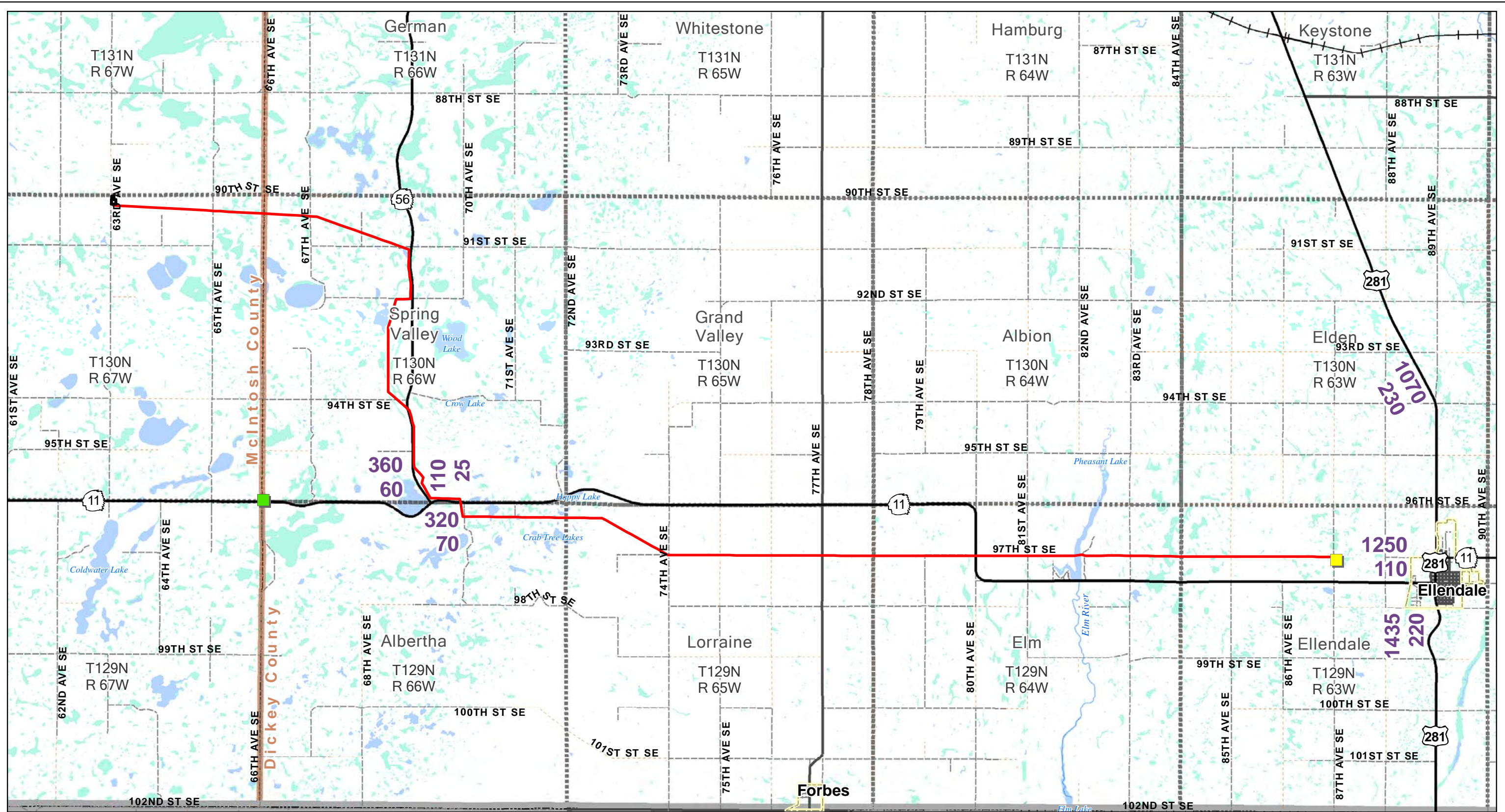
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|-------------------------------------|--|---------------------------------------|---------------------|--------------|-----------------------|
| ROW (120 ft)/Route | Existing Forbes Substation | Dwelling Occupied - Verified | Gravel Pit | Agriculture | Intermittent Drainage |
| Proposed Interconnection Substation | Existing MDU Ellendale Jct. Substation | Dwelling Vacant - Verified | Dump | Prairie | Perennial Stream |
| Route Corridor (3 miles) | Public Airport | Dwelling - Not Verified | Communication Tower | Shrubland | Delineated Wetland |
| Existing Transmission Line | Private Airport | Church and/or Cemetery - Verified | | Lake or Pond | Wetland |
| Existing Gas Pipeline | | Church and/or Cemetery - Not Verified | | Wetland | |
| Private Runway | | Recreation - Verified | | Woodland | |
| | | Recreation - Not Verified | | | |

Figure 4c

Land Use
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project



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- | | | |
|---|-----------------------|------------------------|
| — Proposed Route | Highway | Stream |
| Proposed Interconnection Substation | In-Use Railroad | Lake or Pond |
| Existing Forbes Substation | Paved | Wetland |
| Existing MDU Ellendale Jct. Substation | Graded/Drained/Gravel | PLSS Township Boundary |
| Incorporated Area | Trail/Unimproved | County Boundary |

TRAFFIC LEGEND

AADT (Average Annual Daily Traffic) - 1250
Commercial Truck Traffic - 110

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

Figure 5: Average Annual Daily Traffic
Montana-Dakota Utilities Co.
Merricourt Wind Farm to Ellendale Project

0 1 2 Miles

Source: NDDOT, 2007.

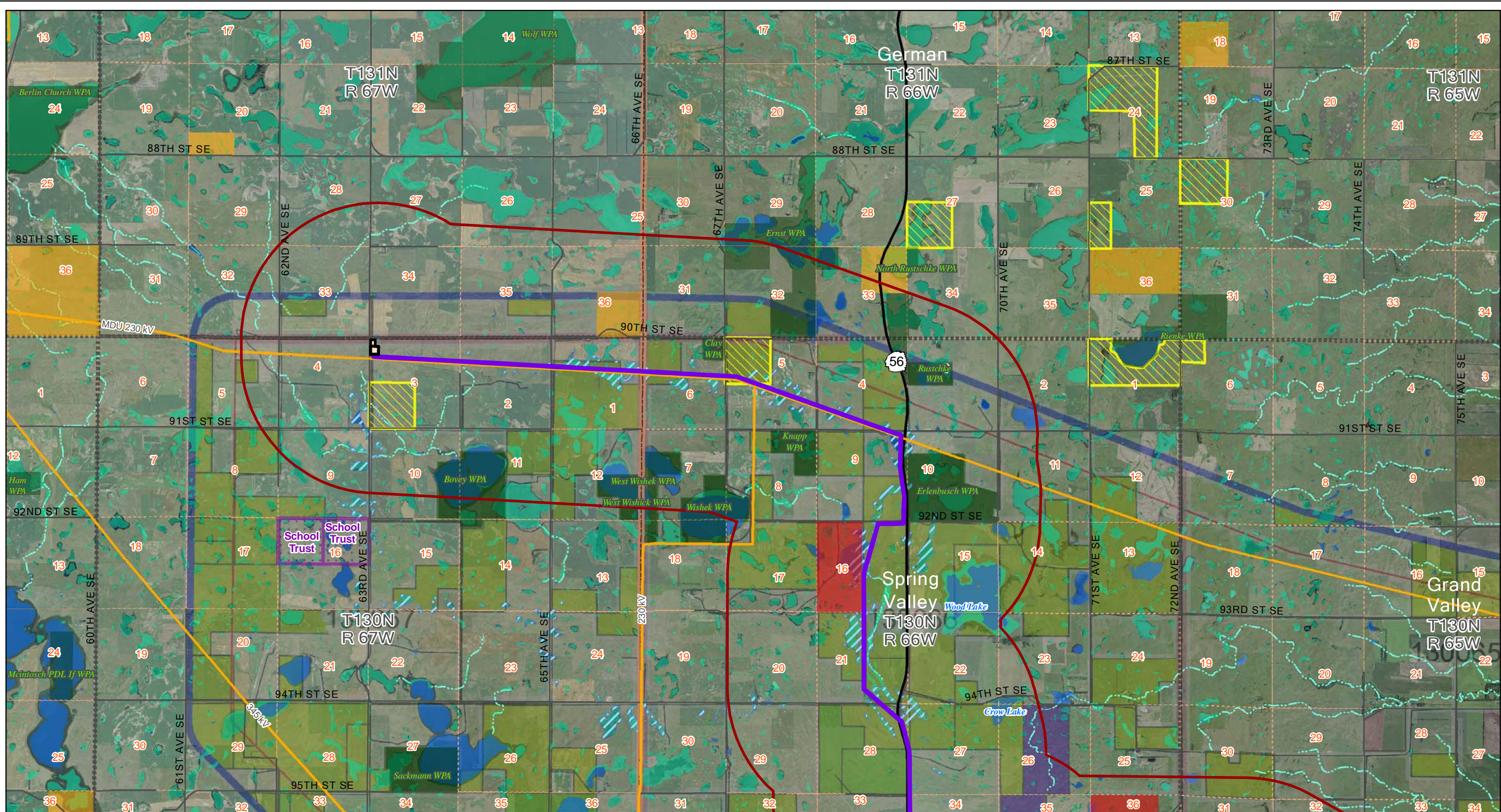
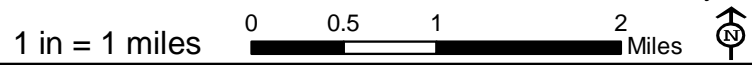


Figure 6a

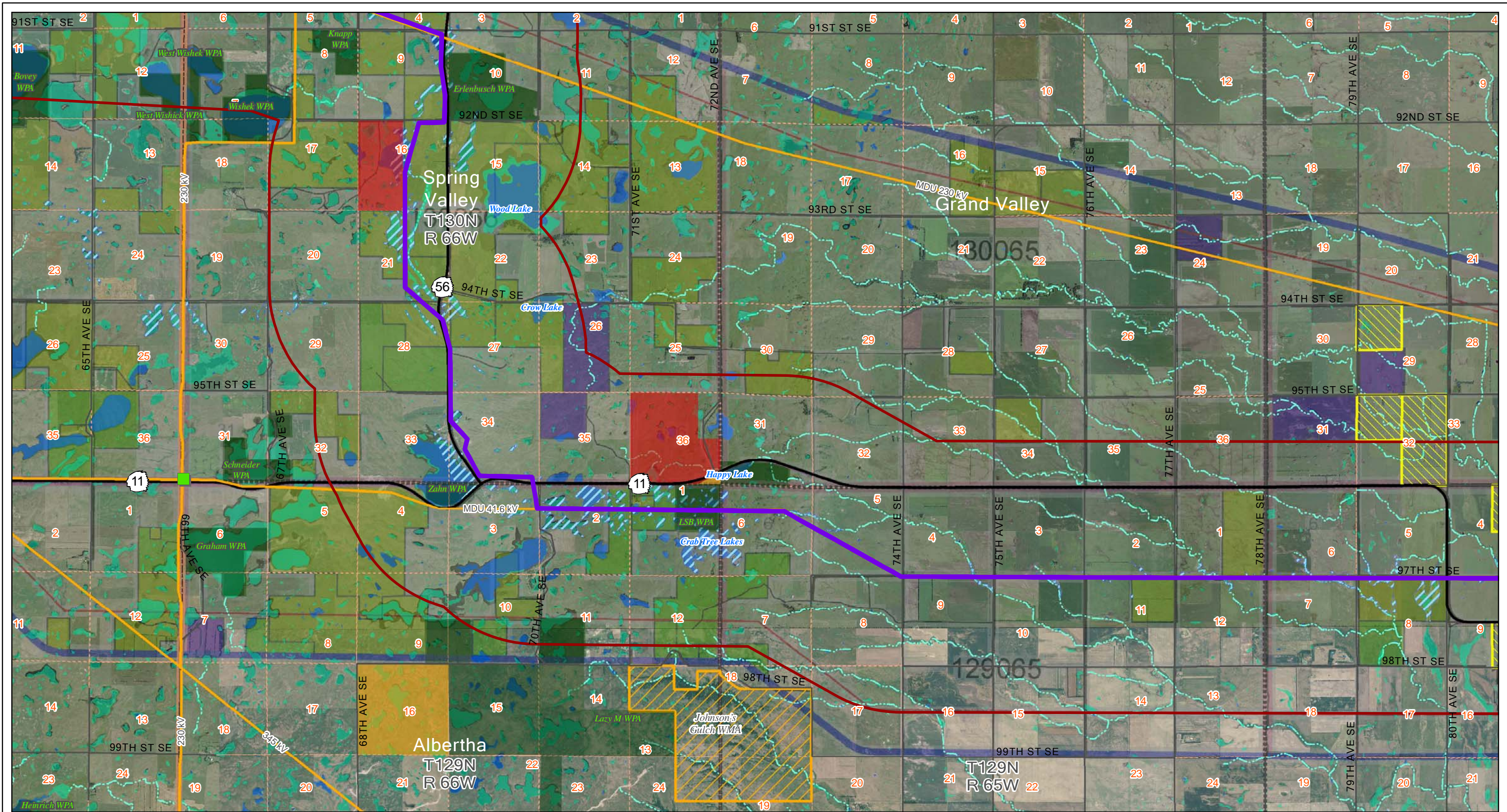
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|-------------------------------------|--|------------------------------------|-----------------------|---------------------------|
| Proposed Interconnection Substation | Existing Forbes Substation | PLOTS Land | Intermittent Drainage | USFWS Easements |
| ROW (120 ft)/Route | Existing MDU Ellendale Jct. Substation | State Surface Tracts ND Land Dept. | Perennial Stream | Conservation Easement |
| Route Corridor (3 miles) | State Recreation Area or WMA | Not Recommended | Delineated Wetland | Wetland Easement |
| Existing Transmission Line | USFWS NWR | Yes Recommended | Lake or Pond | Grassland Easement |
| Existing Gas Pipeline | | No Comments | Wetland | Waterfowl Production Area |

Public and Recreation Lands
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project



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- | | | | | |
|-------------------------------------|--|------------------------------------|-----------------------|---------------------------|
| Proposed Interconnection Substation | Existing Forbes Substation | PLOTS Land | Intermittent Drainage | USFWS Easements |
| ROW (120 ft)/Route | Existing MDU Ellendale Jct. Substation | State Surface Tracts ND Land Dept. | Perennial Stream | Conservation Easement |
| Route Corridor (3 miles) | State Recreation Area or WMA | Not Recommended | Delineated Wetland | Wetland Easement |
| Existing Transmission Line | USFWS NWR | Yes Recommended | Lake or Pond | Grassland Easement |
| Existing Gas Pipeline | | No Comments | Wetland | Waterfowl Production Area |

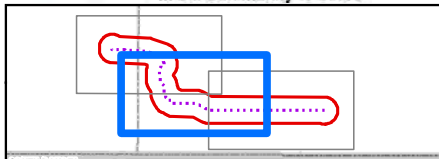
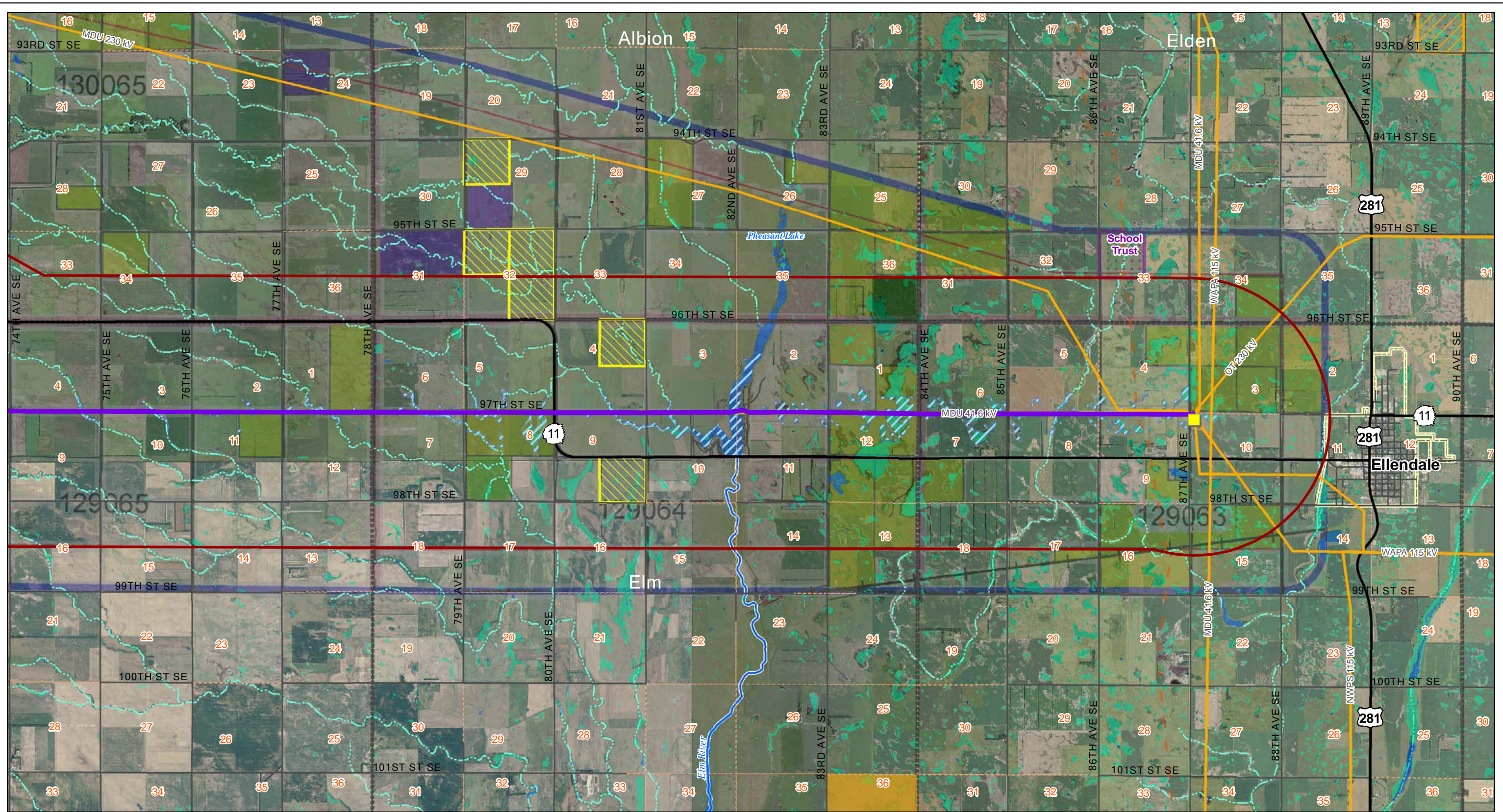


Figure 6b

Public and Recreation Lands
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles





MONTANA-DAKOTA
UTILITIES CO.
 A Division of MDU Resources Group, Inc.
In the Community to Serve®

- | | | | | |
|-------------------------------------|--|------------------------------------|-----------------------|---------------------------|
| Proposed Interconnection Substation | Existing Forbes Substation | PLOTS Land | Intermittent Drainage | USFWS Easements |
| ROW (120 ft)/Route | Existing MDU Ellendale Jct. Substation | State Surface Tracts ND Land Dept. | Perennial Stream | |
| Route Corridor (3 miles) | State Recreation Area or WMA | Not Recommended | Delineated Wetland | |
| Existing Transmission Line | USFWS NWR | Yes Recommended | Lake or Pond | |
| Existing Gas Pipeline | | No Comments | Wetland | Conservation Easement |
| | | | | Wetland Easement |
| | | | | Grassland Easement |
| | | | | Waterfowl Production Area |

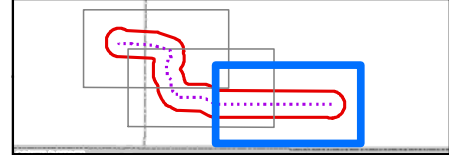
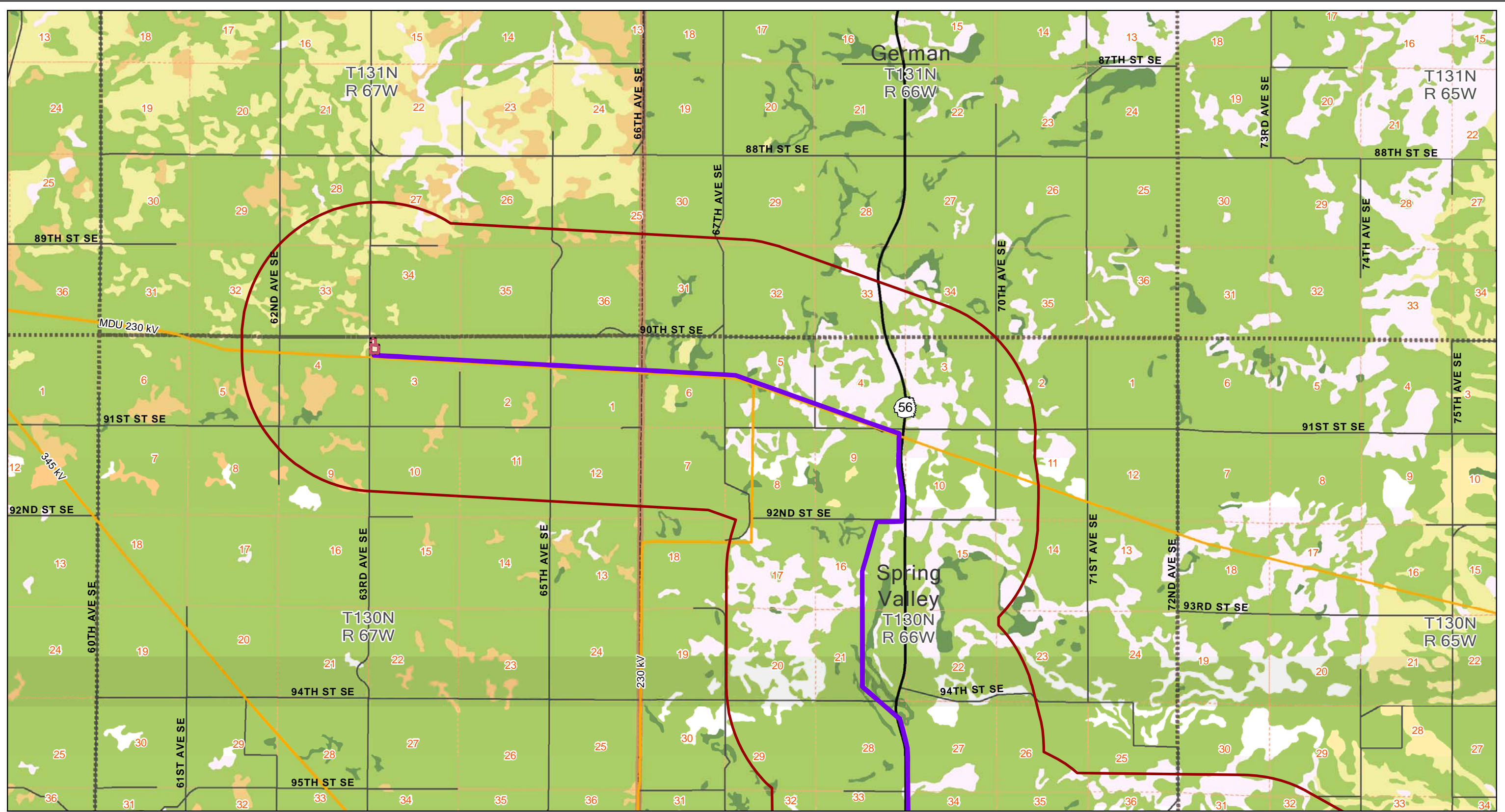


Figure 6c

Public and Recreation Lands
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

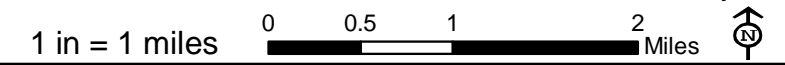
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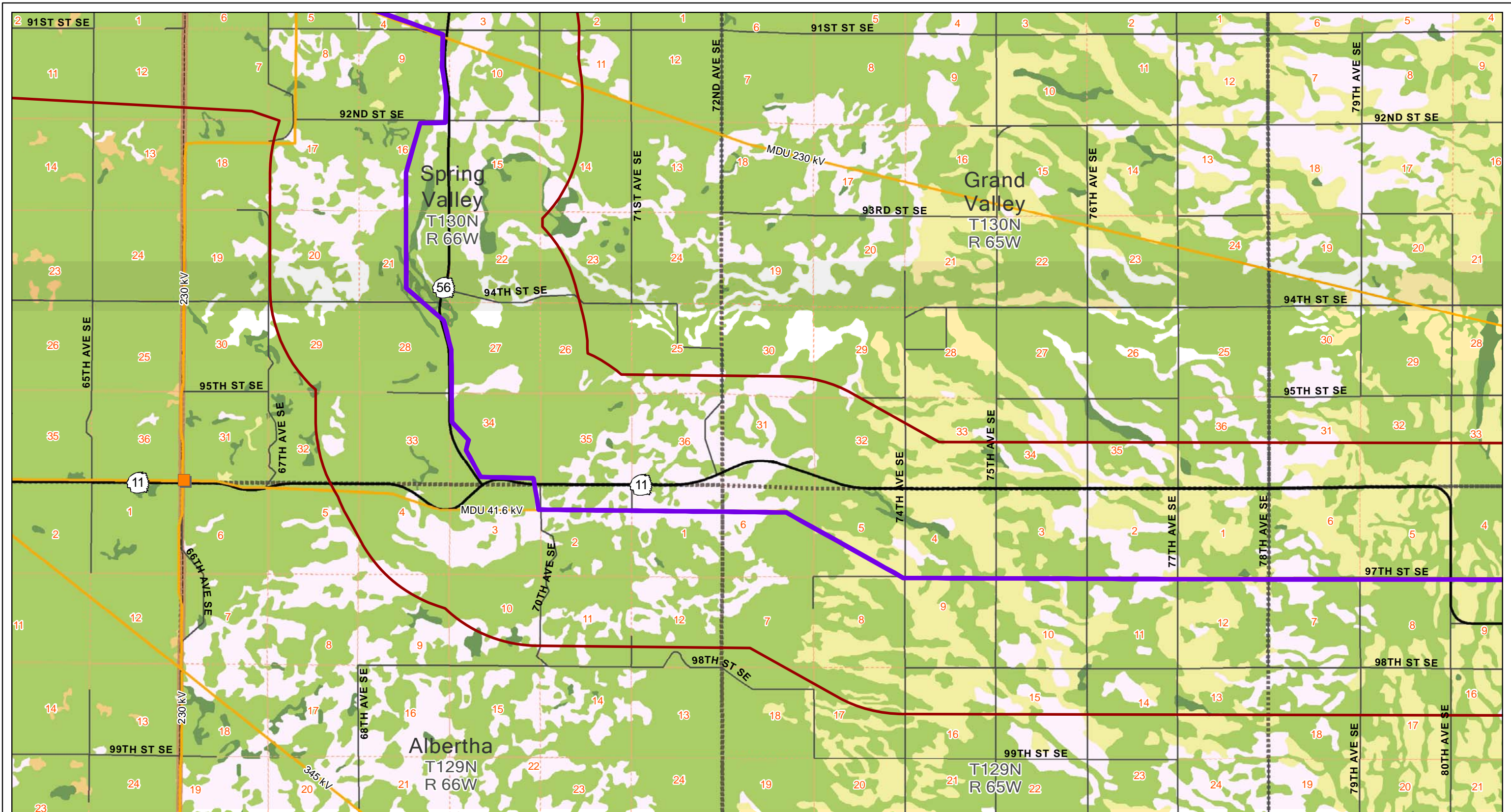
MONTANA-DAKOTA
UTILITIES CO.
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- Proposed Substation
- Proposed Interconnection Substation
- ROW (120 ft)/Route
- Route Corridor (3 miles)
- ~ Existing Transmission Line
- Existing Gas Pipeline
- Existing Forbes Substation
- Existing MDU Ellendale Jct. Substation
- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Not prime farmland
- No classification

Figure 7a
 Prime Farmland & Soil
 Distribution Map (SSURGO)
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project



Map Document: (\\mpe-gis-file\gisproj\MDU\140114\map_docs\I\SCMWFE_11x17L_Fig07_SSURGO.mxd) 2/12/2011 10:52:05 AM



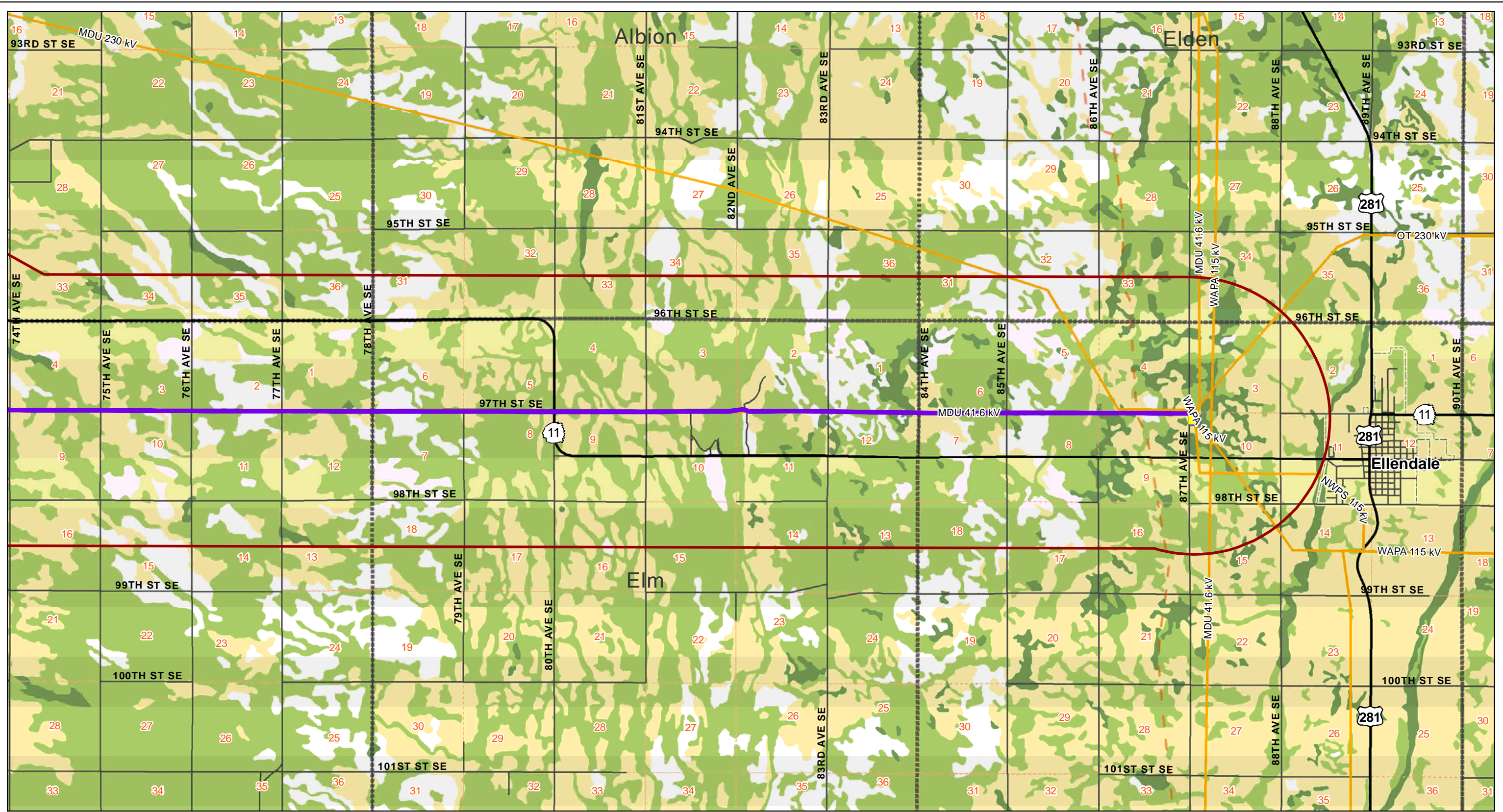
MONTANA-DAKOTA UTILITIES CO.
 A Division of MDU Resources Group, Inc.
In the Community to Serve

- Proposed Substation
- Proposed Interconnection Substation
- ROW (120 ft)/Route
- Route Corridor (3 miles)
- Existing Transmission Line
- Existing Gas Pipeline
- Existing Forbes Substation
- Existing MDU Ellendale Jct. Substation
- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Not prime farmland
- No classification

Figure 7b
 Prime Farmland & Soil
 Distribution Map (SSURGO)
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles 0 0.5 1 2 Miles

Map Document: (\\mpe-gis-1\gisproj\MDU\140114\map_docs\PS\MWFE_11x17L_Fig07_SSURGO.mxd) 2/12/11 - 10:52:05 AM



MONTANA-DAKOTA UTILITIES CO.
 A Division of MDU Resources Group, Inc.
In the Community to Serve®

- Proposed Substation
- Proposed Interconnection Substation
- ROW (120 ft)/Route
- Route Corridor (3 miles)
- ~ Existing Gas Pipeline
- Existing Forbes Substation
- Existing MDU Ellendale Jct. Substation
- All areas are prime farmland
- Farmland of statewide importance
- Prime farmland if drained
- Not prime farmland
- No classification
- ~ Existing Transmission Line

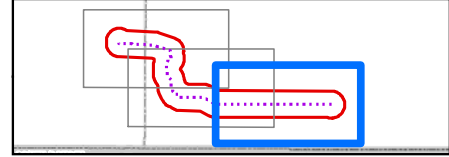
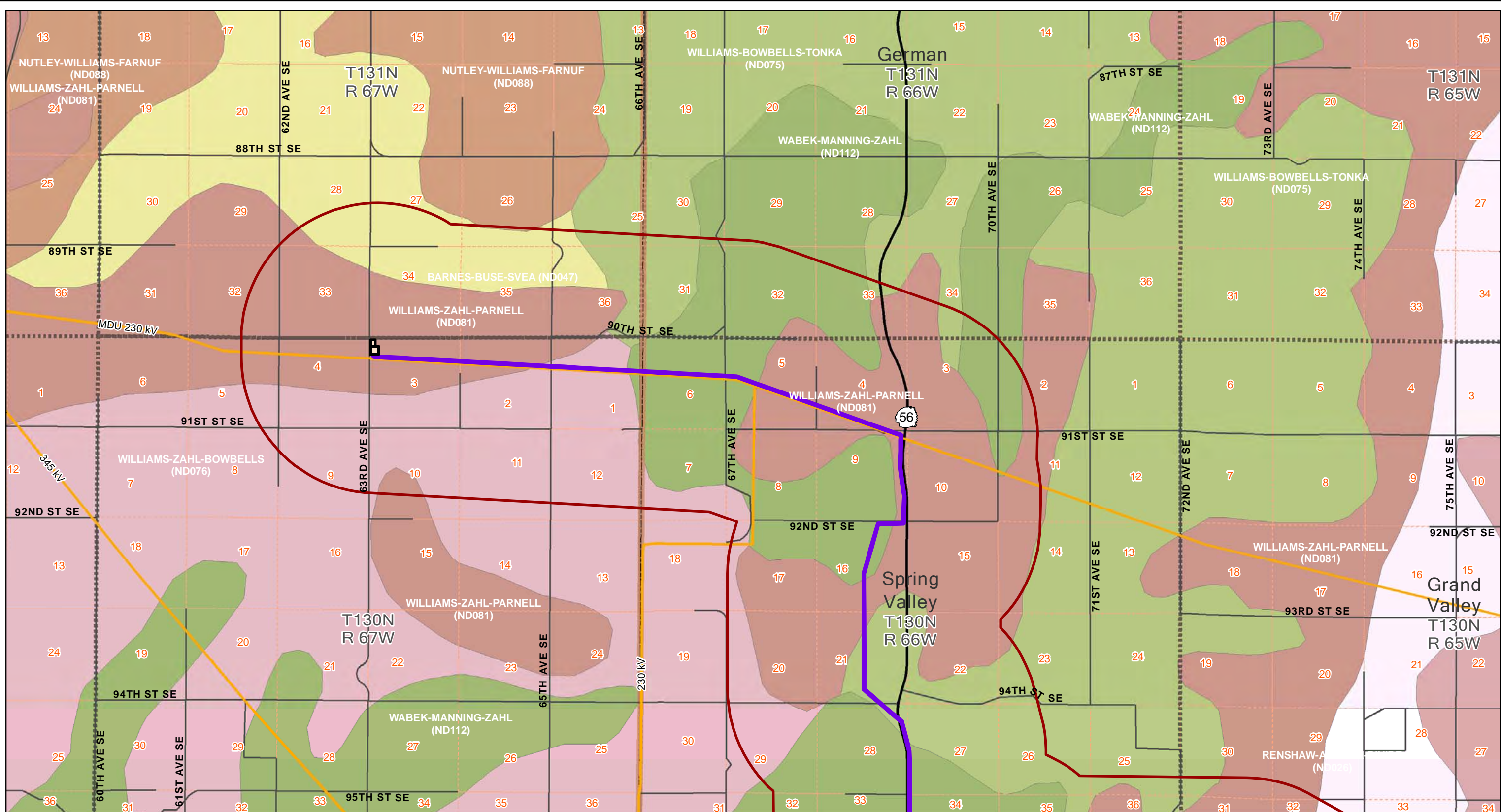


Figure 7c
 Prime Farmland & Soil
 Distribution Map (SSURGO)
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles 0 0.5 1 2 Miles ↑



MONTANA-DAKOTA UTILITIES CO.
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- Proposed Interconnection Substation
- ROW (120 ft)
- Route Corridor (3 miles)
- Existing Transmission Line
- Existing Gas Pipeline

- Existing Forbes Substation
- Existing MDU Ellendale Jct. Substation

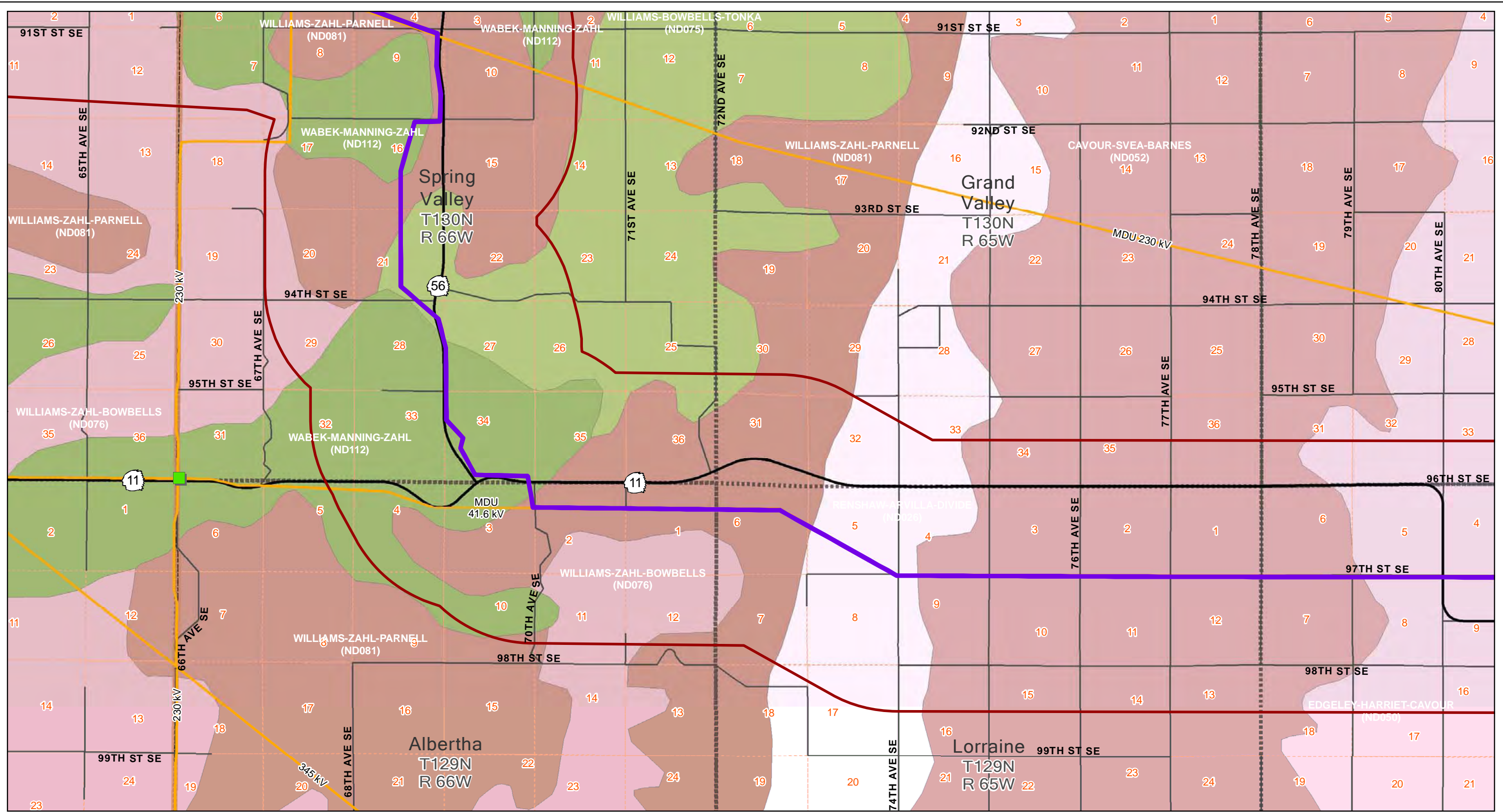
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- BARNES-SVEA-TONKA (ND045)
- CAVOUR-SVEA-BARNES (ND052)
- EDGELEY-HARRIET-CAVOUR (ND050)
- NUTLEY-WILLIAMS-FARNUF (ND088)
- RENSHAW-ARVILLA-DIVIDE (ND026)
- WABEK-MANNING-ZAHL (ND112)
- WILLIAMS-BOWBELLS-TONKA (ND075)
- WILLIAMS-ZAHL-BOWBELLS (ND076)
- WILLIAMS-ZAHL-PARNELL (ND081)

- SWENODA-BARNES-TIFFANY (ND014)
- WABEK-MANNING-ZAHL (ND112)
- WILLIAMS-BOWBELLS-TONKA (ND075)
- WILLIAMS-ZAHL-BOWBELLS (ND076)
- WILLIAMS-ZAHL-PARNELL (ND081)

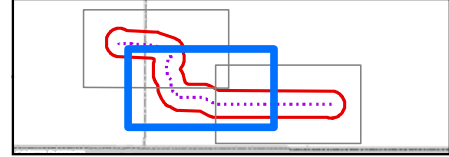
Figure 8a
 State Soils Association
 Map (STATSGO)
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles

Map Document: \\mspe-gis-1\GIS\Proj\MDU\140114\map_docs\PS\CMWFE_11x17L_Fig 8a_STATSGO.mxd
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MONTANA-DAKOTA
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- Proposed Interconnection Substation
- ROW (120 ft)
- Route Corridor (3 miles)
- Existing Transmission Line
- Existing Gas Pipeline

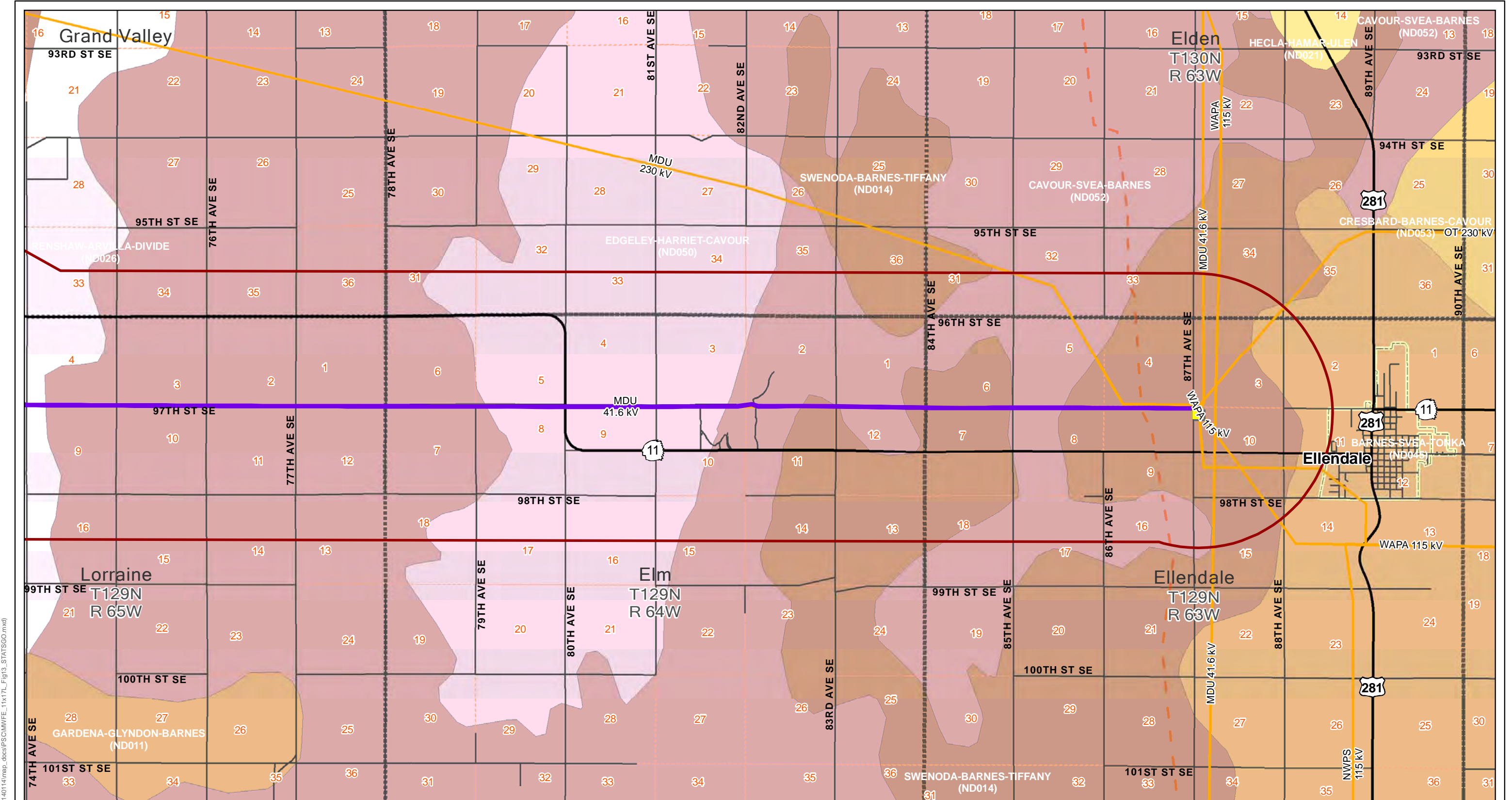
- Existing Forbes Substation
- Existing MDU Ellendale Jct. Substation

- BARNES-BUSE-SVEA (ND047)
- BARNES-SVEA-TONKA (ND045)
- CAVOUR-SVEA-BARNES (ND052)
- EDGELEY-HARRIET-CAVOUR (ND050)
- NUTLEY-WILLIAMS-FARNUF (ND088)
- RENSHAW-ARVILLA-DIVIDE (ND026)
- SWENODA-BARNES-TIFFANY (ND014)
- WABEK-MANNING-ZAHL (ND112)
- WILLIAMS-BOWBELLS-TONKA (ND075)
- WILLIAMS-ZAHL-BOWBELLS (ND076)
- WILLIAMS-ZAHL-PARNELL (ND081)

Figure 8b
 State Soils Association
 Map (STATSGO)
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles

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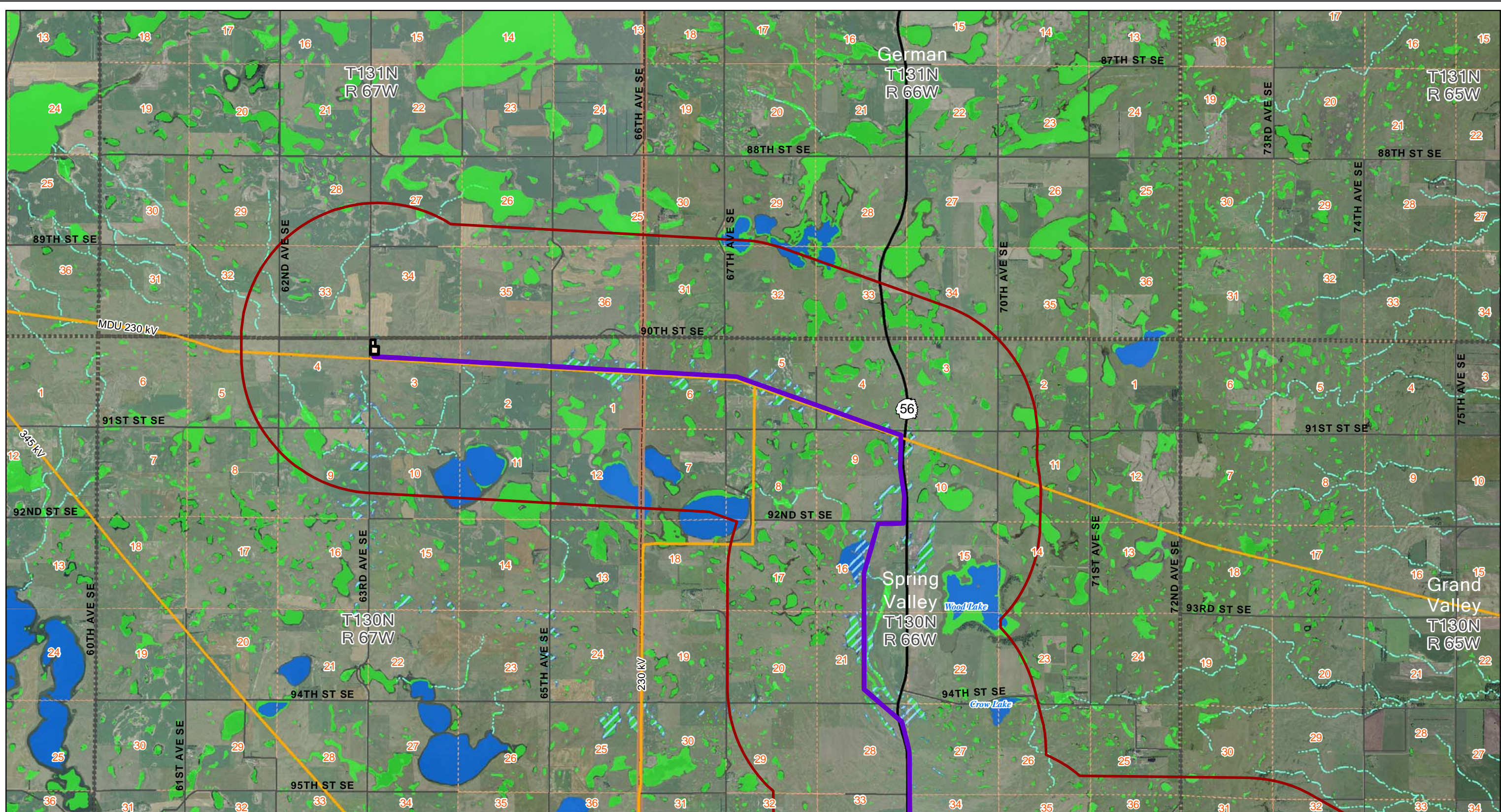
MONTANA-DAKOTA UTILITIES CO.
 A Division of MDU Resources Group, Inc.
In the Community to Serve®

- | | | | |
|-------------------------------------|--|--------------------------------|---------------------------------|
| Proposed Interconnection Substation | Existing Forbes Substation | BARNES-BUSE-SVEA (ND047) | SWENODA-BARNES-TIFFANY (ND014) |
| ROW (120 ft) | Existing MDU Ellendale Jct. Substation | BARNES-SVEA-TONKA (ND045) | WABEK-MANNING-ZAHL (ND112) |
| Route Corridor (3 miles) | | CAVOUR-SVEA-BARNES (ND052) | WILLIAMS-BOWBELLS-TONKA (ND075) |
| Existing Transmission Line | | EDGELEY-HARRIET-CAVOUR (ND050) | WILLIAMS-ZAHL-BOWBELLS (ND076) |
| Existing Gas Pipeline | | NUTLEY-WILLIAMS-FARNUF (ND088) | WILLIAMS-ZAHL-PARNELL (ND081) |
| | | RENSHAW-ARVILLA-DIVIDE (ND026) | |

Figure 8c
 State Soils Association
 Map (STATSGO)
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles

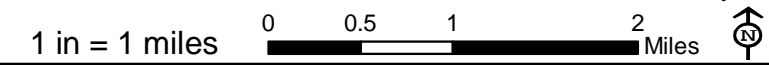
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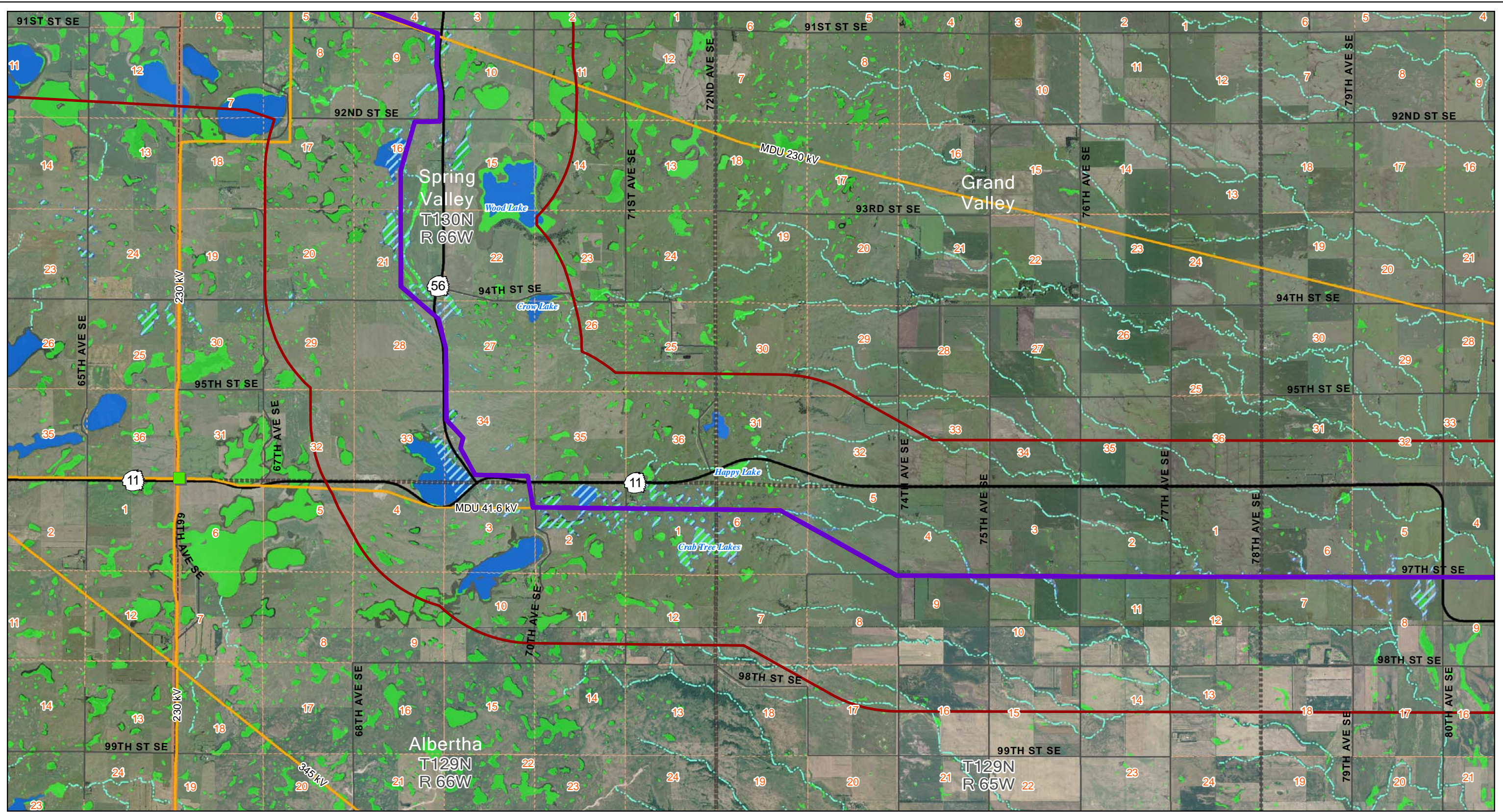
MONTANA-DAKOTA UTILITIES CO.
 A Division of MDU Resources Group, Inc.
In the Community to Serve®

- Proposed Interconnection Substation
- ROW (120 ft)/Route
- Route Corridor (3 miles)
- Existing Transmission Line
- Existing Gas Pipeline
- Existing Forbes Substation
- Existing MDU Ellendale Jct. Substation
- Delineated Wetland
- NWI Wetland
- NWI Lake / Riverine
- Intermittent Drainage
- Perennial Stream

Figure 9a
 National Wetlands Inventory
 & Surface Waters
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project



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MONTANA-DAKOTA
 UTILITIES CO.
 A Division of MDU Resources Group, Inc.
In the Community to Serve

- | | | |
|-------------------------------------|--|-----------------------|
| Proposed Interconnection Substation | Existing Forbes Substation | Delineated Wetland |
| ROW (120 ft)/Route | Existing MDU Ellendale Jct. Substation | NWI Wetland |
| Route Corridor (3 miles) | | NWI Lake / Riverine |
| Existing Transmission Line | | Intermittent Drainage |
| Existing Gas Pipeline | | Perennial Stream |

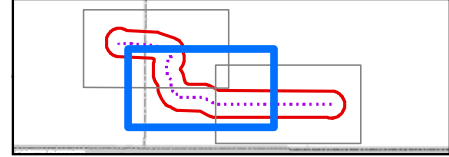
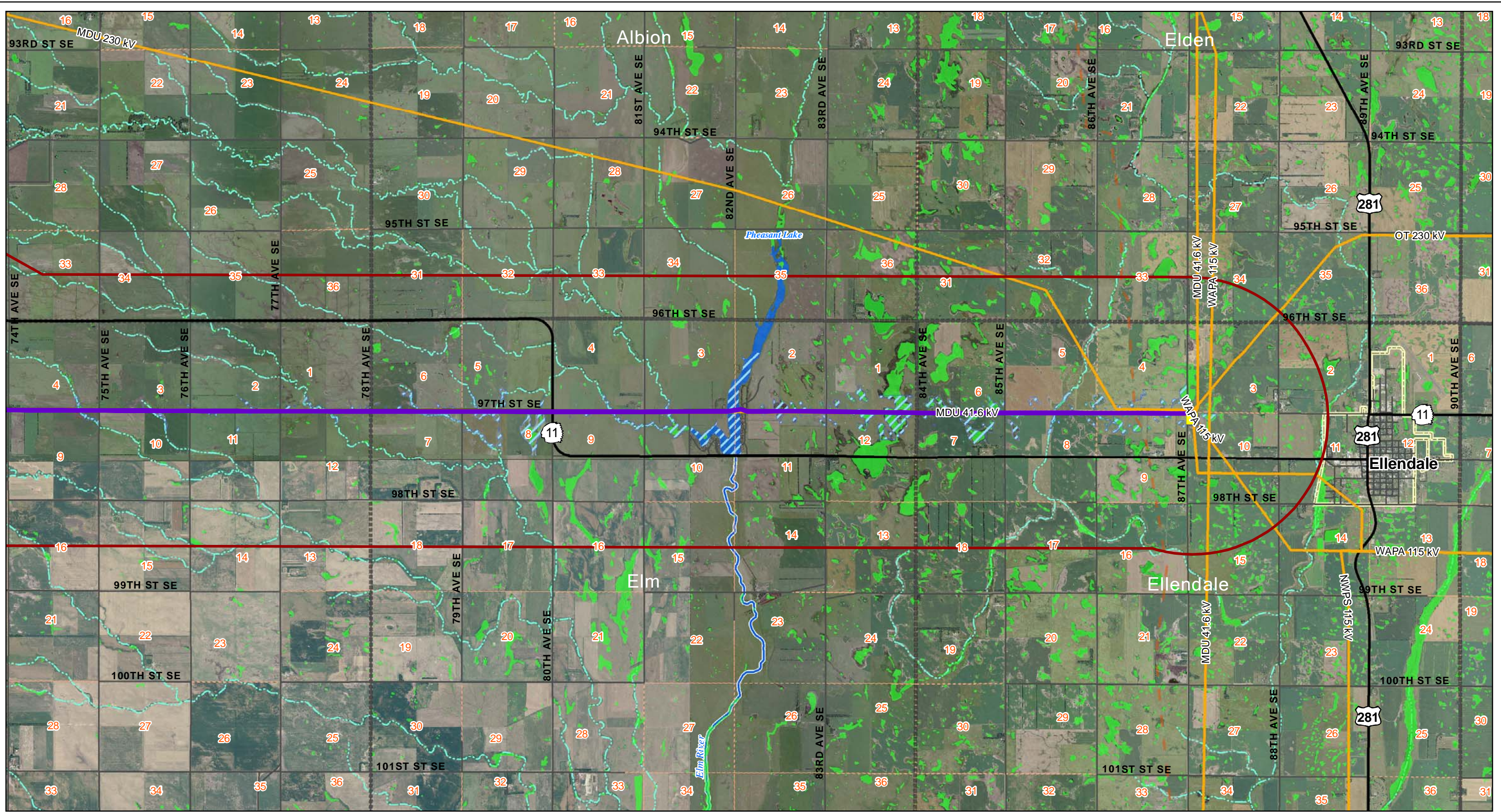


Figure 9b
 National Wetlands Inventory
 & Surface Waters
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles

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MONTANA-DAKOTA
 UTILITIES CO.
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-  Proposed Interconnection Substation
-  ROW (120 ft)/Route
-  Route Corridor (3 miles)
-  Existing Transmission Line
-  Existing Gas Pipeline
-  Existing Forbes Substation
-  Existing MDU Ellendale Jct. Substation
-  Delineated Wetland
-  NWI Wetland
-  NWI Lake / Riverine
-  Intermittent Drainage
-  Perennial Stream

Figure 9c
 National Wetlands Inventory
 & Surface Waters
 Montana-Dakota Utilities Co.
 Merricourt Wind Farm to
 Ellendale Project

1 in = 1 miles  Miles 

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Appendix A

Letter of Intent



Public Service Commission
State of North Dakota



COMMISSIONERS

Kevin Cramer
Tony Clark
Brian P. Kalk

Executive Secretary
Durrell Nitschke

600 E. Boulevard Ave. Dept 408
Bismarck, North Dakota 58505-0480
Web: www.nd.gov/psc
E-mail: ndpsc@nd.gov
Phone 701-328-2400
Toll Free 1-877-245-6685
Fax 701-328-2410
TDD 800-366-6888 or 711

June 3, 2010

Daniel S Kuntz
Associate General Counsel
MDU Resources Group Inc
PO Box 5650
Bismarck ND 58506-5650

Tamie A Aberle
Pricing & Tariff Manager
Montana-Dakota Utilities Co
400 N 4th St
Bismarck ND 58501

RE: Case Number PU-10-164
Montana-Dakota Utilities Co., A Division of MDU
Resources Group, Inc.
230 kV Transmission Line – McIntosh & Dickey Cty
Siting Application

Dear Mr. Kuntz and Ms. Aberle:

At its regular meeting on June 2, 2010, the North Dakota Public Service Commission passed a motion acknowledging the Letter of Intent, shortening the one-year waiting period between filing a letter of intent and a siting application to three months, and assessing a filing fee of \$72,500 in the above-referenced case. A copy of the Commission motion is enclosed.

Sincerely,

Patrick Fahn, Director
Compliance and Competitive Markets

Enclosure

APPROVED

DATE: 6-2-10

MOTION

June 2, 2010

Montana-Dakota Utilities Co., A Division of MDU
Resources Group, Inc.
230 kV Transmission Line – McIntosh & Dickey Cty
Siting Application

Case No. PU-10-164

I move the Commission acknowledge the Letter of Intent, shorten the one-year waiting period between filing a letter of intent and a siting application to three months, and assess a filing fee of \$72,500 due upon filing an application in Case No. PU-10-164, Montana-Dakota Utilities Co.'s proposed 230 kV electric transmission line and associated facilities in Dickey and McIntosh Counties of North Dakota.

JRL

Appendix B
Table Displaying Existing 41.6 kV Structures and New 230 kV Structures

Table B-1
The distance of the proposed 230 kV transmission line structures from the existing 41.6 kV transmission line structures

| Existing 41.6kV Structure # | New 230kV Structure # | Distance (in feet) from structure being replaced | Direction from structure being replaced |
|-----------------------------|-----------------------|--|---|
| 330A | 2 | 57 | NW |
| 330 | 3 | 17 | N |
| 329 | 4 | 122 | W |
| 328 | 5 | 139 | W |
| 327 | 6 | 58 | W |
| 326 | 7 | 0 | - |
| 325 | 8 | 107 | E |
| 324 | 9 | 154 | E |
| 323 | 10 | 129 | E |
| 322 | 11 | 85 | E |
| 321 | 12 | 4 | SE |
| 320 | 13 | 16 | W |
| 319 | 14 | 68 | W |
| 318 | 15 | 46 | W |
| 317 | 16 | 51 | W |
| 316 | 17 | 53 | W |
| 315 | 18 | 88 | E |
| 314 | 19 | 242 | E |
| 313 | 20 | 240 | E |
| 312 | 21 | 168 | E |
| 311 | 22 | 263 | E |
| -a | 23 | - | - |
| 310 | 24 | 114 | W |
| 309 | 25 | 6 | E |
| 308 | 26 | 119 | E |
| 307 | 27 | 160 | E |
| 306 | 28 | 180 | E |
| 305 | 29 | 264 | E |
| 304 | 30 | 455 | E |
| 303 | 31 | 213 | E |
| 302 | 32 | 142 | E |
| 301 | 33 | 74 | E |
| 300 | 34 | 117 | W |
| 299 | 35 | 240 | W |
| 298 | 36 | 292 | W |

| Existing 41.6kV Structure # | New 230kV Structure # | Distance (in feet) from structure being replaced | Direction from structure being replaced |
|-----------------------------|-----------------------|--|---|
| 297 | 37 | 316 | W |
| 296 | 38 | 332 | W |
| 295 | 39 | 301 | W |
| 294 | 40 | 337 | W |
| 293 | 41 | 447 | W |
| 292 | 42 | 328 | W |
| 291 | 43 | 283 | W |
| 290 | 44 | 199 | W |
| 289 | 45 | 22 | E |
| 288 | 46 | 37 | W |
| 287 | 47 | 119 | W |
| 286 | 48 | 184 | W |
| 285 | 49 | 208 | W |
| 284 | 50 | 284 | W |
| 283 | 51 | 284 | W |
| 282 | 52 | 234 | W |
| 281 | 53 | 368 | W |
| 280 | 54 | 364 | W |
| 279 | 55 | 260 | W |
| 278 | 56 | 197 | W |
| 277 | 57 | 187 | W |
| 276 | 58 | 152 | E |
| 275 | 59 | 197 | W |
| 274 | 60 | 140 | W |
| 273 | 61 | 114 | W |
| 272 | 62 | 74 | W |
| 271 | 63 | 99 | W |
| 270 | 64 | 92 | W |
| 269 | 65 | 144 | W |
| 268 | 66 | 81 | W |
| 267 | 67 | 58 | W |
| 266 | 68 | 132 | W |
| 265 | 69 | 201 | W |
| 264 | 70 | 263 | W |
| 263 | 71 | 338 | W |
| 262 | 72 | 374 | W |
| 261 | 73 | 712 | W |

| Existing 41.6kV Structure # | New 230kV Structure # | Distance (in feet) from structure being replaced | Direction from structure being replaced |
|-----------------------------|-----------------------|--|---|
| 260 | 73 | 188 | E |
| 259 | 74 | 161 | E |
| 258 | 75 | 147 | E |
| 257 | 76 | 100 | E |
| 256 | 77 | 91 | E |
| 255 | 78 | 103 | E |
| 254 | 79 | 198 | E |
| -a | 80 | - | - |
| 253 | 81 | 244 | NW |
| 252 | 82 | 61 | NW |
| 251 | 83 | 33 | NW |
| 250 | 84 | 93 | NW |
| 249 | 85 | 91 | NW |
| 248 | 86 | 98 | NW |
| 247 | 87 | N/A ^b | N/A ^b |
| 246 | 88 | 95 | NW |
| 245 | 89 | 30 | N |
| 244 | 90 | 41 | NE |
| 243 | 91 | 60 | NE |
| 242 | 92 | 68 | NE |
| 241 | 93 | 51 | NE |
| 240 | 94 | 40 | NE |
| 239 | 95 | N/A ^b | N/A ^b |
| 238 | 96 | 169 | E |
| 237 | 97 | 222 | E |
| 236 | 98 | 256 | E |
| 235 | 99 | 331 | E |
| 234 | 100 | 369 | E |
| 233 | 101 | 366 | E |
| 232 | 102 | 281 | E |
| 231 | 103 | 303 | E |
| 230 | 104 | 225 | E |
| 229 | 105 | 195 | E |
| 228 | 106 | 166 | E |
| 227 | 107 | 118 | E |
| 226 | 108 | 67 | E |
| 225 | 109 | 12 | E |

| Existing 41.6kV Structure # | New 230kV Structure # | Distance (in feet) from structure being replaced | Direction from structure being replaced |
|-----------------------------|-----------------------|--|---|
| 224 | 110 | 12 | W |
| 223 | 111 | 43 | W |
| 222 | 112 | 13 | W |

a - Indicates new structure that is not replacing an existing one
b - Indicates existing structure that is missing from the shapefile

Appendix C

MDU Design Data Report

MONTANA DAKOTA UTILITIES GENERATION OUTLET MCINTOSH AND DICKEY COUNTIES, NORTH DAKOTA

DESIGN DATA REPORT

Project

- Approximately 30-mile transmission line.
- Approximately 17.4 miles of the proposed transmission line will be double circuited. The existing 41.6 kV transmission line will be removed and the proposed 230 kV transmission line will be double circuited in the existing ROW.
- Final layout and structure types to be completed after design is finalized.

Transmission Line

GENERAL SPECIFICATIONS

| | |
|------------------------|--|
| Voltage | 230-kV |
| Average Height | 70-90 feet |
| Capacity | 680 MW |
| Operating Capacity | 400 MW |
| Span Range Length | 800-1,000feet for 230 kV 500 feet for the 41.6 kV double curcuit |
| Structure Type | H-frame |
| Minimum Conductor Size | 954 Kcmil Aluminum Conductor Steel Reinforced (ACSR) on 230 kV transmission circuit 336.4 Kcmil ACSR on the 41.6 double curcuit |
| Shield Wire | 3/8 inch EHS and Optical Ground Wire |
| Right-of-Way | 120 feet wide |
| Average Pole Depth | 11 to 15 feet |
| Average Pole Diameter | 5 to 6 feet |
| Foundation Type | Direct imbed tangent – concrete foundation angles and dead ends |

Associated Facilities

GENERAL SPECIFICATIONS

| Merricourt Interconnect Substation | |
|---|--|
| Substation Voltage | 230-kV |
| Approximate Substation footprint | 5.5 acres |
| Total substation area to be acquired (| Approximately 11 acres |
| Equipment | One 230 switchgear and control house, circuit breakers, surge arrestors, ring bus |
| Ellendale Substation Upgrades | |
| Equipment | A 230 kV circuit breaker will be added, the existing 230/115kV transformer would be replaced with a new 230/115 kV90/120/150 MVA auto-transformer. |

Appendix D

Landowner Waiver Table and Signed Landowner Waivers

The table below identifies the occupied residences located within 500 feet of the proposed transmission line. Attached to the table are the signed waiver forms from property owners. At the time of this application there were two property owners that Montana-Dakota Utilities was having continued discussions with to obtain waivers.

Table D-1. Landowner Waiver Table

| Landowner | Twp, Range, Section | Signed 500-ft Waiver |
|-----------------------------|---|----------------------|
| Brokaw, Ryan and Marcie J | T130N, R66W, Sec. 34, W1/2 | yes |
| Zahn, Doug and Patricia | T129N, R66W, Sec 1, NW1/4 | *pending |
| Trautmann, Robert and Twyla | T129N, R64W, Sec. 4, SE1/4, SE1/4 | yes |
| Emma Gulke Trust | T129N, R64W, Sec. 3, SE1/4 | *pending |
| James Monroe | T129N, R64W, Sec. 11, NW1/4 Lots 94,95 | yes |
| Charles Even | T129N, R64W, Sec. 11, NW1/4 Lots 92,93 | yes |
| Dennis Stebner | T129N, R64W, Sec 11, NW1/4 Lots 90,91 | Yes |
| David Miechiels | T129N, R64W, Sec 11, NW1/4 Lots 88,89 | yes |

**Montana Dakota is continuing to work with the property owner*

Acknowledgement of MDU Project

To:


Attn: Tom Crary
Montana-Dakota Utilities Co.,
A Division of MDU Resources Group, Inc.
400 North Fourth Street
Bismarck, North Dakota 58501

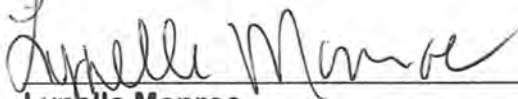
We James Monroe and Lynelle Monroe, ^{305 Main St} ~~724 1st Ave. North~~, Ellendale, North Dakota 58436, are the owners of Lots 94 and 95, Block 11 platted as Pheasant Acres, in Dickey County, North Dakota

We understand MDU is upgrading an existing 41.6 kV electric transmission line and adding a 230 kV transmission currently within 500 feet of my property. The new project will require the existing poles to be replaced and the new lines will be together on the same poles as the previous line occupied for the last 50 years. The new 230 kV line shall occupy the space approximately 25 feet above the replaced 41.6 kV line.

We acknowledge the new project and have no objection.

By: James Monroe and Lynelle Monroe, husband and wife


James Monroe


Lynelle Monroe

Dated: 11-5-10

Acknowledgement of MDU Project

To:

Attn: Tom Crary
Montana-Dakota Utilities Co.,
A Division of MDU Resources Group, Inc.
400 North Fourth Street
Bismarck, North Dakota 58501

We Charles Even and Joyce Even, 78E. Lake Drive, Ellendale, North Dakota 58436, are the owners of Lots 92 and 93, Block 11 platted as Pheasant Acres, in Dickey County, North Dakota

We understand MDU is upgrading an existing 41.6 kV electric transmission line and adding a 230 kV transmission currently within 500 feet of my property. The new project will require the existing poles to be replaced and the new lines will be together on the same poles as the previous line occupied for the last 50 years. The new 230 kV line shall occupy the space approximately 25 feet above the replaced 41.6 kV line.

We acknowledge the new project and have no objection.

By: Charles Even and Joyce Even



Charles Even

Joyce Even

Dated: 11-9-10

Acknowledgement of MDU Project

To:

Attn: Tom Crary
Montana-Dakota Utilities Co.,
A Division of MDU Resources Group, Inc.
400 North Fourth Street
Bismarck, North Dakota 58501

We Dennis Stebner and Tammera Stebner, 208 6th Ave. N., Ellendale, North Dakota 58436, are the owners of Lots 90 and 91, Block 11 platted as Pheasant Acres, in Dickey County, North Dakota

We understand MDU is upgrading an existing 41.6 kV electric transmission line and adding a 230 kV transmission currently within 500 feet of my property. The new project will require the existing poles to be replaced and the new lines will be together on the same poles as the previous line occupied for the last 50 years. The new 230 kV line shall occupy the space approximately 25 feet above the replaced 41.6 kV line.

We acknowledge the new project and have no objection.

By: Dennis Stebner and Tammera Stebner



Dennis Stebner



Tammera Stebner

Dated: 11-5-10

Acknowledgement of MDU Project

To:

Attn: Tom Crary
Montana-Dakota Utilities Co.,
A Division of MDU Resources Group, Inc.
400 North Fourth Street
Bismarck, North Dakota 58501

We David L. Miechiels and Janet A. Miechiels, 2570 Brewer Road, Howell, Michigan 48855-7749, are the owners of Lots 88 and 89, Block 11 platted as Pheasant Acres, in Dickey County, North Dakota


We understand MDU is upgrading an existing 41.6 kV electric transmission line and adding a 230 kV transmission currently within 500 feet of my property. The new project will require the existing poles to be replaced and the new lines will be together on the same poles as the previous line occupied for the last 50 years. The new 230 kV line shall occupy the space approximately 25 feet above the replaced 41.6 kV line.

We acknowledge the new project and have no objection.

By: David L. Miechiels and Janet A. Miechiels



David L. Miechiels



Janet A. Miechiels

Dated: 11-13-10

Acknowledgement of MDU Project

To:

Attn: Tom Crary
Montana-Dakota Utilities Co.,
A Division of MDU Resources Group, Inc.
400 North Fourth Street
Bismarck, North Dakota 58501

We, Robert A. and Twyla Trautmann, 8091 97th St. SE, Ellendale, North Dakota 58436-9656, are the owners of a tract of land located in the SE $\frac{1}{4}$ Sec. 4-T129N-R64W described as follows:

Commencing at the Southeast corner of the SE $\frac{1}{4}$ Sec. 4-T129N-R64W, thence west a distance of 800 feet, thence North 458 feet, thence East 596 feet, thence North 377 feet, thence East 204 feet, thence South a distance of 835 feet to the true point of beginning. Said tract contains 10.0 acres, more or less

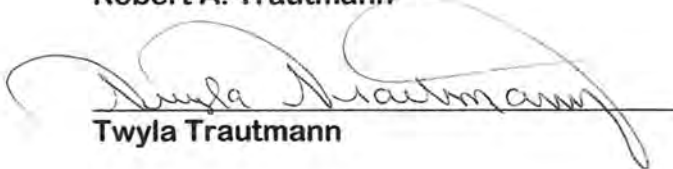
We understand MDU is upgrading an existing 41.6 kV electric transmission line and adding a 230 kV transmission currently within 500 feet of my property. The new project will require the existing poles to be replaced and the new lines will be together on the same poles as the previous line occupied for the last 50 years. The new 230 kV line shall occupy the space approximately 25 feet above the replaced 41.6 kV line.

We acknowledge the new project and have no objection.

By: Robert A. Trautmann and Twyla Trautmann, husband and wife



Robert A. Trautmann



Twyla Trautmann

Dated: 11/10/10

Acknowledgement of MDU Project

To:

Attn: Tom Crary
Montana-Dakota Utilities Co.,
A Division of MDU Resources Group, Inc.
400 North Fourth Street
Bismarck, North Dakota 58501

Ryan Brokaw and Marcie Jo Brokaw are the owners of a home site whose address is: 9550 Hwy 56, Forbes, North Dakota 58439, situated in the W $\frac{1}{2}$ of Section 34, Township 130 North, Range 66 West, in Dickey County, North Dakota

I understand MDU is building a 230 kV transmission to provide service to a proposed substation for an enXco wind farm project north and west of my property. The proposed alignment is currently within 500 feet of my home site. The proposed transmission line is intended to parallel Highway #56.

I acknowledge the new project and have no objection.

By: Ryan Brokaw and Marcie Jo Brokaw



Ryan Brokaw



Marcie Jo Brokaw

Dated: 2-1-11

Appendix E

Class I Literature Search

Class I Literature Search

**Montana-Dakota Utilities Co. 230kV Transmission Line from the
Merricourt Wind Farm to the Ellendale Junction Substation, Dickey and
McIntosh Counties, North Dakota.**

**Prepared for
Montana-Dakota Utilities Co.**

**Prepared by
HDR Engineering, Inc.**

September 2010

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Introduction

This report presents the results of a Class I cultural resources inventory (literature search) completed by HDR Engineering (HDR) in September 2010 for the proposed Montana-Dakota Utilities Co (MDU) Merricourt Wind Farm to Ellendale (MWFE) Transmission Line Project. MDU proposes to build an approximately 30-mile-long, 230 kilovolt (kV) transmission line and substation in Dickey and McIntosh counties, North Dakota. This transmission line will connect the existing Ellendale Junction Substation, located about 1.5 miles west of Ellendale, North Dakota, in Section 10, T129N, R63W, Dickey County, to a proposed (new) Merricourt Wind Farm Substation, located about 15 miles east-northeast of Ashley in Section 3, T130N, R67W, McIntosh County. The MWFE Project will serve to increase the transfer capacity on the current transmission system in the area, and serve as a generation outlet for the proposed Merricourt Wind Farm.

This Class I literature search was completed for the project's siting corridor developed by HDR and MDU (Table 1). The purpose of this literature search was to determine the location of previously recorded historic properties and surveys (archaeological surveys, archaeological sites, and architectural structures) within the study area, and to assess the potential for the presence of as yet unrecorded archaeological resources within the siting corridor.

Table 1: Siting Corridor Legal Descriptions

| County | Township Name | Township | Range | Sections |
|----------|-----------------------|----------|-------|--|
| Dickey | Ellendale | T129N | R63W | 3,4,5,6,7,8,9,10,15,16,17,18 |
| Dickey | Elm | T129N | R64W | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18 |
| Dickey | Lorraine | T129N | R65W | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17 |
| Dickey | Albertha | T129N | R66W | 1,2,3,4,5,6,7,8,9,10,11,12 |
| Dickey | Elden | T130N | R63W | 31,32,33,34 |
| Dickey | Albion | T130N | R64W | 19,20,21,25,26,27,28,29,30,31,32,33,34,35,36 |
| Dickey | Grand Valley | T130N | R65W | 7,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36 |
| Dickey | Spring Valley | T130N | R66W | 3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36 |
| McIntosh | Unorganized Territory | T129N | R67W | 1,2,3,11,12 |
| McIntosh | Unorganized Territory | T130N | R67W | 1,2,3,4,5,8,9,10,11,12,13,14,15,16,17,20,21,22,23,24,25,26,27,28,29,33,34,35,36 |

This report presents the physiography and environmental overview, cultural contexts, and archaeological study units relevant to siting corridor, discusses the potential for encountering cultural resources present within portions of the siting corridor that have not been previously surveyed, and provides recommendations for archaeological investigations within the siting corridor.

Physiography and Environmental Overview

This project is located within the Central Lowlands physiographic province of North Dakota (Bluemle and Biek 2007). Within this province, the siting corridor traverses three physiographic

regions: the Missouri Coteau, the Glaciated Plains, and the Glacial Lake Basin of Glacial Lake Dakota (Bluemle and Biek 2007, USGS 2006).

Glaciated Plains

The eastern portion of the siting corridor from the Ellendale substation to just west of Pheasant Lake is located within the Glaciated Plains physiographic province. The Glaciated Plains region is characterized by a rolling landscape with numerous temporary and seasonal wetlands formed by glacial till deposited by the Wisconsin glacier as it slowly retreated. Historically this region was a mix of tall and short grass prairie with natural vegetation consisting of western wheatgrass, big and little bluestem, switchgrass, and indiangrass. The current land use of this region consists almost completely of agriculture (spring wheat and other small grains, sunflowers, and alfalfa). The mean annual precipitation in this region is 17-19 inches. The average January high temperature is 16° F, while the average July high is 83° F. The average frost free season lasts from 95-125 days (USGS 2006).

Glacial Lake Dakota Basin

The relatively flat plain from just west of Pheasant Lake to the edge of the Missouri Coteau is the lake basin of a small northward arm of Glacial Lake Dakota, the main body of which is located mostly within South Dakota. This region is characterized by fewer wetlands and flatter terrain than the Glaciated Plains to the east and the Missouri Coteau to the west. Historically this region was a mix of western wheatgrass, needleandthread, blue grama, and green needlegrass. The current land use of this region is intensive agriculture with corn and soybean crops (USGS 2006).

Missouri Coteau

The western portion of the siting corridor is located on the Missouri Coteau, which rises dramatically from the flat Glacial Lake Dakota basin to the east. The Missouri Coteau is characterized by rolling, hummocky topography containing numerous pothole wetlands. This region's distinctive pothole topography was formed when the Wisconsin glacier stalled on the Missouri escarpment during its retreat and gradually melted beneath a mantle of sediment. Historically this region was a mixed-grass prairie with natural vegetation including western wheatgrass, bluestem, needleandthread, and green needlegrass, along with prairie cordgrass and northern reedgrass near wetlands. Patches of native prairie can be found throughout this region on unbroken rangeland. The current land use of this region consists of a mix of cattle grazing on steeper terrain and agriculture (winter wheat, hay) in areas of less topographical relief (USGS 2006). This region's climate is semiarid continental, with long, cold winters and hot summers (NDSHPO 2003). The mean annual precipitation in this region is 15-19 inches. The average January high temperature is 16° F, while the average July high is 84° F. The average frost-free season lasts from 110-130 days (USGS 2006).

Cultural Contexts

This section provides a summary of the five precontact/protohistoric cultural traditions identified in the North Dakota State Historical Society (NDSHPO) planning document *The North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component*: Paleo-Indian; Plains Archaic; Plains Woodland; Plains Village; and Equestrian Nomadic . (Gregg et al 2008) These cultural traditions are differentiated based on technical innovations (e.g. changes in projectile point form or pottery decoration) and changes in resource exploitation and mobility patterns that can be

observed in the archaeological record. This section also presents an overview of the state's contact, historical, and modern period contexts. The Contact, Historical, and Modern period contexts examine important historical events and trends important to the development of North Dakota as a state. The following discussion of precontact cultural traditions has been adapted from *The North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component* (Gregg et al 2008), and *The Handbook of North American Indians* (DeMallie, 2001). The following overview of the Contact, Historic, and Modern period contexts in North Dakota has been adapted from *Early History of North Dakota: Essential Outlines of American History* (Lounsberry 1919), *Out Where the West Begins: Early and Romantic History of North Dakota* (Trinka 1920), and the chapter "North Dakota History: Overview and Summary" from *North Dakota Blue Book* (Remele 1998).

Paleo-Indian

The Paleo-Indian Tradition (9500-5500 BC) begins with what is thought to be the initial peopling of the state following the recession of the Wisconsin glacier and lasts until the transition of Paleo-Indian lifeways into Plains Archaic lifeways. Boreal climatic conditions dominated the early part of this tradition. Grasslands and spruce-aspen parklands surrounding major rivers and large lakes were common throughout the state and were popular locations for Paleo-Indian settlement. This tradition is characterized by a highly mobile, nomadic settlement pattern and a subsistence strategy based largely on the hunting of Pleistocene megafauna such as mammoths, camels, and giant bison, and later, smaller species of bison closer in size to modern forms. Wild plant foods were gathered as well, but archaeological evidence regarding this activity is sparse. Large lanceolate and fluted projectile points diagnostic of this tradition are used to mark the various Paleo-Indian cultural complexes represented in North Dakota: Clovis, Goshen, Folsom, Hell Gap-Agate Basin, Cody, Parallel Oblique Flaked, Pryor Stemmed, and Caribou Lake. Site types include camps, Knife River flint quarry sites, other lithic procurement areas, lithic workshops and isolate artifact finds.

Plains-Archaic

The Plains-Archaic Tradition (5500 BC-400 BC) is characterized by hunting and gathering adaptations to a plains ecosystem with a greater variety of resources available for exploitation. Climatic shifts during this period brought about more arid and droughty conditions, broken up by short periods of more mesic conditions. These climatic conditions may have led to declining populations and a reduction in the extent of interaction between population groups. Settlement patterns for this tradition are not as well known as other traditions because comparatively few Archaic period sites have been identified in the state. Projectile point styles became more regionalized, indicating the beginnings of regional cultural variation. Diversified technologies associated with hunting, trapping, fishing, foraging, wood working and plant processing are represented in the material culture from Plains-Archaic sites. Of particular note, the atlatl weapon is developed during this tradition, and ground stone tools appear in the archaeological record. Side-notched projectile points, and chipped stone scrapers, knives, punches, and drills also appear in the Plain-Archaic toolkit. Plains Archaic complexes recognized in North Dakota include Logan Creek-Mummy Cave, Oxbow, McKean Lanceolate, Duncan, Hanna, Yonke, and Pelican Lake. Site types include animal kill sites, camps, Knife River flint quarry sites, lithic workshops, and burial sites.

Plains Woodland

The Plains Woodland Tradition (400 BC-AD 1200) is characterized by the emergence of ceramic technology, mound burials, and limited horticulture in addition to the continued subsistence strategies and settlement patterns exhibited in the Plains Archaic Tradition. The climate began to stabilize and resembled the climate that exists today. The development of horticulture and construction of burial mounds indicate a transition to a more sedentary lifestyle in this tradition. Interaction between population groups broadened during this period, and trade networks with other parts of the country expanded. The bow and arrow was developed during this tradition. Smaller side and corner-notched projectile points along with a variety of chipped stone cutting tools, ground stone tools, and ceramic pottery are common in the Plains Woodland toolkit. The Plains Woodland complexes recognized in North Dakota are based largely on ceramic wares and include Sonota/Besant, Laurel, Avonlea, Brainerd, Blackduck, Mortlach, Old Women's, and Sandy Lake. Site types include burial mounds and other burial sites, occupations, camps, quarries and lithic procurement areas, and bison kill sites.

Plains Village

The Plains Village Tradition (AD 1200-ca.1780) is characterized by an intensification of agriculture and the emergence of larger, more complex societies. Subsistence strategies included an equal mixture of cultivating river floodplains for garden crops and hunting game, primarily bison, in the upland grasslands. Corn was the primary crop cultivated during this tradition. Dried corn was stored in subterranean storage pits, creating a dependable surplus of food. This surplus supported semi-permanent earthlodge villages, situated on the higher terraces and uplands overlooking river channels and floodplains. The Plains Village cultures in North Dakota were concentrated primarily along the Missouri River Trench and within the James and Sheyenne river basins, although hybrid Woodland/Plains Village cultures existed in other parts of the state. Material culture from this tradition includes distinctly decorated ceramic pottery, triangular chipped-stone side-notched and unnotched projectile points, chipped stone end scrapers, drills, and bifaces, bison or elk scapulae hoes and digging tools, an array of bone tools and decorations, mollusk shell beads and ornaments, a variety of groundstone tools, and various smoking pipes. Luxury items include native copper from the Great Lakes, shells from the Gulf or Atlantic coasts, snails from the southeastern United States, steatite from northern Wyoming, obsidian from near Yellowstone Park in Wyoming, dentallium from the Pacific Coast, and catlinite from southwestern Minnesota. In North Dakota, the Plains Village tradition is subdivided into the Middle Missouri and Coalescent Traditions, and the Northeastern Plains Village Complex. Site types include occupations (fortified and unfortified earthlodge villages), winter villages, camps (hunting), flint quarries, eagle trapping sites and conical timber lodges, burials, lithic workshops, bison kill sites, and rock art sites.

Equestrian-Nomadic

The Equestrian Nomadic period (AD 1780-1880) encompasses both the late Protohistoric and Historic times, following the arrival of European trade goods and the introduction of the horse. The horse replaced the dog as a beast of burden and allowed a more nomadic settlement pattern. Subsistence economies changed as well as groups were able to travel further from residential bases to hunt bison and other large game. The new Equestrian Nomadic lifeway spread throughout the region and was adopted by different cultural groups, eventually leading to greater interactions between these groups. Less complex bands came together and formed larger tribes as migration increased and

competition for resources grew. An increasing number of European trade goods appear in the material culture of this period. Site types include camps, battle sites and animal kill sites.

Fur Trade/Contact

One of the first known Euro-American expeditions into North Dakota was by Pierre Gaultier de la Verendrye, a French explorer and fur trader, who in 1738 visited Mandan villages near present day Bismarck. By the 1790s the Canadian North West Company and Hudson's Bay Company erected trading posts along the Red River of the North and in the northeastern corner of the state. Euro-American interest in this part of the country increased with the United States' purchase of the Louisiana Territory in 1803. The Lewis and Clark expedition was organized to explore and report on this new territory, and in 1804 they passed through North Dakota. During their time in North Dakota, Lewis and Clark visited Mandan, Hidatsa, and Arahami villages along the Missouri River, and wintered in Fort Mandan, which they built six miles below the mouth of the Knife River. The following year, the expedition made its way through the rest of North Dakota on its way into present day Montana.

Increasing numbers of explorers and fur traders would reach the area in the following years. This time period is recognized by the establishment, operation, and adaptation of gathering the hides of fur bearing mammals in exchange for other goods and materials. This exchange linked the Northern Plains to a world-wide economic and political system. Increased demand for furs by European societies led to the establishment of settlements or forts in strategic locations throughout the Northern Plains. These areas of centered interaction allowed the furs to be procured in an orderly fashion and transport to markets in Europe as quickly as possible. One of the earliest settlements in North Dakota was a colony set up by white settlers from Winnipeg in 1812 at the confluence of the Pembina River and the Red River of the North near present day Pembina. The Red River Valley was also occupied by the Metis, a group of people of mixed European and Native American ancestry. The Metis were active in the fur trade in the region, and they carried furs and merchandise between Winnipeg and St. Paul, Minnesota, by way of oxcart. By 1859 steamboats were being used to transport goods between the two cities. Known site types include fur trading posts and forts, trails, loading and shipping facilities, trapping, trading and hunting grounds, camps and camp sites, steamboat docks, stores, dwellings, warehouses, and residences of prominent fur trade participants.

Historic Period

Military Confrontation

This time period, defined as between 1862 and 1870, is characterized by and increasing Federal presence in form of a chain of military outposts. An unfulfilled treaty between the Federal government and the Dakota led to a violent uprising in Minnesota in 1862. This in turn led to major military expeditions by the United States government in 1863, 1864, and 1865. Battles at Whitestone Hill and Killdeer Mountain in 1863 and battles in the Badlands in 1864 diminished Dakota resistance. However, strained relations between Federal entities and Dakota populations existed well into the 1890s and to some extent still exist today. Known site types include forts, posts, armories, battlefields, trails, roads, bridges, fords, mail stations, cemeteries, villages, camps, camp sites, dumps, defensive work corrals, barns, storage areas, and dwellings and residences.

American Settlement/Statehood

The American Settlement time period ran from 1861 through North Dakota's statehood on November 2, 1889. The settlement of North Dakota was a direct tie to creation of railroads and railroad lines across the state. In 1862 gold was discovered in present day Montana and Idaho, leading to waves of settlers traveling west across North Dakota. In 1864, the Northern Pacific Railroad Company was granted rights to build a railroad through the territory, and in 1871 an expedition with a military escort was sent out to scout and survey potential routes. In 1872 the Northern Pacific was built as far as Bismarck, and by the end of the 1870s, railroad links from the east brought homesteaders, including many Norwegian and German immigrants, into the state. Throughout the 1870s and 1880s towns and settlements developed in order to serve the homesteaders, frontier citizens, and railroad crews working in the territory. Around 1879, a population boom occurred that had direct ties to the development of organized, highly mechanized, and large bonanza farms. These bonanza farms had a dramatic effect on the landscape. For the first time, large sections of the project area were able to be cultivated and farmed. On November 2, 1889, President Benjamin Harrison approved the admission of North Dakota to the United States. The new state was a Republican stronghold, with the state government dealing with issues concerning large amounts of resources and wealth being extracted for the state with no reinvestment. This eventually led to the Democratic Party winning elections and in turn reinvesting wealth and resource back into the state. Known site types may include towns, colonies, settlements, reservations, businesses, residences, farms, courthouses, city halls, township halls, government office buildings, office jails, police and sheriff's offices, fire stations, maintenance shops, storage yards, buildings and facilities, dumps, warehouses, roads, highways, streets, alleys, bridges, water and sewer treatment facilities, and homes of prominent local political leadership.

Modern Period

The Great Depression

During the Great Depression (1929-1940), a slowing national economy, heavy from debt, low prices for agricultural goods, crop failures, dust storms, and extreme weather resulted in series of farm forecloses, bank failures, and residential dwellings and business abandonment. Known site types may include abandoned farms, banks, businesses buildings, city parks, civic improvements, relief facilities, WPA projects, Civilian Conservation Corps camps and project sites.

Modern Industrial Development

Remele defines this time period as the 1940s, 50s, and 60s. During this time period, a post-war economy was driving the development of large industrial facilities in order to change raw materials into products for local and national consumption. Large construction project, such as dam building and reservoirs, allowed farms, corporations, and citizens of the state to control their access to water resource throughout the year in a more predictable manner. Discovery of natural resources, such as oil and coal, allowed for the development of these industries in the state. Additionally, the beginnings of Cold War stress between the United States and foreign governments generated a perceived need for strategic placement of military bases. In 1960 two large Air Force bases were built in North Dakota at Grand Forks and Minot. Known site types include Air Force installations, armories, storage areas, dwellings and residences, brick plants, concrete plants, blotting plants, meat packing plants, food processing plants, assembly plants, factories, foundries, saw mills, gristmills, gravel potash and uranium mines, tipples, mines, mine entrances, loading and transportation facilities, storage yards,

railroad spurs, office buildings, camps, oil wells, gas wells, petroleum product refineries, tank batteries, pipelines, and pumping stations.

North Dakota Archaeological Study Units

The North Dakota SHPO has divided the state into 13 archaeological study units, based on the state's major drainage basins. These study units were developed to enable a better analysis of prehistory or history in terms of regional adaptations to geography and environmental conditions (NDSHPO 2008). This project is located mainly within the James River study unit, with a small portion near the western terminus located within the Southern Missouri River study unit.

James River

The James River archaeological study unit (JRSU) is centered on the James River, flowing north to south in eastern North Dakota. This study unit falls within the Central Lowlands physiographic province and traverses the Glaciated Plains physiographic region (Bluemle and Biek 2007). The following discussion of the JRSU is adapted from *The North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component: James River Study Unit* (Swenson and Bleier 2008).

Landscape

Following the recession of the Wisconsin glacier, the deglaciated terrain of this study unit was colonized by a boreal forest with openings dominated by sagebrush. By the mid-Holocene, the boreal forest had shifted east of the Red River, being replaced by prairie grasslands. This prairie grassland ecosystem has persisted into the present. A variety of landforms are present in the study unit and include uplands, valley wall side slopes, valley wall foot slopes, alluvial fans, river terraces, flood plains, and lake plains. The rolling uplands are characterized by ground moraines, end moraines, and valley trains.

Floral and Faunal Resources

Floral resources historically available in the JRSU include the willow, elm, ash, box elder, cottonwood, and bur oak trees that comprise the gallery forests of the James River and associated drainages, along with edible plants such as prairie turnips, chokecherries, wild plums, currants, raspberries, snowberries, juneberries, and gooseberries. Faunal resources historically available in the JRSU include large and small mammals such as bison, elk, pronghorn antelope, white-tailed deer, beaver, badger, raccoon, muskrat, fox, coyote, wolf, skunk, jack rabbit, cottontail rabbit, mink, weasel, ground squirrel and some insectivores; aquatic species including painted turtles, snapping turtles, bullheads, yellow perch, northern pike, and numerous species of mollusks; and avian species including geese, ducks, raptors, and song birds. Pleistocene megafauna such as mammoths and camels were available in the JRSU until their extinction in the early Holocene.

Lithic Resources

Lithic raw material sources available in this unit can be found in both stream gravels and the glacial till and include Tongue River silicified sediment (TRSS), Swan River chert, chalcedony, quartzite, and occasionally Knife River flint (KRF). The glacial till also provided small boulders that were utilized for securing tipi covers, building cairns, capping caches and burials, and creating game drive

alignments, amongst other purposes. Granite was used to make ground and pecked stone artifacts. Rocks were also used for stone boiling and sweat bathing.

Site Types

Within the JRSU, common site/feature types include cultural material scatters and mounds. A number of other site/feature types including graves, other rock features, and stone circles are also present within this study unit, along with a couple of earthlodge villages. The majority of the recorded sites in the JRSU are located on hills, knolls, or bluffs, although a number of sites are located on floodplains, ridges, and upland plains as well. This section presents the common site types associated with each of the major prehistoric/protohistoric cultural traditions identified in North Dakota.

Paleo-Indian Tradition

Sites dating to the Paleo-Indian period are rare in the JRSU. A few scattered surface finds consisting of lithic tools or projectile points have been found throughout the unit, mostly in the uplands and on valley rims. Only one subsurface Paleo-Indian site has been found within the study unit. This site consisted of a partially excavated mammoth with no associated artifacts located just west of the James valley in Stutsman County. Although no artifacts were found, a portion of this site remains intact for future study.

Plains Archaic Tradition

As of 2008, the only site/feature types associated with the Plains Archaic Tradition identified in the JRSU were cultural material scatters, one burial site, and isolated finds of projectile points. Based on studies in other study units, site/feature types associated with the Plains Archaic Tradition likely to be found in the JRSU include hearths, jump sites, rock cairns, rock alignments, stone circles, and storage and refuse pits.

Plains Woodland Tradition

Plains Woodland functional site types identified in the JRSU include mortuary sites, field camps, and residential bases. Most of the mortuary sites are located in mounds in the uplands. The residential bases, special purpose mortuary sites, and temporary campsites should be present near these mound sites in both the floodplain and uplands. Site/feature types associated with the Plains Woodland Tradition identified in the JRSU include cultural material scatters, earthworks, graves, hearths, mounds, rock cairns, and storage and refuse pits. Based on studies in other study units, site/feature types associated with the Plains Woodland Tradition likely to be found in the JRSU include jump sites, lithic procurement areas, and stone circles.

Plains Village Tradition

Previously recorded Plains Village residential sites have all been located on floodplain and terrace settings. Mounds attributed to the Plains Village Tradition are mostly situated along the bluffs of the James River Valley, although some are located on terraces as well. Plains Village site/feature types identified in the JRSU include cultural material scatters, earthlodge villages, earthworks, fortifications, graves, hearths, mounds, pits, and lithic procurement areas.

Nomadic Equestrian Tradition

Tribes likely to have been in the JRSU during early historic times include the Dakota (Yankton and Yanktonai), Cheyenne, Awaxawi Hidatsa, and Assiniboine. The most common sites attributed to the

Nomadic Equestrian Tradition are stone circle sites. These sites can be found along ridges or hill crests, often with commanding views of the surrounding country. Previous archaeological investigations indicate that some sites with large numbers of ring features were used recurrently.

Southern Missouri River

The Southern Missouri River archaeological study unit (SMSU) is centered on the north to south orientated portion of the Missouri River Trench located in south-central North Dakota. This study unit falls within the Great Plains physiographic province and traverses the Missouri Coteau, the Coteau Slope, and the River Breaks physiographic regions as well as a small portion of the Missouri Plateau region west of the Missouri River (Bluemle and Biek 2007, USGS 2006). The following discussion of the SMSU is adapted from *The North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component: Southern Missouri Study Unit* (Gregg et al 2008).

Landscape

Before modern dam impoundments, the original course of the Missouri River flowed through a broad, deeply entrenched valley. The Missouri River Valley and some of its larger tributaries are comprised of several landforms that have been utilized by human populations since the end of the Pleistocene: floodplains, terraces and breaks terrain. The floodplains of the Missouri River and its tributaries are comprised of alluvial sediments that have built up to variable thicknesses since the final retreat of the last Pleistocene glacier. These floodplain deposits may vary in thickness from several to many meters. The terraces of the Missouri River and its tributaries are comprised of lateral, uneroded margins of prior stream beds or remains of former floodplains that are currently located above the existing floodplain. Three terraces have been identified within the Missouri River Valley. The uppermost Holocene sediments in these terraces are eolian in origin and classified in the Oahe Formation. These terraces were flood-free and well drained and were heavily occupied as warm weather residential settlements. The Missouri River “breaks” are the eroded and steeply dissected margins of the River Trench, and often appear as woody draws. The breaks were important resource procurement areas exploited for both faunal and floral resources. Outside of the Missouri River Valley, the upland plains landscape, characterized by the rolling uplands and pothole lakes of the Missouri Coteau, has been utilized since at least the Late Plains Archaic. Stone circles and other rock features such as cairns are common site types found in these rolling uplands.

Floral and Faunal Resources

Floral resources historically available in the SMSU include the cottonwood, willow, box elder, and green ash trees that comprise the forested areas within the floodplain of the Missouri River, stands of mixed deciduous trees in the valley breaks, wild plant foods with edible roots such as textile onion, biscuitroot, prairie turnip, and ground plums, and other edible plants including as chokecherries, buffaloberries, gooseberries, and wild plums. Faunal resources historically available in the SMSU include large mammals such as white-tailed deer, mule deer, Bison, elk, and antelope; semiaquatic mammals such as beaver; aquatic animals including numerous fish species, turtles, and various mussels; and a variety of avian species including eagles, hawks, owls, pelicans, magpies, and diverse waterfowl. Predators in this study unit include the wolf, coyote and fox. Pleistocene megafauna such as mammoths and camels were available in the SMSU until their extinction in the early Holocene.

Lithic Resources

Knife River flint (KRF) was the preferred raw material for making chipped stone tools in the northern half of the SMRSU. Tongue River silicified sediment (TRSS) was an important lithic raw material utilized by both Plains Village and earlier peoples living to the south near the Missouri-Cannonball confluence.

Other Lithic materials such as granite and rocks of coal burn origin (clinker and scoria) were important for secular and ceremonial functions. Granite cobbles were used both as construction materials and as sources of heat transfer in food preparation and ceremonial sweatbathing. Granite was also used to fashion large hammering, grinding, and abrading tools. Clinker and scoria were used for domestic chores as well as ritual functions in the Plains Village ceremonial practices.

Site Types

Within the SMSU, site types such as cultural material scatters, earthworks, fortifications, graves, hearths, mounds, pits, and trails are frequently found on the terraces of the Missouri River its major tributaries. The majority of earthlodge village sites found within the SMSU are also located on terraces. Site types including stone rings, other rock features, and rock art sites are more commonly found on hills, knolls, bluffs, and ridges. This section presents the common site types associated with each of the major prehistoric/protohistoric cultural traditions identified in North Dakota.

Paleo-Indian Tradition

During the Paleo-Indian Tradition, this study unit would have been dominated by spruce-aspen forests and wetlands. Landforms available for settlement would have included the remnant surfaces of old river terraces, and the rim of the uplands overlooking the Missouri River Valley. Site types associated with the Paleo-Indian Tradition in this study unit are limited to scattered finds of chipped stone projectile points.

Plains Archaic Tradition

During the Plains Archaic Tradition, the ecosystem transitioned to prairie as the boreal forest conditions withdrew. The terrace settings of the Missouri River and its tributaries would have been open prairie and unsheltered during this time. During dryer climatic conditions during this period, settlement in this study unit may have been limited to the Missouri River Trench. Site types associated with the Plains Archaic Tradition in this study unit are limited to chipped stone projectile points.

Plains Woodland Tradition

During the Plains Woodland period, the Missouri River Trench was the focus of residential settlement. Plains Woodland functional site types identified in the SMRSU include mortuary sites, field camps, and residential bases. Site/feature types associated with the Plains Woodland Tradition found within the SMRSU include cultural material scatters, earthworks, graves, hearths, mounds and animal processing sites. Based on studies in other study units, site/feature types associated with the Plains Woodland Tradition likely to be found in the SMRSU include jump sites, lithic procurement areas, and stone circles.

Plains Village Tradition

The SMSU contains the majority of North Dakota's Plains Village period earthlodge villages and other settlements. These settlements were more intensively and continuously occupied here than in any other part of the state. Plains Village site/feature types identified in the SMRSU include cultural material scatters, earthlodge villages, earthworks, fortifications, graves, hearths, mounds, and pits.

Nomadic Equestrian Tradition

The most common sites attributed to the Nomadic Equestrian period are stone circle sites located on the Coteau east of the river. These sites can be found along ridges or hill crests, often with commanding views of the surrounding country. Previous archaeological investigations indicate that some sites with large numbers of ring features were used recurrently.

Background Research Results

The background research for this project consisted of online research of the National Park Service's National Register of Historic Places (NRHP), online research of historical General Land Office (GLO) plat maps, an analysis of cultural resources data provided by the NDSHPO, and a review of the NDSHPO planning document: *The North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component*. The cultural resources data obtained at the SHSND included topographic maps that document the location of all previous cultural surveys, previously identified archaeological sites, and recorded architectural properties within the siting corridor. The NDSHPO archaeological planning document was reviewed to obtain information regarding the expected locations of archaeological sites within the various archaeological study units.

Previous Surveys

A total of 19 cultural resources investigations have been completed within the siting corridor (Attachment A Table 1). These investigations included several surveys of smaller parcels for projects such as borrow areas and communication towers, and a couple of long, linear water pipeline surveys. The areas surveyed for these projects represent a small portion of the overall siting corridor. Relatively larger portions of the siting corridor were surveyed as part of three wind farm projects. The majority of sites located within the siting corridor were identified during surveys for these wind farms.

Previously Recorded Archaeological Sites

The files provided by NDSHPO indicate there are 73 previously identified archaeological sites within the siting corridor (Attachment A Table 2). There are 66 precontact sites and 7 historical sites. The majority of the sites identified within the siting corridor were identified during survey of three wind farms mentioned above.

The majority of these sites were precontact sites identified on the Missouri Coteau. These sites are clustered in two areas, with one cluster being found along the eastern edge of the Coteau, and another cluster located along an east-west trending ridge further west on the Coteau. The majority of the previously recorded precontact sites are Native American stone feature sites with the exception of one mound, and one cultural material scatter not associated with any stone features. Based on information contained in the site forms, twelve precontact sites are associated with burials or may contain mortuary remains.

The previously recorded historic sites are all located on the Coteau, but this is likely due to the larger areas surveyed there as compared to the surveys completed east of the Coteau. These historical sites include two graves, a couple foundations, and three cultural material scatters.

Previously Recorded Archaeological Isolated Finds/Site Leads

Isolated finds are archaeological find spots consisting of five or less artifacts recovered from the ground surface where no linear dimension on the location exceeds 100m, and no intact subsurface cultural deposits can be demonstrated (SHSND 2009). Site leads are suspected but unconfirmed archaeological sites and architectural properties. Because complete information on the nature of the individual isolated finds/site leads is not available at this level of investigation, they are classified together for this literature search. The files provided by NDSHPO also indicate there are 21 site leads/isolated finds located within the siting corridor (Attachment A Table 3). Precontact resources represent 16 of the isolated finds/sites leads. These resources include 11 stone feature sites, four isolated finds, and one small cultural material scatter. Historic resources represent five of the isolated finds/site leads. These resources include three possible post office locations, one grave, and one foundation, depression, and associated cultural material scatter.

Previously Recorded Architectural Properties

In addition to archaeological sites, the files provided by NDSHPO indicate there are 3 recorded architectural properties and one architectural site lead within the siting corridor. The architectural properties include two bridges (one destroyed), and one religious shrine that is a replica of an old church. The architectural site lead is a farmstead (Attachment A Table 4).

NRHP Listed Properties

The online review of the NRHP was done to identify NRHP registered sites and districts located within the siting corridor. A search of the NRHP's online database revealed there are no NRHP registered historic properties or historic districts located within the siting corridor.

GLO Research

Official Government Land Office survey plat maps (GLOs) corresponding with the siting corridor were examined to identify areas that may have potential for containing historical era cultural resources. Archaeological sites may be present in locations where historic resources have been documented on the GLO maps. The most common resource identified on the GLO maps consisted of structures, often with associated cultivated fields, representing farmsteads. The majority of these farmsteads were located within the eastern portion of the siting corridor, on the relatively flat terrain east of the Missouri Coteau. Detailed information regarding the location and resource types found within this section of the macro-corridor is presented in Attachment A, Table 5.

Whitestone Hill Battlefield

The Whitestone Hill Battlefield State Historic Site is located approximately six to seven miles north of the siting corridor in Whitestone Township. This historic site marks the location of a battle between Native Americans and U.S. Soldiers in 1863. After the battle, detachments of U.S. soldiers were sent out in all directions to overtake retreating Indians, but few were taken (Black 1930). Although this battlefield is located outside of the siting corridor, resources related to the skirmishes that occurred after the battle may be located within the siting corridor.

One previously identified archaeological site within the siting corridor is definitively associated with the Whitestone Hill Battle. Site 32DI115 is the grave of 2nd Lieutenant Thomas J. Leavitt of the Iowa 6th Cavalry. The grave is marked by a white marble headstone and chain link fence. A small rock cairn situated in front of the headstone is presumably the original grave marker, which the site form documents as being associated with the White Stone Hill Battle of 1863. This site has been recommended eligible to the NRHP under Criterion A (NDCRS Archaeological and Historic Site Form 32DI115).

Five previously identified archaeological sites and one site lead within the siting corridor are suggested to be associated with the Whitestone Hill Battle. Sites 32DI117, 32DI119, 32DI120, 32DI121, and 32DI122 are Native American stone feature sites. These sites all may contain burials and the site forms suggest these sites are possibly associated with the Whitestone Hill Battle. All of these sites were recommended as potentially eligible to the NRHP under Criterion D. Site Lead 21DIX28 is listed as grave of Lt. Bain. No additional information is available but this site may possibly be associated with White Stone Hill Battle of 1863 as well.

Proposed Transmission Line Corridor

The proposed transmission line corridor does not intersect any previously recorded sites or isolated finds/site leads. The proposed transmission line corridor does however come into close proximity (100 meters or less) to two sites. These sites are located near the northern terminus of the route and one of them consists of a large stone triangle and a stone arc, while the other consists of one stone circle and six stone arcs.

Archaeological Site Potential

Precontact/Protohistoric Sites/Site Leads

Although the majority of the previously recorded precontact/protohistoric archaeological sites within the siting corridor have not been associated with any cultural/temporal affiliation, information obtained from *The James River Study Unit* (Swenson and Bleier 2008) and *The Southern Missouri Study Unit* (Gregg et al 2008) of *The North Dakota Comprehensive Plan for Historic Preservation* indicate there is potential for encountering sites associated with a broad range of cultural tradition within the siting corridor as it falls within these study units. Sites dating to the Paleo-Indian Tradition in the siting corridor may possibly be encountered in the upland plains of the Coteau, and the glaciated plains east of the Glacial Lake Dakota basin, especially near the margin of the glacial lake basin. Paleo-Indian sites also may possibly be found in upland areas where the land surface has been deflated or has experienced minimal deposition. Plains Archaic sites in this section of the macro-corridor may possibly be encountered in upland settings that have had minimal soil deposition since the Early Holocene. Plains Archaic sites may also be located along minor drainages in the area. Plains Woodlands Sites may possibly be found along the former shorelines of the larger lakes in the region. The most common sites attributed to the Nomadic Equestrian period are stone circle sites located on the Coteau west of the Glacial Lake Dakota basin. These sites may be found along ridges or hill crests, often with commanding views of the surrounding country.

It is suspected that large concentrations of precontact/protohistoric archaeological sites/site leads are located along the east edge of the Missouri Coteau. Other large concentration of sites may be located along prominent landform features within or near the project area. It is anticipated that the majority of

these sites would be prehistoric Native American sites. These resource sites may contain features such as cairns, arcs, circles, effigies, petroforms, and rock-lined depressions that may be important expressions of Native American traditional religious and cultural activities. Other stone features may be associated with burials or may contain mortuary remains. In some instances some features may represent burials associated with the Whitestone Hill Battle.

It is suspected that the greatest potential to find additional precontact archaeological sites is on the Missouri Coteau, in upland settings or on prominent rises or near water sources. Previous investigations in the area indicated a high density of Native American sites and because a relatively large portion of the area remains uncultivated, there is a higher potential to encounter intact features with the project area.

It is suspected precontact/protohistoric site density will dramatically decrease within the portion of the siting corridor off the Coteau. Large areas on this relatively flat landscape have been cultivated for many years, and agricultural activities have likely destroyed or severely disturbed archaeological sites that may have existed here. The potential for encountering additional precontact archaeological sites in the area is highest in uncultivated areas or on upland settings or on prominent rises or near water sources. The potential to encounter precontact sites in the glacial lake basin is lower due to intensive cultivation.

Historical Sites/Site Leads and Architectural Properties

Although the majority of previously identified historic sites are located on the Coteau, this is likely due to the larger areas surveyed there as compared to the surveys completed east of the Coteau. Historical period sites/site leads associated with former and existing farmsteads are likely to be found scattered throughout the countryside, especially east of the Coteau slope. All three of the previously recorded architectural properties are located east of the Coteau. Other historical period sites/site leads are expected to be found in greater densities near former and current communities. There is also high potential for encountering intact historical period archaeological sites in the areas that have not been cultivated within and surrounding existing and former farmsteads, as well as in uncultivated areas where historical maps reveal the presence of structures or other features.

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Attachment A – Research Tables

Table A-1. Previous Cultural Resource Investigations

| Manuscript Number | Report Date | Manuscript Title | Author/ Association | Associated Sites in Project Area |
|-------------------|-------------|--|---|--|
| 005496 | 1991 | A Cultural Resources Inventory of WEB (Phase 7) Construction in Dickey Co., North Dakota and South Dakota Vol. 1 and 2 | Buechler, J. | |
| 005920 | 1996 | Historic Bridges in North Dakota | Johnson, L. | |
| 006090 | 1993 | Cultural Resources Survey Report Class III Cultural Resource Inventory Item No. 1, Ten Microwave Repeater Sites, ND | Martorano, M. | |
| 006391 | 1994 | Dickey County Rural Water Distribution System: A Class II and Class III Cultural Resource Inventory in Dickey County, North Dakota | Stine, E. | 32DI43 |
| 006441 | 1995 | Nesting Islands Survey of 43 Borrow Areas in an 11 County Area of Central North Dakota | Kordecki, C. | |
| 006631 | 1995 | Interstate Engineering's Dickey County Rural Water Pipeline Phase 2, Plan B: A Class II and Class III Cultural Resource Inventory in Dickey and LaMoure Counties, North Dakota | Kulevsky, A. | |
| 006732 | 1996 | Gravel Products' Ashley Pit: A Class III Cultural Resource Inventory in Dickey County, North Dakota | Stine, E. | |
| 006817 | 1996 | Addendum to Interstate Engineering's Dickey County Rural Pipeline Phase 2, Plan B: A Class II and Class III Cultural Resource Inventory in Dickey and LaMoure Counties, North Dakota | Stine, E. | |
| 007081 | 1997 | A Cultural Resource Inventory of the Hoffman Property, McIntosh and Dickey Counties, ND | Penny, D. | |
| 008091 | 2002 | Zahn Borrow Area and Access Road: A Class III Cultural Resources Inventory, Dickey, Co., ND | Bluemle, W. | |
| 008093 | 2002 | Highway 11, Pleasant Lake, Class III Inventory Report, Dickey, Co., ND | Borchert, J. | e |
| 008364 | 2002 | Two Zahn Borrow Areas: A Class III Cultural Resource Inventory, Dickey Co., ND | Morrison, J. | |
| 008390 | 2002 | Dakota 1 Windtower Survey: A Class III Cultural Resource Inventory, Dickey Co., ND | Bluemle, W. | 32E185, 32DI86, 32DI87, 32DI88, 32DI89 |
| 009309 | 2005 | An Archaeological Survey of a Proposed Communications Tower Site in the Township of Ellendale, Dickey Co., ND | Salkin, P. | |
| 010398 | 2008 | Tatanka Wind Farm, Dickey and McIntosh Counties, ND | Grohnke, R., S. Blondo, A. Anderson, A. Gronhovid | |
| 010501 | 2008 | A Cultural Resource Re-Inventory of the Ellendale Microwave Facility in Dickey Co., ND | Kluth, D. | 32DI112 |
| 010820 | 2008 | Rough Rider I Wind Farm Project: A Class III Cultural Resource Inventory, Dickey Co., ND | Burns, C. | |

| Manuscript Number | Report Date | Manuscript Title | Author/ Association | Associated Sites in Project Area |
|-------------------|-------------|---|-------------------------------|----------------------------------|
| 011038 | 2008 | Addendum to Rough Rider I Wind Farm Project: A Class III Cultural Resource Inventory, Dickey Co., ND | Burns, C., W. Burns | |
| Unknown | Unknown | Merricourt Wind Farm: A Class III Cultural Resource Inventory, Dickey and McIntosh Counties, North Dakota | Harty, J.L., and A. Leuchtman | |

Table A-2. Previously Identified Archaeological Sites

| Site Number | Site Type | Site Type | County | Comments | NRHP |
|-------------|----------------|---|--------|--|---------------|
| 32DI0033 | Archaeological | CM Scatter | Dickey | CM scatter, grave and hearth may be present | Not Evaluated |
| 32DI0043 | Archaeological | Stone Circle | Dickey | Ten stone circles | Not Evaluated |
| 32DI0085 | Archaeological | Stone Circle | Dickey | One stone circle | Not Evaluated |
| 32DI0086 | Archaeological | Other Rock Feature, Pit | Dickey | Rock lined depression, site may contain mortuary remains | Not Evaluated |
| 32DI0087 | Archaeological | Other Rock Feature, Pit | Dickey | Rock lined depression, site may contain mortuary remains | Not Evaluated |
| 32DI0091 | Historical | Foundation | Dickey | Two historic foundations | Not Evaluated |
| 32DI0092 | Historical | Grave | Dickey | Grave of Wagner-D and possible unmarked adjacent graves | Not Evaluated |
| 32DI0112 | Archaeological | CM Scatter, Other Rock Features, Stone Circle | Dickey | CM scatter, three stone circles, and three cairns | Not Evaluated |
| 32DI0113 | Archaeological | Other Rock Feature, Stone Circle | Dickey | One stone circle with depression in middle | Not Evaluated |
| 32DI0115 | Historical | Grave | Dickey | Grave of Thomas J. Leavitt, associated with the White Stone Hill Battle of 1863 | Not Evaluated |
| 32DI0117 | Archaeological | Other Rock Feature | Dickey | Two cairns, site may contain graves. Site form suggests possible association with the White Stone Hill Battle of 1863 as it is in close proximity to the battlefield | Not Evaluated |
| 32DI0119 | Archaeological | Other Rock Feature | Dickey | Two cairns, site may contain graves. Site form suggests possible association with the White Stone Hill Battle of 1863 as it is in close proximity to the battlefield | Not Evaluated |
| 32DI0120 | Archaeological | Other Rock Feature | Dickey | One cairn, site may contain graves. Site form suggests possible association with the White Stone Hill Battle of 1863 as it is in close proximity to the battlefield | Not Evaluated |

| Site Number | Site Type | Site Type | County | Comments | NRHP |
|-------------|----------------|---|----------|---|---------------|
| 32DI0121 | Archaeological | Other Rock Feature, Stone Circle | Dickey | One stone circle, one cairn, site may contain graves. Site form suggests possible association with the White Stone Hill Battle of 1863 as it is in close proximity to the battlefield | Not Evaluated |
| 32DI0122 | Archaeological | Other Rock Feature | Dickey | Mounded cairn with depression in the middle, site may contain graves. Site form suggests possible association with the White Stone Hill Battle of 1863 as it is in close proximity to the battlefield | Not Evaluated |
| 32DI0123 | Historical | Foundation | Dickey | Two historic rock foundations | Not Evaluated |
| 32DI0124 | Historical | CM Scatter, Depression, Dump | Dickey | Historic and modern CM scatter, one depression, a dump, and a linear field clearing pile | Not Evaluated |
| 32DI0128 | Archaeological | Cairn | Dickey | One cairn | Not Evaluated |
| 32DI0130 | Archaeological | Cairn, Stone Circle | Dickey | Three cairns, one stone circle | Not Evaluated |
| 32DI0131 | Archaeological | Stone Circle | Dickey | One stone circle | Not Evaluated |
| 32DI0132 | Archaeological | Cairn, Stone Circle | Dickey | One cairn, six stone circles | Not Evaluated |
| 32DI0137 | Archaeological | Stone Circle | Dickey | One stone circle | Not Evaluated |
| 32DI0138 | Archaeological | Stone Circle | Dickey | Two stone circles | Not Evaluated |
| 32DI0149 | Archaeological | Cairn | Dickey | Two cairns | Not Evaluated |
| 32DI0150 | Archaeological | Cairn | Dickey | One cairn | Not Evaluated |
| 32DI0088 | Archaeological | Other Rock Feature, Pit | Dickey | Rock lined depression, site may contain mortuary remains | Not Evaluated |
| 32DI0089 | Archaeological | Other Rock Feature, Pit | Dickey | Rock lined depression, site may contain mortuary remains | Not Evaluated |
| 32MT0119 | Archaeological | Other Rock Feature | McIntosh | Feature information not available | Not Evaluated |
| 32MT0120 | Archaeological | Other Rock Feature | McIntosh | Stone arc | Not Evaluated |
| 32MT0121 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | One cairn, one stone arc, and one stone circle | Not Evaluated |
| 32MT0122 | Archaeological | Cairn, Other Rock Feature | McIntosh | One cairn and two stone arcs | Not Evaluated |
| 32MT0123 | Archaeological | Cairn | McIntosh | One cairn | Not Evaluated |
| 32MT0124 | Historical | CM Scatter, Foundation | McIntosh | Historic artifact scatter and four historic foundations | Not Evaluated |
| 32MT0125 | Archaeological | Cairn, Other Rock Feature | McIntosh | One stone arc and three cairns | Not Evaluated |
| 32MT0126 | Historical | CM Scatter | McIntosh | Historic artifact scatter | Not Evaluated |

| Site Number | Site Type | Site Type | County | Comments | NRHP |
|-------------|----------------|---|----------|---|---------------|
| 32MT0127 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Multiple stone features including cairns, arcs, stone circles, a linear stone alignment, and a rock formation in the shape of the dipper | Not Evaluated |
| 32MT0128 | Archaeological | Cairn, Other Rock Feature | McIntosh | One prayer stone and one cairn | Not Evaluated |
| 32MT0129 | Archaeological | Other Rock Feature | McIntosh | One stone arc | Not Evaluated |
| 32MT0130 | Archaeological | Other Rock Feature | McIntosh | One stone arc | Not Evaluated |
| 32MT0131 | Archaeological | Cairn | McIntosh | One cairn | Not Evaluated |
| 32MT0132 | Archaeological | Cairn | McIntosh | One cairn | Not Evaluated |
| 32MT0134 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Five arcs, two cairns, and three stone circles | Not Evaluated |
| 32MT0138 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Three cairns, four stone arcs, and three stone circles | Not Evaluated |
| 32MT0139 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Two cairns, five stone arcs, five stone circles, and a rock alignment in the shape of the big dipper | Not Evaluated |
| 32MT0140 | Archaeological | Stone Circle | McIntosh | One stone circle | Not Evaluated |
| 32MT0142 | Archaeological | Cairn, Stone Circle | McIntosh | One cairn and four stone circles | Not Evaluated |
| 32MT0151 | Archaeological | Other Rock Feature, Stone Circle | McIntosh | Two stone arcs and one stone circle | Not Evaluated |
| 32MT0171 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Twelve stone arcs, a linear stone alignment, and one stone circle | Not Evaluated |
| 32MT0174 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Multiple stone features including cairns, spirals, stone circles, arcs, a crescent moon formation, and effigies | Not Evaluated |
| 32MT0175 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Multiple stone cairns, arcs, and circles | Not Evaluated |
| 32MT0182 | Archaeological | Other Rock Feature | McIntosh | Two interconnecting stone arcs | Not Evaluated |
| 32MT0183 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Multiple stone features including cairns, arcs, stone circles, linear alignments, stone altars, a stone man effigy, and a lightning bolt effigy | Not Evaluated |
| 32MT0184 | Archaeological | Other Rock Feature | McIntosh | One stone arc | Not Evaluated |
| 32MT0185 | Archaeological | Other Rock Feature | McIntosh | One stone arc | Not Evaluated |

| Site Number | Site Type | Site Type | County | Comments | NRHP |
|-------------|----------------|--|----------|--|---------------|
| 32MT0186 | Archaeological | Other Rock Feature, Stone Circle | McIntosh | Two stone circles and two altars | Not Evaluated |
| 32MT0187 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Multiple cairns, offering bowls, offering stones, and linear stone alignments | Not Evaluated |
| 32MT0188 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Multiple cairns, stone circles, and one SRC flake | Not Evaluated |
| 32MT0190 | Archaeological | Other Rock Feature, Stone Circle | McIntosh | Stone arc, linear rock alignment, small depression, stone circle with stone altar | Not Evaluated |
| 32MT0191 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Stone circle, rock alignment, two cairns | Not Evaluated |
| 32MT0192 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Stone circle, stone arc, linear stone feature | Not Evaluated |
| 32MT0193 | Archaeological | Cairn, Other Rock Feature | McIntosh | Stone crescent and cairn | Not Evaluated |
| 32MT0194 | Archaeological | Cairn, Other Rock Feature | McIntosh | Rock alignment, cairn, stone arc | Not Evaluated |
| 32MT0198 | Archaeological | Stone Circle | McIntosh | Five stone circles | Not Evaluated |
| 32MT0203 | Archaeological | Mound | McIntosh | One mound (Burial) | Not Evaluated |
| 32MT0204 | Archaeological | Cairn | McIntosh | One cairn | Not Evaluated |
| 32MT0205 | Archaeological | Other Rock Feature | McIntosh | Large triangle and stone arc | Not Evaluated |
| 32MT0206 | Archaeological | Other Rock Feature, Stone Circle | McIntosh | One stone circle and six stone arcs | Not Evaluated |
| 32MT0209 | Archaeological | Cairn, Other Rock Feature | McIntosh | Cairn and stone arc | Not Evaluated |
| 32MT0210 | Archaeological | Other Rock Feature | McIntosh | One stone arc | Not Evaluated |
| 32MT0211 | Archaeological | Cairn, Other Rock Feature, Stone Circle | McIntosh | Two stone circles, four cairns, one linear rock feature | Not Evaluated |
| 32MT0233 | Archaeological | Cairn, Grave, Other Rock Feature, Stone Circle | McIntosh | Multiple stone features and a burial - this site has been included with site 32MT175 | Not Evaluated |
| 32MT0234 | Archaeological | Other Rock Feature, Stone Circle | McIntosh | Multiple stone features | Not Evaluated |
| 32MT0258 | Archaeological | Cairn | McIntosh | One cairn | Not Evaluated |

Table A-3. Previously Identified Archaeological Isolated Finds/Site Leads

| Site Number | Site Type | Feature Type | County | Comments | NRHP |
|-------------|----------------|------------------------------------|----------|---|---------------|
| 32DIX0012 | Historical | Post Office | Dickey | Possible location of historic post office | Not Evaluated |
| 32DIX0018 | Historical | Post Office | Dickey | Possible location of historic post office | Not Evaluated |
| 32DIX0028 | Historical | Grave | Dickey | Grave of Lt. Bain. No additional information, possibly associated with White Stone Hill Battle of 1863 | Not Evaluated |
| 32DIX0029 | Historical | Post Office | Dickey | Possible location of historic post office | Not Evaluated |
| 32DIX0081 | Archaeological | CM Scatter | Dickey | One KRF flake, one KRF shatter, and one chert flake | Not Evaluated |
| 32DIX0082 | Archaeological | Isolated Find | Dickey | KRF flake | Not Evaluated |
| 32DIX0108 | Archaeological | Pit, Stone Circle | Dickey | Multiple stone circles, and one rock-lined depression | Not Evaluated |
| 32DIX0109 | Archaeological | Stone Circle | Dickey | One stone circle | Not Evaluated |
| 32DIX0110 | Archaeological | Stone Circle | Dickey | One stone circle | Not Evaluated |
| 32DIX0111 | Archaeological | Stone Circle | Dickey | One stone circle | Not Evaluated |
| 32DIX0112 | Archaeological | Stone Circle | Dickey | One stone circle | Not Evaluated |
| 32DIX0115 | Archaeological | Stone Circle | Dickey | Fourteen stone circles | Not Evaluated |
| 32DIX0116 | Archaeological | Rock Shelter | Dickey | Listed as "rock shelter", however, the site form notes multiple stone circles and does not mention a rock shelter | Not Evaluated |
| 32DIX0117 | Archaeological | Pit, Stone Circle | Dickey | Multiple rock-lined depressions, six stone circles, and possible grave site | Not Evaluated |
| 32DIX0118 | Archaeological | Stone Circle | Dickey | One stone circle | Not Evaluated |
| 32DIX0119 | Archaeological | Stone Circle | Dickey | Multiple stone circles | Not Evaluated |
| 32DIX0121 | Archaeological | Stone Circle | Dickey | At least five stone circles | Not Evaluated |
| 32DIX0130 | Archaeological | Isolated Find | Dickey | Quartzite flake | Not Evaluated |
| 32DIX0131 | Archaeological | Isolated Find | Dickey | Quartzite biface fragment | Not Evaluated |
| 32DIX0132 | Archaeological | Isolated Find | Dickey | Quartzite flake | Not Evaluated |
| 32MTX0001 | Historical | CM Scatter, Depression, Foundation | McIntosh | No additional information | Not Evaluated |

Table A-4. Previously Identified Architectural Properties

| Site Type | Feature Type | County | Comments |
|---------------|------------------|--------|---|
| Architectural | Bridge | Dickey | Recommended eligible under C |
| Architectural | Bridge | Dickey | Destroyed |
| Architectural | Religious Shrine | Dickey | Replica of Christ Evangelical Lutheran Church |
| Architectural | Farm/Farmstead | Dickey | |

Table A-5. GLO Resources

| Township | Range | Section | Date Surveyed | Comments |
|----------|-------|---------|-------------------|--|
| 129 | 64 | 1 | May 1883 | Structure (Annie McCall) in NW 1/4 of SW 1/4 |
| 129 | 64 | 2 | May 1883 | Structure (McDonald) in NE1/4 of NE 1/4. Structure (W.H. Batson) in NE 1/4 of SE 1/4 |
| 129 | 64 | 6 | May 1883 | Structure (Townsend) in NW 1/4 of NE 1/4. Structure (McNulty) in NE 1/4 of NW 1/4 |
| 129 | 64 | 7 | May 1883 | Structure (W.H. Gray) in SW 1/4 of NW1/4. Structure (S.G. Gray) in NW 1/4 of SW 1/4. Structure and cultivated field (Jennie Johnson) in NE 1/4 of SE 1/4 |
| 129 | 64 | 9 | May 1883 | Structure (Joseph Kelly) in SE 1/4 of SE 1/4 |
| 129 | 64 | 10 | May 1883 | Structure (Alex Snyder) in SW 1/4 of SW 1/4 |
| 129 | 64 | 11 | May 1883 | Structure (Jno. Purvey) in SW 1/4 of SW 1/4. Structure (M.L. Riley) in NE 1/4 of NE 1/4. Structure and cultivated field (J.F. Wilson) in E 1/2 of SE 1/4 |
| 129 | 64 | 13 | May 1883 | Structure (M.T. Russel) in SE 1/4 of SE 1/4. Structure (Jno. Dickson) in SE 1/4 of SW 1/4 |
| 129 | 64 | 14 | May 1883 | Structure (Geo. West) in SE 1/4 of SE 1/4 |
| 129 | 64 | 17 | May 1883 | Structure (Jno. Jorgenson) in NW 1/4 of NW 1/4 |
| 129 | 65 | 3 | May 1883 | Structure and cultivated field (L. McDermond) in NE 1/4 of NE 1/4. Structure and cultivated field (Kept ?) in NW 1/4 of NW 1/4. Structure and cultivated field (John Ingram) in SW 1/4 of SW 1/4 |
| 129 | 65 | 4 | May 1883 | Structure and cultivated field (J.I. Ivngenfelt?) in NE 1/4 of NE 1/4 (field extends south into E 1/2 of SE 1/4 of NE 1/4). Structure (Geo. H. Kayes) in SE 1/4 of SE 1/4. Cultivated field (Geo. H. Kayes) takes up SE 1/4 east of drainage. |
| 129 | 65 | 9 | May 1883 | Structure (Ole Christianson) in NW 1/4 of NW 1/4 |
| 129 | 65 | 10 | May 1883 | Structure and cultivated field (W.H. Finley?) in S 1/2 of NW 1/4. Structure and cultivated field (Geo. Morton) in S 1/2 of SW 1/4. Structure and cultivated field (Lucy Carrich) in S 1/2 of SE 1/4). |
| 129 | 65 | 13 | May 1883 | Structure (Henry Karvey?) in SE 1/4 of SE 1/4. Structure and cultivated field (C.H. Haynes) in SW 1/4 of SW 1/4 |
| 129 | 65 | 14 | May 1883 | Structure (A.W. Sutley) in SW 1/4 of SE 1/4. Structure (J.H. McCarty) in SE 1/4 of SW 1/4. |
| 129 | 65 | 16 | May 1883 | Structure and cultivated field (S.H. Batson) in NW 1/4 of NW 1/4 |
| 129 | 67 | 1 | August 1884 | Unnamed road/trail runs E-W through N 1/2 |
| 129 | 67 | 2 | August 1884 | Unnamed road/trail runs E-W through N 1/2. Unnamed road/trail runs SE-NW through SW 1/4 |
| 129 | 67 | 3 | August 1884 | Unnamed road/trail runs E-W through N 1/2. Unnamed road/trail runs SE-NW through SE 1/4 and intersects E-W road/trail in NE 1/4. Structure (Geo. M. Caye) in SE 1/4 of NW 1/4. Landowner (C.V. Boyse) attributed to S 1/2 and NE 1/4 of SW 1/4 |
| 129 | 67 | 11 | August 1884 | Unnamed road/trail runs SE-NW through SE 1/4, NE 1/4, and NW 1/4 |
| 129 | 67 | 12 | August 1884 | Unnamed road/trail runs SE-NW through SW 1/4 |
| 130 | 63 | 34 | August-Sept. 1881 | Structure (J. Hart) in NE 1/4 of NW 1/4 |
| 130 | 64 | 19 | May -June 1883 | Structure (T.B. Clark) in SW 1/4 of NW 1/4 and associated cultivated field in W 1/2 of NW 1/4. |

| Township | Range | Section | Date Surveyed | Comments |
|----------|-------|---------|----------------|---|
| 130 | 64 | 25 | May -June 1883 | Structure (G. Heine) in NW 1/4 of NE 1/4 and associated cultivated field in N 1/2 of NE 1/4. Structure (L. Weise) in S 1/2 of SW 1/4 and associated cultivated field in E 1/2 of SW 1/4 |
| 130 | 64 | 27 | May -June 1883 | Structure (E. Retzloff) in NW 1/4 of SW 1/4 |
| 130 | 64 | 31 | May -June 1883 | Structure (G. Dagget) and associated cultivated field in SE 1/4 of SE 1/4 |
| 130 | 64 | 33 | May -June 1883 | Structure (C. Dickenson) in SE 1/4 of NE 1/4 and associated cultivated field in E 1/2 of NE 1/4 |
| 130 | 64 | 34 | May -June 1883 | Structure (J. Roberts) in SW 1/4 of NW 1/4 and associated cultivated field in W 1/2 of NW 1/4 |
| 130 | 64 | 35 | May -June 1883 | Structure (F. Tyler) in SE 1/4 of NE 1/4 and associated cultivated field in E 1/2 of NE 1/4. Structure and cultivated field (J.Keough) in SE 1/4 of SE 1/4. Structure (Eastwood) in SE 1/4 of SW 1/4 and associated cultivated field in S 1/2 of SW 1/4 |
| 130 | 64 | 36 | May -June 1883 | Structure (L.M. Hammond) in SW 1/4 of SW 1/4 and associated cultivated field in SE 1/4 of SW 1/4 and SW 1/4 of SE 1/4 |
| 130 | 65 | 14 | May 1883 | Structure (P. Bristol) in SW 1/4 of NE 1/4. Structure (W. Bristol) in SE 1/4 of NW 1/4 |
| 130 | 65 | 22 | May 1883 | Structure (Ellen Degnan) in SE 1/4 of SE 1/4. Cultivated field (E. McEntee) in S 1/2 of SE 1/4 |
| 130 | 65 | 23 | May 1883 | Structure (F. Bishop) in SE 1/4 of NW 1/4. Structure (S. Van Vort.) in SW 1/4 of NE 1/4 and associated field in W 1/2 of NE 1/4. Structure (J.M. Atherton) in NW 1/4 of SE 1/4. Structure (W. L. Atherton) in NE 1/4 of SW 1/4 |
| 130 | 65 | 24 | May 1883 | Structure (Alex Reed) in SE 1/4 of NW 1/4. Structure (C.B. Moore) in SE 1/4 of NE 1/4. Structure (O.P. Lutton) in NE 1/4 of SE 1/4. Structure (unnamed) in NE 1/4 of SW 1/4 |
| 130 | 65 | 25 | May 1883 | Structure (T.A. Duncan) in SW 1/4 of NE 1/4. Structure (W.E. Duncan) in SE 1/4 of NW 1/4. Structure (Libbie Almond) in SE 1/4 of SE 1/4. Structure (Ella Collins) in N 1/2 of SW 1/4 |
| 130 | 65 | 26 | May 1883 | Structure (G. Lindersmith) in SE 1/4 of NW 1/4. Structure (A. Lindersmith) in SW 1/4 of NE 1/4. Structure (L. Draper) in SE 1/4 of SE 1/4. Structure (W. Edward) in SW 1/4 of SW 1/4 |
| 130 | 65 | 27 | May 1883 | Structure (E.M. McEntee) in NE 1/4 of NE 1/4 and associated cultivated field in N 1/2 of NE 1/4 |
| 130 | 65 | 33 | May 1883 | Structure (Henry Green) in SW 1/4 of NW 1/4. Structure (E. Mattie) in NW 1/4 of SW 1/4. Structure and cultivated field (R. Gabby) in SE 1/4 of NE 1/4. Structure and cultivated field (H.M. McConville) in SE 1/4 of SE 1/4 |
| 130 | 65 | 34 | May 1883 | Structure (T.C. Rice) in SW 1/4 of NW 1/4 and associated cultivated field in W 1/2 of NW 1/4. Structure and cultivated field (J. McConville) in SW 1/4 of SW 1/4 |
| 130 | 65 | 35 | May 1883 | Structure (L. Heminway) in NW 1/4 of NW 1/4. Structure (Alice E. Cochran) in NE 1/4 of NE 1/4 |
| 130 | 65 | 36 | May 1883 | Structure (Glover) in NW 1/4 of NW 1/4 |
| 130 | 66 | 13 | August 1884 | Cultivated field (unnamed) in NW 1/4 of NW 1/4 |
| 130 | 66 | 23 | August 1884 | Unnamed road/trail begins/terminates in the NE 1/4 of the SE 1/4 and runs SW to NE through the SE 1/4 of the NE 1/4. |

| Township | Range | Section | Date Surveyed | Comments |
|----------|-------|---------|---------------|---|
| 130 | 66 | 24 | August 1884 | Unnamed road/trail runs E to W through the NW 1/4 and begins/terminates in the NE 1/4 |
| 130 | 66 | 27 | August 1884 | Unnamed cultivated field in the NE 1/4 of the SE 1/4 |
| 130 | 67 | 29 | June 1885 | Road to Standing Rock runs SE to NW through SW 1/4 |
| 130 | 67 | 33 | June 1885 | Road to Standing Rock runs SE to NW through NW 1/4 |

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Attachment B – Revised Research Tables

The data presented in this report and shown in the tables in Attachment A were derived from the original siting corridor provided for the Project. Since then, the Project Corridor has been narrowed to cover a smaller area. The tables below summarize new findings based on the new Project Corridor.

Table B-1 provides the legal descriptions of the sections comprising the Project Corridor. Table B-2 summarizes the results of the Government Land Office (GLO) search completed for the Study Area. Table B-3 lists the 14 previous cultural resource survey reports on file at SHPO for the proposed three mile corridor, and Table B-4 summarizes the 83 cultural resource sites and/or cultural site leads identified within the proposed three mile corridor. HDR anticipates the potential to find resources of the same nature and type as those listed in Table B-2 (GLO summary) and/or Table B-4 (cultural resource site summary).

**Table B-1.
Project Corridor Legal Description**

| County | Township Name | Township | Range | Sections |
|----------|-----------------------|----------|-------|---------------------------------------|
| Dickey | Ellendale | T129N | R63W | 2-11, 14-18 |
| Dickey | Elm | T129N | R64W | 1-18 |
| Dickey | Lorraine | T129N | R65W | 1-18 |
| Dickey | Albertha | T129N | R66W | 1-5, 9-12 |
| Dickey | Elden | T130N | R63W | 31-35 |
| Dickey | Albion | T130N | R64W | 31-36 |
| Dickey | Grand Valley | T130N | R65W | 31-36 |
| Dickey | Spring Valley | T130N | R66W | 2-6, 7-11, 14-17, 20-23, 25-29, 32-36 |
| Dickey | German | T131N | R66W | 29, 30, 31-35 |
| McIntosh | Unorganized Territory | T130N | R67W | 1-5, 8-12 |
| McIntosh | Unorganized Territory | T131N | R67W | 25-29, 32-36 |

Table B-2.
Summary of GLO Review for the Project Corridor

| Township | Range | Section | Date Surveyed | Comments |
|----------|-------|---------|-------------------|---|
| 129 | 64 | 1 | May 1883 | Structure (Annie McCall) in NW 1/4 of SW ¼ |
| 129 | 64 | 2 | May 1883 | Structure (McDonald) in NE1/4 of NE 1/4. Structure (W.H. Batson) in NE 1/4 of SE ¼ |
| 129 | 64 | 6 | May 1883 | Structure (Townsend) in NW 1/4 of NE 1/4. Structure (McNulty) in NE 1/4 of NW ¼ |
| 129 | 64 | 7 | May 1883 | Structure (W.H. Gray) in SW 1/4 of NW1/4. Structure (S.G. Gray) in NW 1/4 of SW 1/4. Structure and cultivated field (Jennie Johnson) in NE 1/4 of SE 1/4 |
| 129 | 64 | 9 | May 1883 | Structure (Joseph Kelly) in SE 1/4 of SE 1/4 |
| 129 | 64 | 10 | May 1883 | Structure (Alex Snyder) in SW 1/4 of SW ¼ |
| 129 | 64 | 11 | May 1883 | Structure (Jno. Purvey) in SW 1/4 of SW 1/4. Structure (M.L. Riley) in NE 1/4 of NE 1/4. Structure and cultivated field (J.F. Wilson) in E 1/2 of SE 1/4 |
| 129 | 64 | 13 | May 1883 | Structure (M.T. Russel) in SE 1/4 of SE 1/4. Structure (Jno. Dickson) in SE 1/4 of SW ¼ |
| 129 | 64 | 14 | May 1883 | Structure (Geo. West) in SE 1/4 of SE 1/4 |
| 129 | 64 | 17 | May 1883 | Structure (Jno. Jorgenson) in NW 1/4 of NW 1/4 |
| 129 | 65 | 3 | May 1883 | Structure and cultivated field (L. McDermond) in NE 1/4 of NE 1/4. Structure and cultivated field (Kept ?) in NW 1/4 of NW 1/4. Structure and cultivated field (John Ingram) in SW 1/4 of SW 1/4 |
| 129 | 65 | 4 | May 1883 | Structure and cultivated field (J.I. Ivngenfelt?) in NE 1/4 of NE 1/4 (field extends south into E 1/2 of SE 1/4 of NE 1/4). Structure (Geo. H. Kayes) in SE 1/4 of SE 1/4. Cultivated field (Geo. H. Kayes) takes up SE 1/4 east of drainage. |
| 129 | 65 | 9 | May 1883 | Structure (Ole Christianson) in NW 1/4 of NW 1/4 |
| 129 | 65 | 10 | May 1883 | Structure and cultivated field (W.H. Finley?) in S 1/2 of NW 1/4. Structure and cultivated field (Geo. Morton) in S 1/2 of SW 1/4. Structure and cultivated field (Lucy Carrich) in S 1/2 of SE 1/4). |
| 129 | 65 | 13 | May 1883 | Structure (Henry Karvey?) in SE 1/4 of SE 1/4. Structure and cultivated field (C.H. Haynes) in SW 1/4 of SW 1/4 |
| 129 | 65 | 14 | May 1883 | Structure (A.W. Sutley) in SW 1/4 of SE 1/4. Structure (J.H. McCarty) in SE 1/4 of SW 1/4. |
| 129 | 65 | 16 | May 1883 | Structure and cultivated field (S.H. Batson) in NW 1/4 of NW 1/4 |
| 130 | 63 | 34 | August-Sept. 1881 | Structure (J. Hart) in NE 1/4 of NW 1/4 |
| 130 | 64 | 31 | May -June 1883 | Structure (G. Dagget) and associated cultivated field in SE 1/4 of SE 1/4 |
| 130 | 64 | 33 | May -June 1883 | Structure (C. Dickenson) in SE 1/4 of NE 1/4 and associated cultivated field in E 1/2 of NE 1/4 |

| Township | Range | Section | Date Surveyed | Comments |
|----------|-------|---------|----------------|---|
| 130 | 64 | 34 | May -June 1883 | Structure (J. Roberts) in SW 1/4 of NW 1/4 and associated cultivated field in W 1/2 of NW 1/4 |
| 130 | 64 | 35 | May -June 1883 | Structure (F. Tyler) in SE 1/4 of NE 1/4 and associated cultivated field in E 1/2 of NE 1/4. Structure and cultivated field (J.Keough) in SE 1/4 of SE 1/4. Structure (Eastwood) in SE 1/4 of SW 1/4 and associated cultivated field in S 1/2 of SW ¼ |
| 130 | 64 | 36 | May -June 1883 | Structure (L.M. Hammond) in SW 1/4 of SW 1/4 and associated cultivated field in SE 1/4 of SW 1/4 and SW 1/4 of SE 1/4 |
| 130 | 65 | 33 | May 1883 | Structure (Henry Green) in SW 1/4 of NW 1/4. Structure (E. Mattie) in NW 1/4 of SW 1/4. Structure and cultivated field (R. Gabby) in SE 1/4 of NE 1/4. Structure and cultivated field (H.M. McConville) in SE 1/4 of SE 1/4 |
| 130 | 65 | 34 | May 1883 | Structure (T.C. Rice) in SW 1/4 of NW 1/4 and associated cultivated field in W 1/2 of NW 1/4. Structure and cultivated field (J. McConville) in SW 1/4 of SW 1/4 |
| 130 | 65 | 35 | May 1883 | Structure (L. Heminway) in NW 1/4 of NW 1/4. Structure (Alice E. Cochran) in NE 1/4 of NE 1/4 |
| 130 | 65 | 36 | May 1883 | Structure (Glover) in NW 1/4 of NW 1/4 |
| 130 | 66 | 23 | August 1884 | Unnamed road/trail begins/terminates in the NE 1/4 of the SE 1/4 and runs SW to NE through the SE 1/4 of the NE 1/4. |
| 130 | 66 | 27 | August 1884 | Unnamed cultivated field in the NE 1/4 of the SE 1/4 |

Table B-3.
Previous Field Surveys in the Project Corridor

| Manuscript Number | Manuscript Title | Author(s)/Associations | Report Date |
|-------------------|--|------------------------|-------------|
| 005496 | A Cultural Resources Inventory of WEB (Phase 7) Construction in Dickey Co., North Dakota and South Dakota Vol. 1 and 2 | Buechler, J. | 1991 |
| 005920 | Historic Bridges in North Dakota | Johnson, L. | 1996 |
| 006090 | Cultural Resources Survey Report Class III Cultural Resource Inventory Item No. 1, Ten Microwave Repeater Sites, ND | Martorano, M. | 1993 |
| 006391 | Dickey County Rural Water Distribution System: A Class II and Class III Cultural Resource Inventory in Dickey County, North Dakota | Stine, E. | 1994 |
| 006441 | Nesting Islands Survey of 43 Borrow Areas in an 11 County Area of Central North Dakota | Kordecki, C. | 1995 |

| Manuscript Number | Manuscript Title | Author(s)/Associations | Report Date |
|-------------------|--|------------------------|-------------|
| 006631 | Interstate Engineering's Dickey County Rural Water Pipeline Phase 2, Plan B: A Class II and Class III Cultural Resource Inventory in Dickey and LaMoure Counties, North Dakota | Kulevsky, A. | 1995 |
| 006732 | Gravel Products' Ashley Pit: A Class III Cultural Resource Inventory in Dickey County, North Dakota | Stine, E. | 1996 |
| 006817 | Addendum to Interstate Engineering's Dickey County Rural Pipeline Phase 2, Plan B: A Class II and Class III Cultural Resource Inventory in Dickey and LaMoure Counties, North Dakota | Stine, E. | 1996 |
| 008091 | Zahn Borrow Area and Access Road: A Class III Cultural Resources Inventory, Dickey, Co., ND | Bluemle, W. | 2002 |
| 008093 | Highway 11, Pleasant Lake, Class III Inventory Report, Dickey, Co., ND | Borchert, J. | 2002 |
| 008364 | Two Zahn Borrow Areas: A Class III Cultural Resource Inventory, Dickey Co., ND | Morrison, J. | 2002 |
| 008390 | Dakota 1 Windtower Survey: A Class III Cultural Resource Inventory, Dickey Co., ND | Bluemle, W. | 2002 |
| 009309 | An Archaeological Survey of a Proposed Communications Tower Site in the Township of Ellendale, Dickey Co., ND | Salkin, P. | 2005 |
| 010501 | A Cultural Resource Re-Inventory of the Ellendale Microwave Facility in Dickey Co., ND | Kluth, D. | 2008 |

Table B-4.
Summary of Previously Identified Archaeological Sites and Archaeological Site Leads
Within the Project Corridor

| Site Number | Site Type | Cultural Affiliation | Comments | Eligibility Status |
|-------------|--|----------------------|--|--------------------|
| # 32DI43 | Stone Circle | Unknown | Site leads 32DIX117and 32DIX121 combined | Not Evaluated |
| # 32DI85 | Stone Circle | Unknown | | Not Evaluated |
| # 32DI86 | Pit/Other Rock Feature | Unknown | | Not Evaluated |
| 32DI87 | Pit/Other Rock Feature | Unknown | | Not Evaluated |
| 32DI88 | Pit/Other Rock Feature | Unknown | | Not Evaluated |
| 32DI89 | Pit/Other Rock Feature | Unknown | | Not Evaluated |
| 32DI107 | Reinforced Concrete T Beam Bridge | 1923 | Potentially eligible under C | Not Evaluated |
| 32DI112 | Stone Circle/Other Rock Feature, CM Scatter, Faunal Remains, Chipped Stone | Unknown | Updated and combined with site 32DIX105 | Not Evaluated |
| 32DI113 | Stone Circle/Other rock Feature | Unknown | | Not Evaluated |
| 32DI138 | Stone Circle | Unknown | | Not Evaluated |
| 32DI149 | Cairn | Unknown | | Not Evaluated |

| Site Number | Site Type | Cultural Affiliation | Comments | Eligibility Status |
|-------------|---|----------------------|------------------|--------------------|
| 32DI150 | Cairn | Unknown | | Not Evaluated |
| 32DIX12 | Lorraine Post Office | | | Not Evaluated |
| 32DIX18 | Albertha Post Office | | | Not Evaluated |
| # 32DIX29 | Wirch Post Office | | | Not Evaluated |
| 32DIX103 | Farmstead | | Ranch like house | Not Evaluated |
| * 32DIX107 | | | | |
| 32DIX108 | Pit/Stone Circle | Unknown | | Not Evaluated |
| 32DIX109 | Stone Circle | Unknown | | Not Evaluated |
| 32DIX110 | Stone Circle | Unknown | | Not Evaluated |
| 32DIX111 | Stone Circle | Unknown | | Not Evaluated |
| 32DIX112 | Stone Circle | Unknown | | Not Evaluated |
| # 32DIX115 | Stone Circle | Unknown | | Not Evaluated |
| 32DIX116 | Rock Shelter | Unknown | | Not Evaluated |
| # 32DIX117 | Stone Circle/Pit/Graves | Unknown | | Not Evaluated |
| # 32DIX118 | Stone Circle | Unknown | | Not Evaluated |
| 32DIX119 | Stone Circle | Unknown | | Not Evaluated |
| 32DIX121 | Stone Circle | Unknown | | Not Evaluated |
| *# 32DIX218 | | | | |
| 32MT119 | Other Rock Feature | Unknown | | Not Evaluated |
| 32MT120 | Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT121 | Stone Circle/Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT122 | Cairn/Other Rock Feature | Unknown | | Not Evaluated |
| 32MT123 | Cairn | Unknown | | Not Evaluated |
| 32MT124 | Foundation/CM Scatter/Glass/Masonry/Metal/Wood | Unknown | | Not Evaluated |
| 32MT125 | Cairn/Other Rock Feature | Unknown | | Not Evaluated |
| 32MT126 | CM Scatter/Glass/Metal/ Wood | Unknown | | Not Evaluated |
| # 32MT127 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| 32MT128 | Cairn/Other Rock Feature | Unknown | | Not Evaluated |
| 32MT129 | Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT130 | Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT131 | Cairn | Unknown | | Not Evaluated |
| # 32MT132 | Cairn | Unknown | | Not Evaluated |
| # 32MT134 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| *# 32MT135 | | | | |
| *# 32MT136 | | | | |
| *# 32MT137 | | | | |

| Site Number | Site Type | Cultural Affiliation | Comments | Eligibility Status |
|-------------|---|----------------------|-----------------------------|--------------------|
| # 32MT138 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| # 32MT139 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| # 32MT140 | Stone Circle | Unknown | | Not Evaluated |
| # 32MT151 | Stone Circle/Other Rock Feature | Unknown | | Not Evaluated |
| * 32MT152 | | | | |
| * 32MT153 | | | | |
| 32MT171 | Cairn/Other Stone Feature/Stone Circle | Unknown | | Not Evaluated |
| * 32MT172 | | | | |
| 32MT174 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| # 32MT182 | Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT183 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| # 32MT184 | Cairn/Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT185 | Other Rock Feature | Unknown | | Not Evaluated |
| 32MT186 | Stone Circle/Other Rock Feature | Unknown | | Not Evaluated |
| 32MT187 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| 32MT188 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| # 32MT190 | Stone Circle/Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT191 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| # 32MT192 | Cairn/Other Rock Feature/Stone Circle | Unknown | | Not Evaluated |
| # 32MT193 | Cairn/Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT194 | Cairn/Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT198 | Stone Circle | Unknown | | Not Evaluated |
| # 32MT203 | Mound | Unknown | | Not Evaluated |
| # 32MT204 | Cairn | Unknown | | Not Evaluated |
| # 32MT205 | Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT206 | Stone Circle/Other Rock Feature | Unknown | | Not Evaluated |
| *# 32MT207 | | | | |
| # 32MT209 | Cairn/Other Rock Feature | Unknown | | Not Evaluated |
| # 32MT210 | Other Rock Feature | Unknown | | Not Evaluated |
| 32MT233 | Cairn/Other Rock Feature/Stone Circle/Grave | Unknown | Is the same as site 32MT175 | Not Evaluated |
| 32MT234 | Stone Circle/Other Rock Feature | Unknown | | Not Evaluated |
| *# 32MT239 | | | | |
| *# 32MT244 | | | | |
| * 32MT256 | | | | |
| *# 32MTX62 | | | | |

** items marked with an asterisk represent sites forms that were not obtained during the initial data gather, but will be reviewed and summarized in the Class III Inventory Report*

represents sites within 1/2 mile of the transmission line and represents the sites SHPO will most likely consider

Appendix F

Notification Letters and Responses

May 26, 2010

<<ADDRESS BLOCK>>

**RE: Request for Information
Montana-Dakota Utilities Co. proposed 230kV transmission line from the Merricourt Wind Farm to the Ellendale Junction Substation
Dickey and McIntosh Counties, North Dakota**

To Whom it May Concern:

On behalf of Montana-Dakota Utilities Co. (MDU), HDR Engineering, Inc (HDR) requests your review of the above-mentioned Project for information and potential impacts relating to resources that may be present within the study area or preliminary corridor. The Project will require a *Certificate of Corridor Compatibility* and a *Route Permit* from the North Dakota Public Service Commission (PSC).

MDU has proposed the construction of an approximately 30-mile-long, 230 kV transmission line and substation in Dickey and McIntosh Counties, North Dakota. This transmission line would connect the existing Ellendale Junction Substation, located about 1.5 miles west of Ellendale, North Dakota in Section 10, T129N, R63W, Dickey County to a proposed (new) Merricourt Wind Farm Substation, located about 15 miles east-northeast of Ashley in Section 3, T130N, R67W, McIntosh County. This Project is referred to as the Merricourt Wind Farm to Ellendale (MWFE) Project. The MWFE Project will serve to increase the transfer capacity on the current transmission system in the area, and serve as a generation outlet for the proposed Merricourt Wind Farm. The proposed Merricourt Wind Farm is not a part of the MWFE Project.

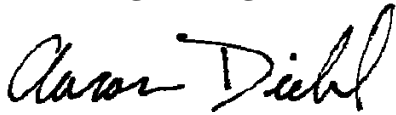
The Project is in the preliminary stages of planning; exact route alternatives have not yet been established within the study area or corridor. ***We are seeking any relevant comments and supporting information for the study area and corridor that would help identify opportunities and constraints for the siting of the proposed transmission line and substation.*** The enclosed map shows the study area and the corridor (Figure 1). Legal description of the corridor is enclosed as Table 1.

MDU is scheduled to attend the North Dakota interagency meeting on June 17, 2010 at the US Army Corps of Engineer's office in Bismarck, N.D. Attending this meeting will provide an opportunity for you to share any initial feedback on the Project you may have.

Information received by June 8, 2010, or sooner, would help us identify and evaluate potential resource issues that would be included in the PSC Application, which is expected to be submitted September 2010. If you have questions or comments during your review, or if you would like a GIS file of the study area, please contact me at (763) 278-5949 or by email at aaron.diehl@hdrinc.com.

Sincerely,

HDR Engineering, Inc.

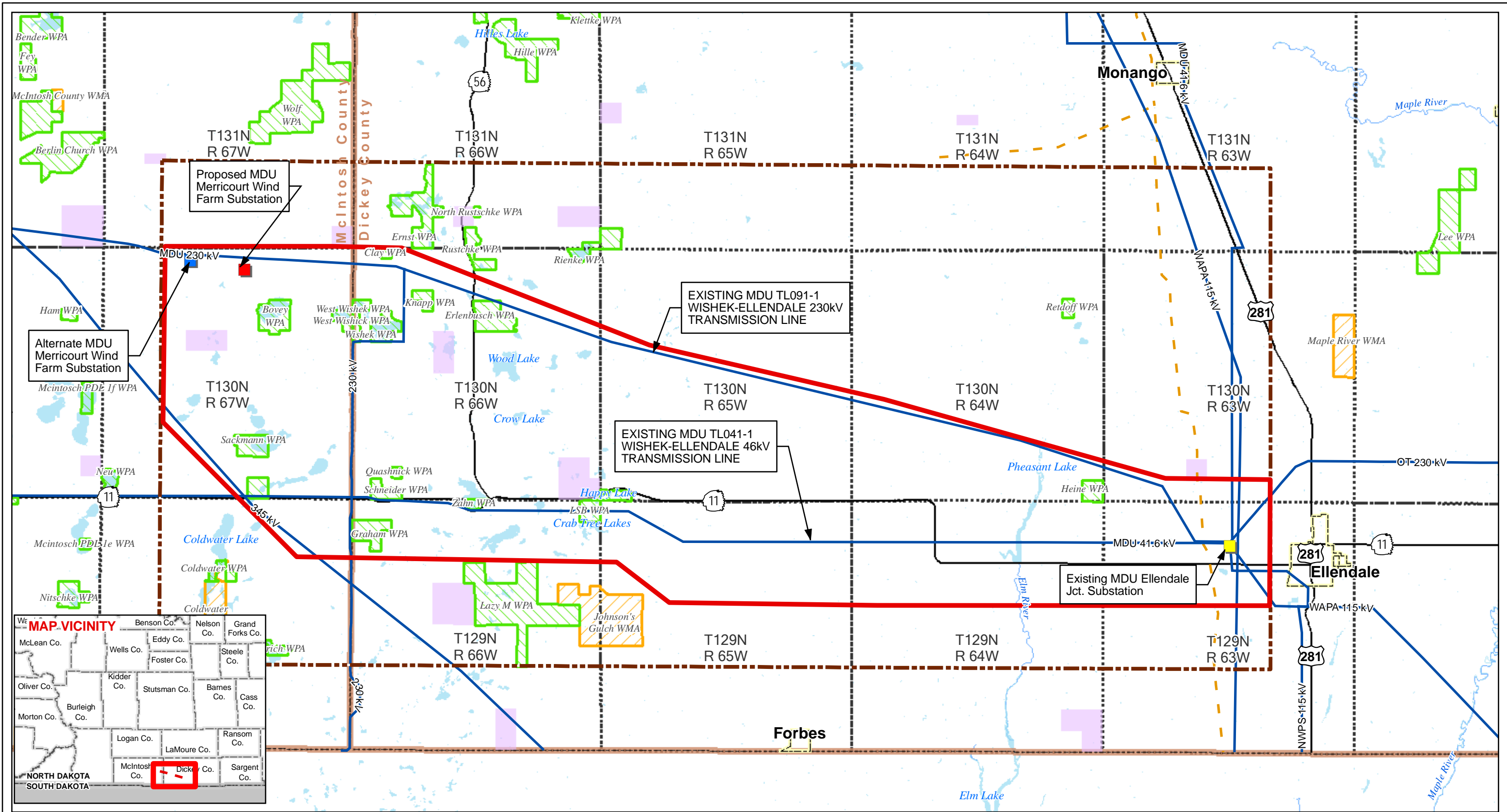


Aaron Diehl
 Environmental Scientist

Enclosures: Project Location Map
 Table of Corridor Location
 Notification List
 Public Open House Invitation

**Table 1
 Corridor Legal Description**

| County | Township Name | Township | Range | Sections |
|----------|-----------------------|----------|-------|--|
| Dickey | Ellendale | T129N | R63W | 3,4,5,6,7,8,9,10,15,16,17,18 |
| Dickey | Elm | T129N | R64W | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18 |
| Dickey | Lorraine | T129N | R65W | 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17 |
| Dickey | Albertha | T129N | R66W | 1,2,3,4,5,6,7,8,9,10,11,12 |
| Dickey | Elden | T130N | R63W | 31,32,33,34 |
| Dickey | Albion | T130N | R64W | 19,20,21,25,26,27,28,29,30,31,32,33,34,35,36 |
| Dickey | Grand Valley | T130N | R65W | 7,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36 |
| Dickey | Spring Valley | T130N | R66W | 3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36 |
| McIntosh | Unorganized Territory | T129N | R67W | 1,2,3,11,12 |
| McIntosh | Unorganized Territory | T130N | R67W | 1,2,3,4,5,8,9,10,11,12,13,14,15,16,17,20,21,22,23,24,25,26,27,28,29,33,34,35,36 |



Map Document: \\mnp-gis-file\GISProj\MDU140114\map_docs\Agency\MEP_11x17L_Notification.mxd 5/17/2010 3:01:42 PM



0 1 2 Miles



- | | | | | | | |
|---|----------------------------|------------------------------|------------------|------------------------|-------------------|--------|
| Study Area | Siting Corridor | State Recreation Area or WMA | USFWS WPA or WDA | State Surface Tracts | Incorporated Area | Stream |
| Alternate MDU Merricourt Wind Farm Substation | Existing Transmission Line | Highway | Lake or Pond | PLSS Township Boundary | County Boundary | |
| Proposed MDU Merricourt Wind Farm Substation | Existing Gas Pipeline | | | | | |
| Existing MDU Ellendale Jct. Substation | | | | | | |

Figure 1. Study Area Map
Montana-Dakota Utilities Co.
Merricourt Wind Farm to Ellendale Project

Distribution List
MDU - Merricourt Wind Farm to Ellendale Project; Dickey and McIntosh Counties, North Dakota

State Agencies

| Agency Name | Title | First Name | Last Name | Job Title | Address | City | State | Zip | Phone (701) | |
|---|--|------------|------------|---------------|---------------------------------|---|----------|-----|-------------|----------|
| Aeronautics Commission | North Dakota Aeronautics Commission | Mr. | Larry | Taborsky | Director | P.O. Box 5020, Bismarck Municipal Airport - General Aviation Terminal 2301 University Drive, Building 1652-22 | Bismarck | ND | 58502-5020 | 328-9650 |
| Attorney General | Attorney General's Office | Mr. | Wayne | Stenehjem | Attorney General | State Capitol 600 E. Boulevard Ave., Dept. 125 | Bismarck | ND | 58505-0601 | 328-2210 |
| Dept. of Agriculture | North Dakota Department of Agriculture | Mr. | Roger | Johnson | Agriculture Commissioner | 600 East Boulevard Ave., Dept. 602 | Bismarck | ND | 58505-0020 | 328-2231 |
| Dept. of Health | North Dakota Department of Health | Dr. | Terry | Dwelle | State Health Officer | 600 East Boulevard Avenue | Bismarck | ND | 58505-0200 | 328-2372 |
| Dept. of Human Services | North Dakota Department of Human Services | Ms. | Carol K. | Olson | Executive Director | 600 East Boulevard Ave., Dept. 325 | Bismarck | ND | 58505-0250 | 328-2310 |
| Dept. of Labor | North Dakota Department of Labor | Ms. | Lisa | Fair McEvers | Commissioner of Labor | 600 East Boulevard Ave., Dept. 406 | Bismarck | ND | 58505-0340 | 328-2660 |
| Department of Vocational Education | North Dakota Department of Career and Technical Education | Mr. | Wayne | Kutzer | Director and Executive Officer | State Capitol 15th Floor 600 East Boulevard Avenue, Dept. 270 | Bismarck | ND | 58505-0610 | 328-3180 |
| Economic Development Commission | North Dakota Department of Commerce Division of Economic Development and Finance | Mr. | Paul | Lucy | Director | 1600 East Century Avenue, Suite 2 P.O. Box 2057 | Bismarck | ND | 58502-2057 | 328-5300 |
| Energy Development Impact Office | North Dakota State Land Department | Mr. | Jeff | Engleson | Director of Investment Division | P.O. Box 5523, 1707 North 9th St. | Bismarck | ND | 58506-5523 | 328-2800 |
| Game and Fish Department | North Dakota Game and Fish Department | Mr. | Terry | Steinwand | Director | 100 North Bismarck Expressway | Bismarck | ND | 58501-5095 | 328-6305 |
| Geological Survey | North Dakota Geological Survey | Mr. | Edward C. | Murphy | State Geologist | 1016 East Calgary Ave. S.E. | Bismarck | ND | 58503-5512 | 328-8000 |
| Highway Department | North Dakota Department of Transportation | Mr. | Frances G. | Ziegler | Director | 608 East Boulevard Ave. | Bismarck | ND | 58505-0700 | 328-2500 |
| State Historical Society of ND | State Historical Society of North Dakota | Mr. | Merlan | Paaverud, Jr. | Director | North Dakota Heritage Center, 612 East Boulevard Avenue | Bismarck | ND | 58505-0830 | 328-2666 |
| Indian Affairs Commission | North Dakota Indian Affairs Commission | Ms. | Cheryl | Kulas | Executive Director | 600 East Boulevard Ave. 1st Floor - Judicial Wing | Bismarck | ND | 58505-0300 | 328-2428 |
| Job Service ND | Job Service North Dakota | Ms. | Maren | Daley | Executive Director | P.O. Box 5507 | Bismarck | ND | 58506-5507 | 328-2825 |
| Land Department | North Dakota State Land Department | Mr. | Gary | Preszler | Land Commissioner | P.O. Box 5523, 1707 North 9th. St. | Bismarck | ND | 58506-5523 | 328-2800 |
| Parks and Rec Dept | North Dakota Parks and Recreation Department | Mr. | Doug | Prchal | Director | 1600 E. Century Avenue, Suite 3 | Bismarck | ND | 58503-0649 | 328-5357 |
| State Planning Division - Office of Intergovernmental Assistance- Office of Management and Budget | North Dakota Department of Commerce Division of Community Services | Mr. | Shane | Goette | Commissioner | 1600 East Century Avenue, Suite 2 P.O. Box 2057 | Bismarck | ND | 58503-0649 | 328-5312 |
| State Planning Division - Office of Intergovernmental Assistance- Office of Management and Budget | Office of Management and Budget | Ms. | Pam | Sharp | Director | 600 East Boulevard Ave., Dept. 110 | Bismarck | ND | 58505-0400 | 328-2680 |
| Soil Conservation Committee | NDSU Extension Service - North Dakota State Soil Conservation Committee | Mr. | Scott | Hochhalter | Soil Conservation Specialist | 2718 Gateway Avenue, Unit #104 | Bismarck | ND | 58503-0585 | 328-9718 |
| State Water Commission | North Dakota State Water Commission | Mr. | Dale | Frink | State Engineer | 900 East Boulevard, Dept. 770 | Bismarck | ND | 58505-0850 | 328-2750 |

Federal Agencies

| Agency Name | Title | First Name | Last Name | Job Title | Address | City | State | Zip | Phone (701) | |
|--------------------------------|---|------------|-----------|-----------|-------------------------------------|--|----------|-----|-------------|----------------|
| FAA | Federal Aviation Administration | Ms. | Patricia | Dressler | Environmental Protection Specialist | Bismarck Airports District Office 2301 University Drive, Bldg 23B | Bismarck | ND | 58504 | (701) 323-7380 |
| FHA | Federal Highway Administration | Mr. | Wendall | Meyer | Division Administrator | North Dakota Division 1471 Interstate Loop | Bismarck | ND | 58503 | |
| U.S. Fish and Wildlife Service | U.S. Fish and Wildlife Service | Mr. | Jeff | Towner | Project Leader | North Dakota Field Office 3425 Miriam Avenue | Bismarck | ND | 58501-7926 | 250-4481 |
| U.S. Corps of Engineers | U.S. Corps of Engineers | Mr. | Daniel | Cimarosti | Regulatory Program Manager | 1513 S 12th St. | Bismarck | ND | 58504-6640 | 255-0015 |
| U.S. Geological Survey | U.S. Geological Survey | Mr. | Gregg | Wiche | Director | 821 E Interstate Ave | Bismarck | ND | 58503-1136 | 250-7400 |
| U.S. Department of Agriculture | USDA Natural Resources Conservation Service | Mr. | J. R. | Flores | State Conservationist | P.O. Box 1458 | Bismarck | ND | 58502-1458 | 530-2000 |

County Officials

| Agency Name | Title | First Name | Last Name | Job Title | Address | City | State | Zip | Phone (701) | |
|-------------------|--|------------|-----------|-----------|---------------------|--|-----------|-----|-------------|----------|
| Dickey County | Dickey County Board of Commissioners | Mr. | John | Hokana | Commissioner, Chair | County Courthouse, P.O. Box 215, 309 N. 2nd Street | Ellendale | ND | 58436-0215 | 349-3249 |
| Dickey County | Dickey County | Ms. | Beverly | Kuska | Auditor | County Courthouse, P.O. Box 215, 309 N. 2nd Street | Ellendale | ND | 58436-2015 | 349-3249 |
| McIntosh County | McIntosh County Board of Commissioners | Mr. | James | Raile | Commissioner, Chair | County Courthouse, P.O. Box 39 | Ashley | ND | 58413-0039 | 288-3347 |
| McIntosh County | McIntosh County | Ms. | Jolene | Weisser | Auditor | County Courthouse, P.O. Box 39 | Ashley | ND | 58413-0040 | 288-3096 |
| City of Ellendale | City of Ellendale | Ms. | Monica | Peldo | Mayor | P.O. Box 267, 55 3rd Ave S | Ellendale | ND | 58436 | 349-3450 |

State Elected Officials (Senators and Representatives of districts in the corridor location)

| State Officials | Title | First Name | Last Name | Job Title | Address | City | State | Zip | Phone (701) | |
|-----------------|----------------|------------|-----------|-------------|----------------|-------------------|----------|-----|-------------|----------|
| District 28 | Senator | Sen. | Robert | Erbele | Senator | 6512 51st Ave SE | Lehr | ND | 58460-9149 | 378-2272 |
| District 28 | Representative | Rep. | Mike | Brandenburg | Representative | 8044 County Rd 34 | Edgeley | ND | 58433-9761 | 493-2915 |
| District 28 | Representative | Rep. | William | Kretschmar | Representative | 201 East Third St | Venturia | ND | 58413-7321 | 684-7321 |

State Elected Officials (Governor)

| State Officials | Title | First Name | Last Name | Job Title | Address | City | State | Zip | Phone (701) | |
|-------------------|-------------------|------------|-----------|-----------|-------------------|------------------------------------|----------|-----|-------------|----------|
| Governor's Office | Governor's Office | Governor | John | Hoeven | Governor's Office | 600 East Boulevard Ave., Dept. 101 | Bismarck | ND | 58505-0001 | 328-2200 |

Merricourt Wind Farm to Ellendale Project

OPEN HOUSE MEETINGS

Wednesday, June 16: Fireside Steakhouse, 6PM–8PM

Thursday, June 17: Ashley High School Gymnasium, 6PM–8PM

Montana-Dakota Utilities Co. (MDU) has announced two public open house meetings for a proposed transmission line - Merricourt Wind Farm to Ellendale (MWFE) Project - on June 16th and June 17th

The purpose of these public meetings will be to provide information regarding the Merricourt Wind Farm to Ellendale Project and discuss areas for potential route options.

Project staff will be available to answer questions in an open-house format.

Please join us!

For more info, call 1-800-225-7587 or visit www.MDU-MWFE.com

| June 16 | June 17 |
|--|--|
| Fireside Steakhouse – Lower Level | Ashley High School Gymnasium |
| 415 1st Ave North Ellendale, North Dakota | 703 West Main Street Ashley, North Dakota |
| 6:00 – 8:00 PM | 6:00 – 8:00 PM |

The same information will be presented at each meeting.

Light refreshments will be served.

Individuals requiring special assistance should call (800) 225-7587 at least 48 hours in advance.



In the Community to Serve®



**STATE
HISTORICAL
SOCIETY
OF NORTH DAKOTA**

RECEIVED

JUN 1 - 2010

HDR Engineering, Inc.

John Hoeven
Governor of North Dakota

May 28, 2010

North Dakota
State Historical Board

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

Chester E. Nelson, Jr.
Bismarck - President

Gerold Gerntholz
Valley City - Vice President

Richard Kloubec
Fargo - Secretary

Albert I. Berger
Grand Forks

Calvin Grinnell
New Town

Diane K. Larson
Bismarck

A. Ruric Todd III
Jamestown

Sara Otte Coleman
Director
Tourism Division

Kelly Schmidt
State Treasurer

Alvin A. Jaeger
Secretary of State

Mark A. Zimmerman
Director
Parks and Recreation Department

Francis Ziegler
Director
Department of Transportation

Merlan E. Paaverud, Jr.
Director

ND SHPO REF: 10-1440 PSC Montana-Dakota Utilities Co. proposed 230kV transmission line from the Merricourt Wind Farm to the Ellendale Junction substation in portions of Dickey and McIntosh Counties, North Dakota

Dear Mr. Diehl,

We received your preliminary information regarding ND SHPO REF: 10-1440 PSC Montana-Dakota Utilities Co. proposed 230kV transmission line from the Merricourt Wind Farm to the Ellendale Junction substation in portions of Dickey and McIntosh Counties, North Dakota. We recommend a Class I (file search) of the project areas followed by a Class III (pedestrian) survey, and review and comment by this office.

Thank you very much for the opportunity to review this project to date. We look forward to further review of the Class I and Class III reports. If you have any questions please contact Susan Quinnell, Review and Compliance Coordinator at (701) 328-3576, e-mail squinnell@nd.gov

Sincerely,

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

C: Patrick Fahn, PSC

Accredited by the
American Association
of Museums since 1986



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640
May 28, 2010

North Dakota Regulatory Office

[NWO-2010-1163-BIS]

HDR Engineering, Inc.
ATTN: Aaron Diehl
701 Xenia Avenue South, Suite 500
Minneapolis, Minnesota 55416

Dear Mr. Diehl:

This is in response to your request for comments on behalf of Montana –Dakota Utilities Company for the proposed construction of approximately 30 miles of 230kV transmission line substation in Dickey and McIntosh Counties, North Dakota. This project is referred to as the Merricourt Wind Farm to Ellendale (MWFE) Project that will serve as a generation outlet for the proposed Merricourt Wind Farm.

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 or affecting navigable waters. This would include work over, through, or under Section 10 water. Section 10 waters in North Dakota include the Missouri River (Lake Sakakawea and Lake Oahe), Yellowstone River, James River south of Jamestown, North Dakota, Bois de Sioux River, Red River of the North, and the Upper Des Lacs Lake. 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 includes, 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 waters of the United States.

Enclosed for your information is the fact sheet for Nationwide Permit 12, Utility Line Activities. Utility lines are already authorized by Nationwide Permit 12 **provided the utility line can be placed without any change to pre-construction contours and all other proposed construction activities and facilities are in compliance with the Nationwide's permit conditions and 401 Water Quality Certification is obtained**. Please note the pre-construction notification requirements on page 2 of the fact sheet. **If a project involves any one of the seven notification requirements, the project proponent must submit a DA application**. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 12 and 13 of the fact sheet.

Also enclosed for your information is the fact sheet for Nationwide Permit 14, Linear Transportation Projects. Road crossings are already authorized by Nationwide Permit 14 **provided the discharge does not cause the permanent loss of greater than ½ acre of waters of the United States per crossing and all other proposed construction activities are in compliance with the Nationwide's permit conditions**. Please note the pre-construction notification requirements on the front page of the fact sheet (highlighted in yellow). **If a project involves (1) the loss of waters of the United States exceeding 1/10 acre per crossing; or (2) there is a discharge in a special aquatic site, including wetlands, the project proponent must submit a DA application prior to the start of construction**. Please reference General Condition 27, Pre Construction Notification on page 8 of the fact sheet. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 11 and 12 of the fact sheet.

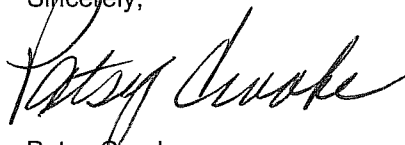
In the event your project requires approval from the U.S. Army Corps of Engineers and cannot be authorized by Nationwide Permit(s), a Standard or Individual Permit will be required. A project that requires a Standard or Individual Permit is intensely reviewed and will require the issuance of a public notice. A Standard or Individual Permit generally requires a minimum of 120 days for processing but based on the project impacts and comments received through the public notice may extend will beyond 120 days.

This correspondence letter **does not approve** the proposed construction work or **does not verify** the proposed project complies with the Nationwide Permit(s).

If any of these projects require a Section 10 and/or Section 404 permit, please complete and submit the enclosed Department of the Army permit application (ENG Form 4345) to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504. If you are unsure if a permit is required, you may submit an application; include a project location map, description of work, and construction methodology.

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,

A handwritten signature in black ink, appearing to read "Patsy Crooke". The signature is fluid and cursive, written over a white background.

Patsy Crooke
Project Manager
North Dakota

Enclosure

ENG Form 4345
Fact Sheet NWP 12
Fact Sheet NWP 14



www.jobsnd.com

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

PO Box 5507 • Bismarck, ND 58506-5507

RECEIVED

JUN 3 - 2010

HDR Engineering, Inc.

June 1, 2010

Mr. Aaron Diehl
Environmental Scientist
HDR One Company
701 Xenia Avenue South, Suite 600
Minneapolis, Minnesota 55416

RE: Merricourt Wind Farm to Ellendale Junction Substation
Dickey and McIntosh Counties, North Dakota

Dear Mr. Diehl:

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "Maren L. Daley".

Maren L. Daley
Executive Director

1707 North 9th Street
PO Box 5523
Bismarck, ND 58506-5523
Phone: (701) 328-2800
Fax: (701) 328-3650



Gary D. Preszler, Commissioner

www.land.nd.gov
www.nd.gov

June 2, 2010

AARON DIEHL ENVIRONMENTAL SCIENTIST
HDR ENGINEERING INC
701 XENIA AVENUE SOUTH SUITE 600
MINNEAPOLIS MN 55416

Re: Comments from the ND State Land Department concerning the Montana Dakota Utilities proposed 230kV electric transmission line from the Merricourt Wind Farm to the Ellendale Junction Substation in Dickey and McIntosh Counties, North Dakota

Dear Mr. Diehl:

The ND State Land Department manages the School Trust lands in North Dakota, which were granted at statehood for the support of primary and secondary education. We have reviewed the preliminary map provided by HDR Engineering and there are several School Trust tracts located within the proposed corridor. Some of these tracts have identifiable assets such as aggregate deposits, potential for wind tower placement, or cultivated land. Construction of the electric transmission line will have a negative impact on these resources.

There are also some tracts that will not be severely impacted, or the future impact from the line is unknown. Attached is a listing of two groups of School Trust land: 1) Tracts not recommended for the electric transmission line, and 2) Tracts that can accommodate the electric transmission line.

The School Trust is one of the larger land owners within the proposed project corridor, and the ND Land Department, on behalf of the School Trust, favors a route parallel to the existing MDU TL041-1 Wishek-Ellendale 46kv transmission line, or combining the proposed line with the existing line, as this will have the least amount of impact on the resources of the School Trust lands.

When MDU is ready to apply for an easement, please submit an on-line application at the following web site: <http://www.land.nd.gov/surface/row/>.

Thank you.

Sincerely,

A handwritten signature in blue ink that reads "Michael L. Haupt".

Michael L. Haupt, CPRM
Land Management Professional

Attachment

TRACTS NOT RECOMMENDED FOR ELECTRIC TRANSMISSION LINE

Dickey County 130-66-16-W2: Rolling native grassland located in the Prairie Pothole region of south central North Dakota. Numerous wetlands ranging from small to large cover a large percentage of this tract. Most of the upland soils in the NW4 are Wabek soils which have potential for aggregate deposits. There is an existing easement for a rural water pipeline parallel with and adjacent to the west and north section lines. The landscape is similar to the surrounding area and so potential for wind development is unknown but there is wind development in the area. This tract would not be suitable for the proposed electric transmission line.

Dickey County 130-66-36-All: Rolling native grassland located in the Prairie Pothole region of south central North Dakota. Numerous wetlands ranging from small to large cover a moderate percentage of this tract. There are no soils with potential for aggregate deposits but this tract is higher on the landscape and there is wind tower development in the area, along with communication towers. There is a NDDOT highway along the south section line and good access to most of the tract. No other major existing right of ways. This tract would not be suitable for the proposed electric transmission line.

TRACTS THAT CAN ACCOMMODATE THE ELECTRIC TRANSMISSION LINE

Dickey County 130-63-33-NW4: Level to rolling native grassland and cultivated land located within the Prairie Pothole region of south central North Dakota. It has a fairly large natural drainage running north-south so it is lower on the landscape and potential for wind development may be less. Past history of aggregate mining but soils do not indicate potential deposit. There is an existing easement for an oil transmission pipeline. This tract would be suitable for the proposed electric transmission line.

McIntosh County 130-67-16-N2: Rolling native grassland located in the Prairie Pothole region of south central North Dakota. Numerous wetlands ranging from small to large cover a large percentage of this tract. There are no soils with potential for aggregate deposits and this tract is slightly lower on the landscape than the surrounding area. There are no existing right of ways on this tract. This tract would be suitable for the proposed electric transmission line.



NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov



RECEIVED

June 8, 2010

JUN 11 2010

Mr. Aaron Diehl
Environmental Scientist
HDR Engineering, Inc.
701 Xenia Ave. South, Suite 600
Minneapolis, MN 55416

HDR Engineering, Inc.

Re: MDU's Proposed 230 kV Transmission Line from the
Merricourt Wind Farm to the Ellendale Junction Substation
Dickey and McIntosh Counties, North Dakota

Dear Mr. Diehl:

This department has reviewed the information concerning the above-referenced project addressed to Dr. Terry Dwelle, under date of May 26, 2010, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.
2. Care is to be taken during construction activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.
3. Projects disturbing one or more acres are required to have a permit to discharge storm water runoff until the site is stabilized by the reestablishment of vegetation or other permanent cover. Further information on the storm water permit may be obtained from the Department's website or by calling the Division of Water Quality (701-328-5210). Also, cities may impose additional requirements and/or specific best management practices for construction affecting their storm drainage system. Check with the local officials to be sure any local storm water management considerations are addressed.

Environmental Health
Section Chief's Office
701.328.5150

Division of
Air Quality
701.328.5188

Division of
Municipal Facilities
701.328.5211

Division of
Waste Management
701.328.5166

Division of
Water Quality
701.328.5210

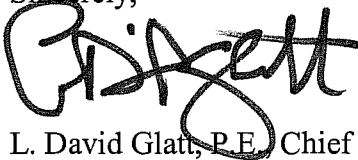
4. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

These comments are based on the information provided about the project in the above-referenced submittal. The U.S. Army Corps of Engineers may require a water quality certification from this department for the project if the project is subject to their Section 404 permitting process. Any additional information which may be required by the U.S. Army Corps of Engineers under the process will be considered by this department in our determination regarding the issuance of such a certification.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,



L. David Glati, P.E. Chief
Environmental Health Section

LDG:cc
Attach.



Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.



John Hoeven, Governor
Mark A. Zimmerman, Director

1600 East Century Avenue, Suite 3
Bismarck, ND 58503-0649
Phone 701-328-5357
Fax 701-328-5363
E-mail parkrec@nd.gov
www.parkrec.nd.gov

June 11, 2010

HDR Engineering, Inc.

Aaron Diehl
HDR Engineering, Inc.
701 Xenia Avenue South, Suite 600
Minneapolis, MN 55416

Re: Montana-Dakota Utilities Co. Transmission Line from the Merricourt Wind Farm to the Ellendale Junction Substation
Dickey and McIntosh Counties

Dear Mr. Diehl:

The North Dakota Parks and Recreation Department (the Department) has reviewed the above referenced project proposal to construct an approximately 30-mile-long 230 kV transmission line and substation in Dickey and McIntosh Counties.

Our agency scope of authority and expertise covers recreation and biological resources (in particular rare plants and ecological communities). The project as defined does not affect state park lands that we manage. We would like to bring to your attention a Land and Water Conservation Fund (LWCF) site in the study area. Coldwater Park, projects 38-00513 and 38-01085, received assistance from the federal Land and Water Conservation Fund and is under protection of section 6(f) of the LWCF Act. Any property taken from within the 6f boundary of this site must be replaced with property of equal market value. Should any public or private utilities need to be added or relocated on the LWCF recreational lands, the NDPRD must be consulted prior to any action taken. Please contact Jessica Riepl (701-328-5364 or jriepl@nd.gov) if additional LWCF information is needed.

The North Dakota Natural Heritage biological conservation database has been reviewed to determine if any current or historic plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, several occurrences have been identified within or adjacent to the project area including: *Podiceps grisegena* (red-necked grebe), *Melospiza georgiana* (swamp sparrow), *Quercus macrocarpa/Prunus virginiana northern ravine woodland* (bur oak upland woodland), *Stipa comata – Bouteloua gracilis/Carex filifolia prairie* (needle-and-thread mixed grass prairie), first order stream, and permanent open water. Please see the attached spreadsheet and map for more specific information on these occurrences. We defer further comments regarding animal species to the North Dakota Game and Fish Department and the United States Fish and Wildlife Service.

Because this information is not based on a comprehensive inventory, there may be species of concern or otherwise significant ecological communities in the area that are not represented in the database. The lack of data for any project area cannot be construed to mean that no significant features are present. The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources.

The Department recommends that the project be accomplished with minimal impacts and that all efforts be made to ensure that critical habitats not be disturbed in the project area to help secure rare species conservation in North Dakota. Regarding any reclamation efforts, we recommend that any impacted areas be revegetated with species native to the project area.

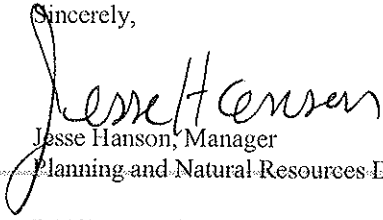
It is our policy to charge out-of-state requests for data services including data retrieval, data analysis, manual and computer searches, packaging and collection of data. An invoice for services provided has been enclosed.

.....
Play in our backyard!

June 7, 2010
Page 2

Thank you for the opportunity to comment on this project. Please contact Kathy Duttonhefner (701-328-5370 or kgduttonhefner@nd.gov) of our staff if additional information is needed.

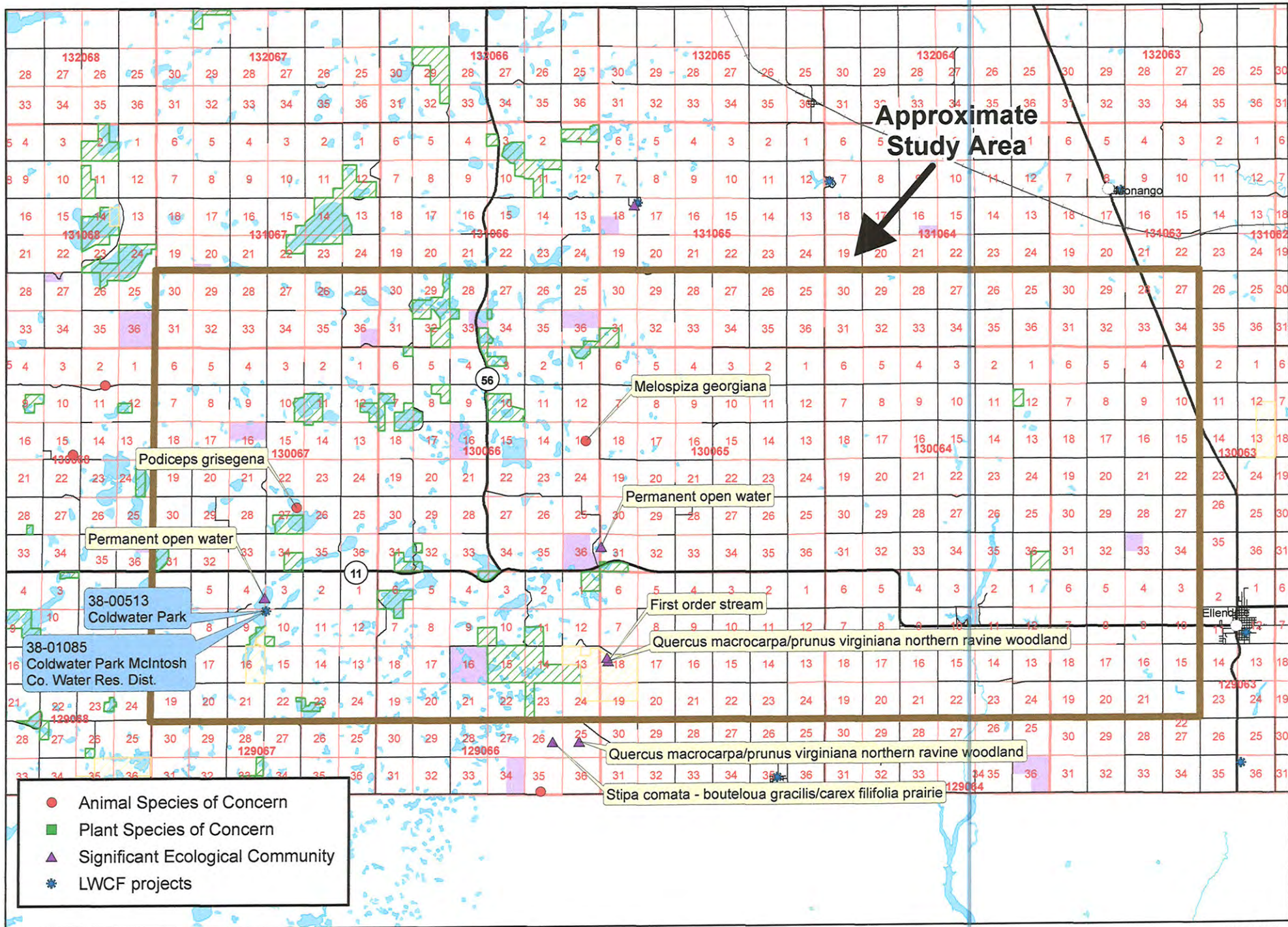
Sincerely,

A handwritten signature in cursive script that reads "Jesse Hanson". The signature is written in black ink and is positioned above the printed name and title.

Jesse Hanson, Manager
Planning and Natural Resources Division

R.USNDNHI*2010-166

North Dakota Parks and Recreation Department North Dakota Natural Heritage Inventory



North Dakota Natural Heritage Inventory
Rare Animal and Plant Species and Significant Ecological Communities

| State Scientific Name | State Common Name | State Rank | Global Rank | Federal Status | Township Range Section | County | Last Observation | Estimated Representation Accuracy | Precision |
|---|---------------------------------------|------------|-------------|----------------|--|------------------|------------------|-----------------------------------|-----------|
| First order stream | | S1 | GNR | | 129N065W - 18 | Dickey | 1982 | | S |
| Quercus macrocarpa/prunus virginiana northern ravine woodland | Bur Oak Upland Woodland | 53 | GNR | | 129N065W - 18 | Dickey | 1982 | | S |
| Quercus macrocarpa/prunus virginiana northern ravine woodland | Bur Oak Upland Woodland | 53 | GNR | | 129N066W - 25 | Dickey | 1985-06-13 | | S |
| Stipa comata - bouteloua gracilis/ carex filifolia prairie | Needle-and-thread Mixed Grass Prairie | S2 | GNR | | 129N066W - 26 | Dickey | 1985-06-13 | | S |
| Permanent open water | | S2 | GNR | | 129N067W - 04; 129N067W - 03 | McIntosh | 1977 | | S |
| Permanent open water | | S2 | GNR | | 130N065W - 31; 130N066W - 36 | Dickey | 1977 | | S |
| Melospiza georgiana | Swamp Sparrow | S3 | G5 | | 130N066W - 13; 131N065W - 29; 130N065W - 06; 130N066W - 22; 131N066W - 35; 129N065W - 04; 130N066W - 34; 130N066W - 12; 130N065W - 07; 130N065W - 20; 129N066W - 10; 129N065W - 05; 130N065W - 32; 131N065W - 27; 130N065W - 10; 131N066W - 22; 130N066W - 20; | Dickey | | | G |
| Podiceps grisegena | Red-necked Grebe | SU | G5 | | 130N067W - 27; 130N067W - 16; 130N068W - 26; 129N067W - 18; 130N067W - 17; 130N067W - 04; 129N067W - 16; 130N067W - 29; 131N067W - 32; 129N067W - 06; 130N067W - 19; 129N066W - 18; 131N067W - 33; 130N066W - 19; 130N066W - 28; 131N067W - 34; 130N066W - 18; | Dickey, McIntosh | | | G |

North Dakota Natural Heritage Inventory Biological and Conservation Data Disclaimer

The quantity and quality of data collected by the North Dakota Natural Heritage Inventory are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in North Dakota have never been thoroughly surveyed, and new species are still being discovered. For these reasons, the Natural Heritage Inventory cannot provide a definite statement on the presence, absence, or condition of biological elements in any part of North Dakota. Natural Heritage data summarize the existing information known at the time of the request. Our data are continually upgraded and information is continually being added to the database. This data should never be regarded as final statements on the elements or areas that are being considered, nor should they be substituted for on-site surveys.

Estimated Representation Accuracy

Value that indicates the approximate percentage of the Element Occurrence Representation (EO Rep) that was observed to be occupied by the species or community (versus buffer area added for locational uncertainty). Use of estimated representation accuracy provides a common index for the consistent comparison of EO reps, thus helping to ensure that aggregated data are correctly analyzed and interpreted.

Very high (>95%)

High (>80%, <= 95%)

Medium (>20%, <= 80%)

Low (>0%, <= 20%)

Unknown

(null) - Not assessed

Precision

A single-letter code for the precision used to map the Element Occurrence (EO) on a U.S. Geological Survey (USGS) 7.5' (or 15') topographic quadrangle map, based on the previous Heritage methodology in which EOs were located on paper maps using dots.

S - Seconds: accuracy of locality mappable within a three-second radius; 100 meters from the centerpoint

M - Minute: accuracy of locality mappable within a one-minute radius; 2 km from the centerpoint

G - General: accuracy of locality mappable to map or place name precision only; 8 km from centerpoint

U - Unmappable



"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

RECEIVED

JUN 24 2010

HDR Engineering, Inc.

June 21, 2010

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

Dear Mr. Diehl:

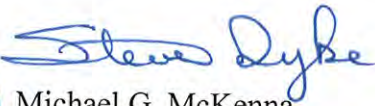
RE: Montana-Dakota Utilities Co. Proposed 230kV Transmission Line
Merricourt Wind Farm to Ellendale Junction Substation
Dickey and McIntosh Counties, North Dakota

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.

Sincerely,


(for) Michael G. McKenna

Chief
Conservation & Communication Division

js

From: Sue_Kvas@fws.gov
Sent: Monday, June 14, 2010 10:25 AM
To: Diehl, Aaron
Cc: michael_erickson@fws.gov; Wayne_Henderson@fws.gov
Subject: RE: MDU 230kV Project: Request for USFWS land interest information
Attachments: 230 kV_dicke_mcint.pdf

Aaron,

Here is a map depicting USFWS land interests for the area you requested. If you have any questions concerning USFWS land interests, please contact the Kulm Wetland Management District at 701-647-2866, Mick Erickson or Wayne Henderson.

Please note:

Ecological Services (USFWS) is the point of contact for information related to compliance with the laws administered by the USFWS such as the Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA), Endangered Species Act (ESA), and the National Wildlife Refuge System Improvement Act of 1997. All individuals and companies are responsible to ensure that their actions are in compliance with these laws. If you have not already done so, project developers should contact the North Dakota Field Office at 701-250-4481 for further information.

Cultural resource compliance requires coordination with the Zone Archeologist early in the NEPA process. Cultural Resource field investigations on USFWS easements and fee lands requires a permit issued by the Zone Archeologist. Contact Barry G. Williams, USFWS Dakotas Zone Archeologist (barry_williams@fws.gov, 701-355-8577).

Thank you,

Sue

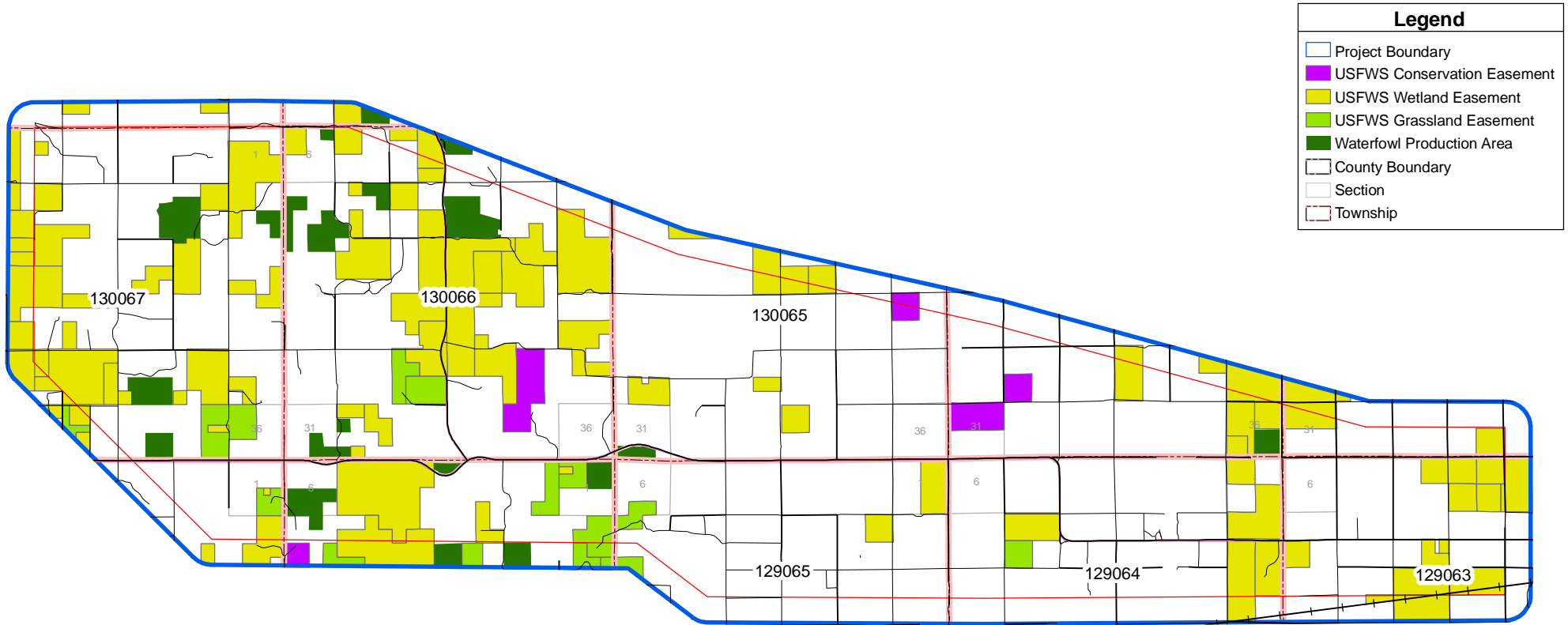
Susan Kvas
US Fish & Wildlife Service
Habitat and Population Evaluation Team
Office of Conservation Science
3425 Miriam Ave
Bismarck, ND 58501
Office: (701)355-8541
Fax: (701)355-8533



U.S. Fish & Wildlife Service

230 kV Transmission Line - HDR

Dickey and McIntosh Counties, North Dakota

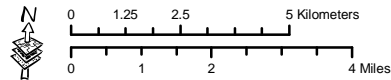


DISCLAIMER:

The USFWS makes no claim as to the accuracy or completeness of the displayed information. Shaded areas depicting the location of USFWS WPA fee lands and limited interest easements are for illustrative purposes only and do not represent legal boundaries or in the case of easements, the acreage of wetland or grassland resources included in the easement contract. For more detailed information, please contact one of the USFWS Realty Offices located in Bismarck and Minot, North Dakota, Aberdeen and Huron, South Dakota, or Great Falls, Montana.

The USFWS easement layer is current through October 2009. Please contact the appropriate Wetland Management District for any newly acquired easements.

Map was produced by HAPET Office of Conservation Science, Bismarck, North Dakota, June 2010.



Projection Information:
Universal Transverse Mercator
Datum NAD83
Zone 14



United States Department of Agriculture



Natural Resources Conservation Service
P.O. Box 1458
Bismarck, ND 58502-1458

June 23, 2010

Aaron Diehl
HDR Engineering, Inc.
701 Xenia Avenue south, Suite 600
Minneapolis, MN 55416

RE: Request of Information
Montana-Dakota Utilities Co. proposed 230kV transmission line from the
Merricourt Wind Farm to the Ellendale Junction Substation
Dickey and McIntosh Counties, North Dakota

Dear Mr. Diehl:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated May 26, 2010, concerning an environmental review for a proposed 230kV transmission line from the Merricourt Wind Farm to the Ellendale Junction Substation located in Dickey and McIntosh Counties, North Dakota.

Important Farmlands - NRCS has a major responsibility with Farmland Protection Policy Act (FPPA) in documenting conversion of farmland (i.e., prime, statewide, and local importance) to non-agricultural use when federal funding is used. Your proposed project consists of activities that are subject to FPPA. New transmission towers and electrical substations may remove farmland from production; therefore, these sites may be subject to FPPA, and an AD-1006 must be completed. Activities that do not enact FPPA include the burying of electrical lines or activities within city limits. Below are instructions for completing the AD-1006 for those areas affected by FPPA, provided federal funds are used.

For those areas subject to FPPA, the following form must be completed. Enclosed is a Form AD-1006 or you may utilize a fillable web based form at http://www.nrcs.usda.gov/Programs/fppa/pdf_files/AD1006.PDF to record the following. Please complete Part I and Part III and return to Fred Aziz, Area Resource Soil Scientist, 208 2nd Avenue SW, PO Box 2096, Jamestown, ND, 58402-2096 or call 701-252-1460 ext.115. If applicable, you may email the information to fred.aziz@nd.usda.gov. We will also need a map of the site at an appropriate scale so we 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, we 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

Helping People Help the Land

An Equal Opportunity Provider and Employer



Mr. Diehl
Page 2

CFR, Sec. 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.

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 buried utilities. 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 wetlands be avoided. If the alignment of the project requires passage through a wetland, NRCS can complete a certified wetland determination, if requested by the landowner/operator.

Sincerely,



ACTING PAUL J. SWEENEY
State Conservationist

Enclosure

cc: w/o encl.

Amy Erickson (Acting), DC, NRCS, Ashley, ND
Timothy Eide, DC, NRCS, Napoleon, ND
Stuart Blotter, ASTC (FO), NRCS, Jamestown, 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? <i>(If no, the FPPA does not apply – do not complete additional parts of this form).</i> | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Acres Irrigated |
| Major Crop(s) | Farmable Land In Govt. Jurisdiction Acres: _____ % | Average Farm Size 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 <i>(Scale of 0 to 100 Points)</i> | | | | |

| | | | | |
|--|----------------|--|--|--|
| PART VI (To be completed by Federal Agency) | Maximum Points | | | |
| Site Assessment Criteria <i>(These criteria are explained in 7 CFR 658.5(b))</i> | | | | |
| 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 <i>(From Part V)</i> | 100 | | | |
| Total Site Assessment <i>(From Part VI above or a local site assessment)</i> | 160 | | | |
| TOTAL POINTS <i>(Total of above 2 lines)</i> | 260 | | | |

| | | |
|----------------|-------------------|---|
| Site Selected: | Date Of Selection | Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input type="checkbox"/> |
|----------------|-------------------|---|

Reason For Selection:



North Dakota Department of Transportation

Francis G. Ziegler, P.E.
Director

John Hoeven
Governor

June 24, 2010

Aaron Diehl
HDR
701 Xenia Ave. S. – Suite 600
Minneapolis, MN 55416

CONSTRUCT A 30-MILE-LONG 230 vK TRANSMISSION LINE IN DICKEY AND
MCINTOSH COUNTIES, NORTH DAKOTA

We have reviewed your May 26, 2010, 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, John Thompson at 701-845-8800.

A handwritten signature in cursive script, appearing to read "Ronald J. Henke".

RONALD J. HENKE, P.E - DIRECTOR, OFFICE OF PROJECT DEVELOPMENT

57:rjh:js

c: John Thompson, Valley City District Engineer



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>

July 1, 2010

Aaron Diehl
HDR Engineering
701 Xenia Avenue S, STE 600
Minneapolis, MN 55416

Dear Mr. Diehl:

This is in response to your request for review of environmental impacts associated with the Montana-Dakota utilities Co. proposed 230 kV transmission line from the Merricourt Wind Farm to the Ellendale Junction Substation, Dickey and McIntosh, ND.

The proposed project have 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.

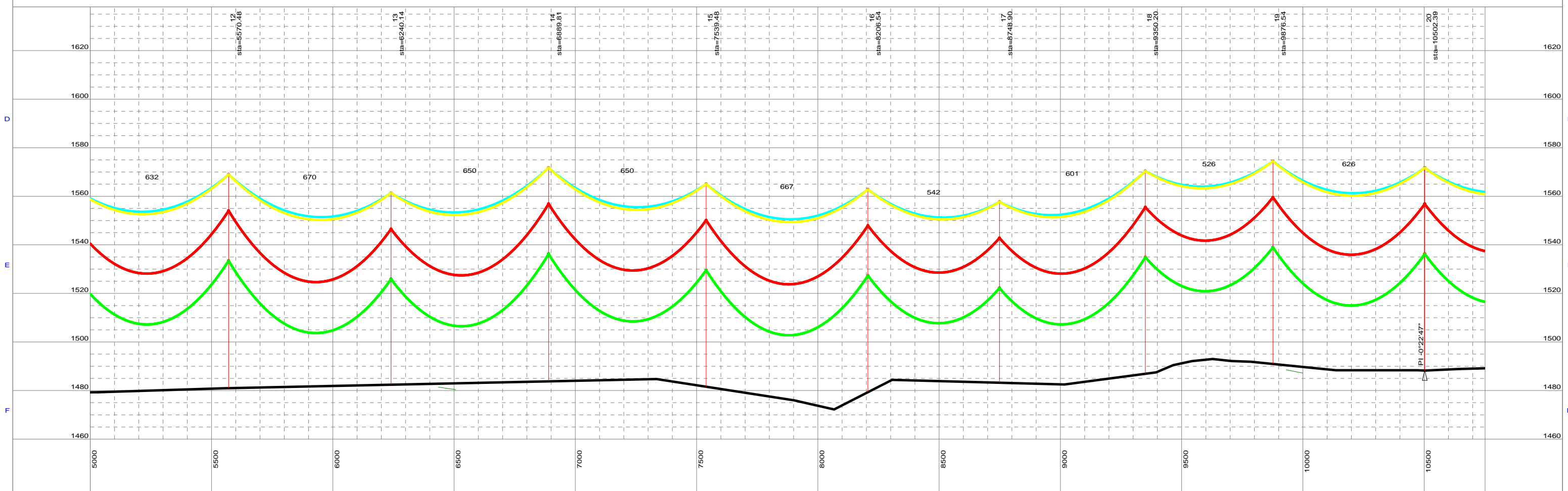
Sincerely,

Larry Knudtson
Research Analyst

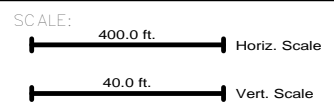
LJK:dp/1570

Appendix G

Plan and Profile



| NO. | DATE | BY | REVISION |
|-----|------|----|----------|
| | | | |
| | | | |



PRELIMINARY - NOT FOR CONSTRUCTION

MDU 01-04-11
1/19/2011
Page 2/29

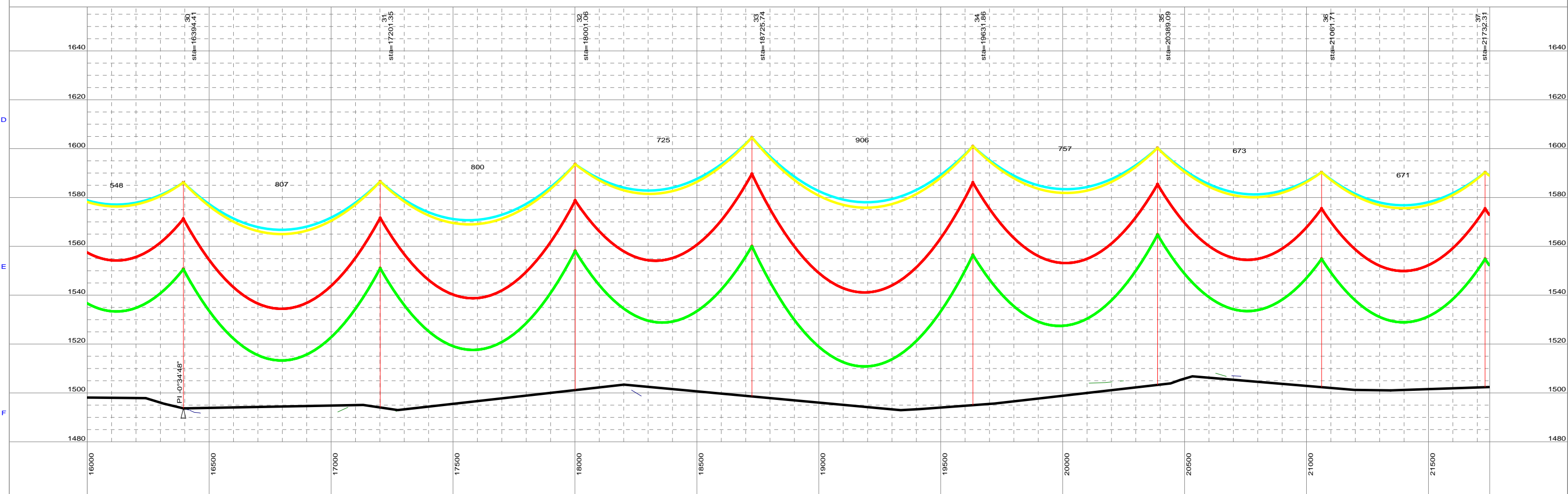
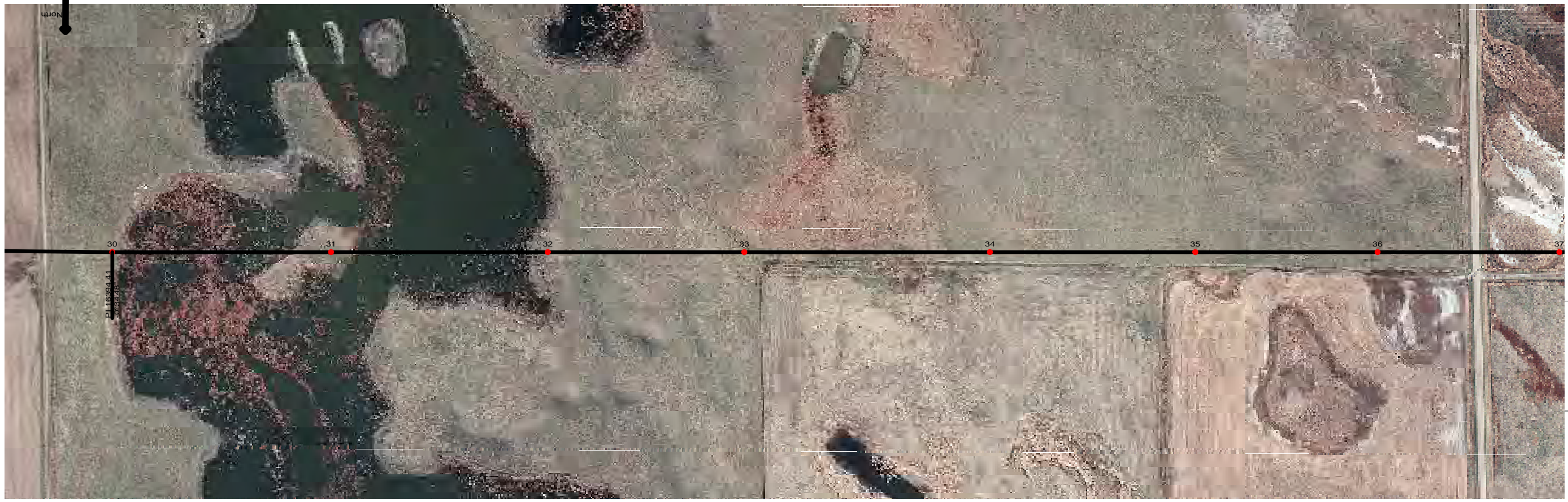
DRAWN:

APPROVED:

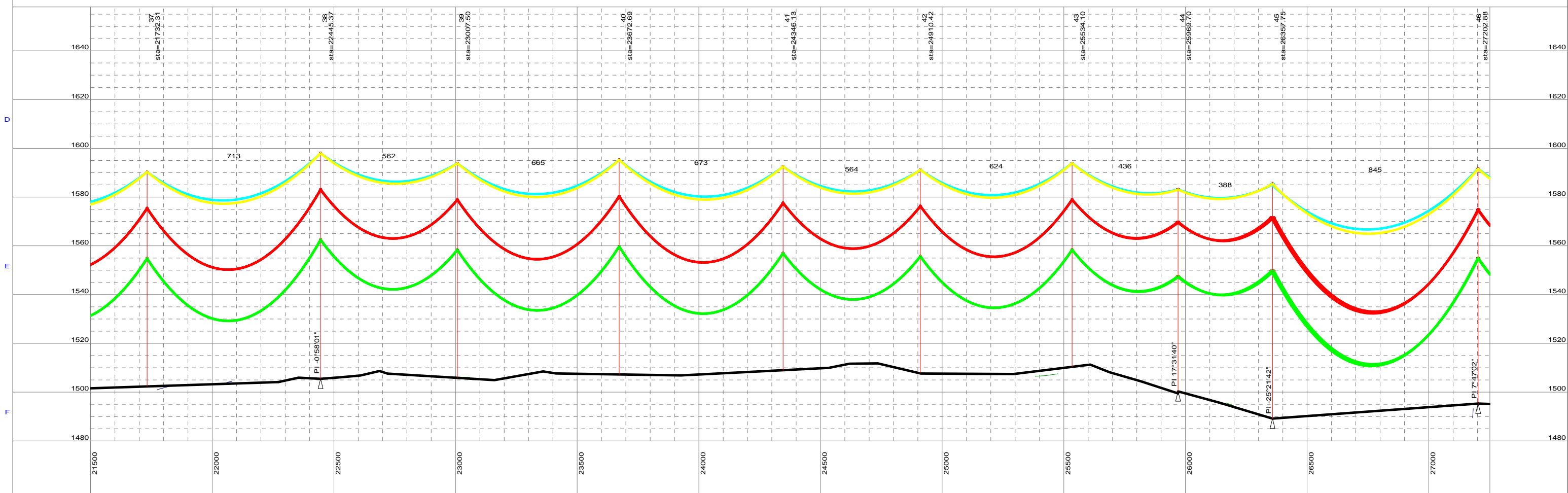
MONTANA-DAKOTA UTILITIES CO.

DATE:

SHEET:



| | | | | | | | | | | | | | | | |
|-------------------------|--|--|--|---|--|--|--|--|--|------------------|--|------------------------------|--|--------------|--|
| NO: DATE: BY: REVISION: | | | | SCALE: 400.0 ft. Horiz. Scale 40.0 ft. Vert. Scale | | | | PRELIMINARY - NOT FOR CONSTRUCTION MDU 01-04-11 1/19/2011 Page 4/29 | | DRAWN: APPROVED: | | MONTANA-DAKOTA UTILITIES CO. | | DATE: SHEET: | |
|-------------------------|--|--|--|---|--|--|--|--|--|------------------|--|------------------------------|--|--------------|--|



| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|--|--|--|-------|--|--|--|-----|--|--|--|-----------|--|--|--|--|--|--|--|--|--|--|--|-----------|--|--|--|---------------------------------|--|--|--|--------|--|--|--|
| NO: | | | | DATE: | | | | BY: | | | | REVISION: | | | | SCALE: | | | | PRELIMINARY - NOT FOR CONSTRUCTION | | | | DRAWN: | | | | DATE: | | | | | | | |
| | | | | | | | | | | | | | | | | 400.0 ft. Horiz. Scale 40.0 ft. Vert. Scale | | | | MDU 01-04-11 1/19/2011 Page 5/29 | | | | APPROVED: | | | | MONTANA-DAKOTA UTILITIES CO. | | | | SHEET: | | | |

1 2 3 4 5 6 7 8 9 10

A

B

C

A

B

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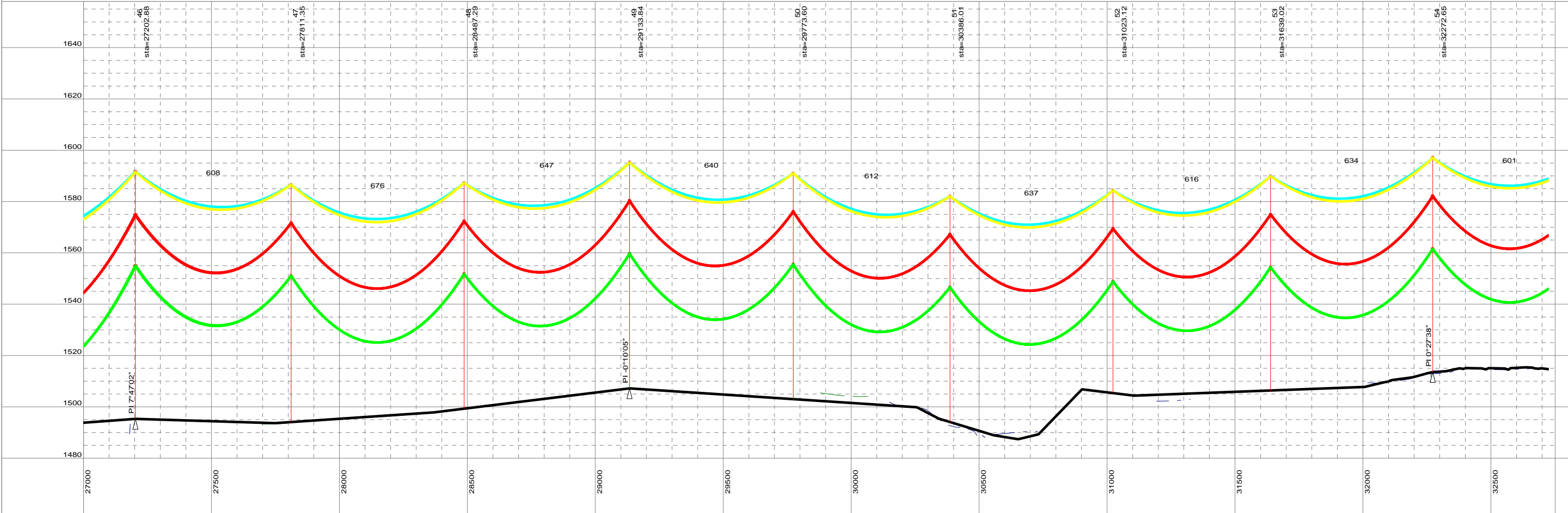
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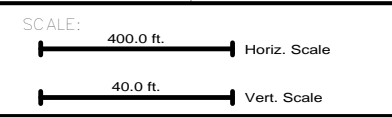
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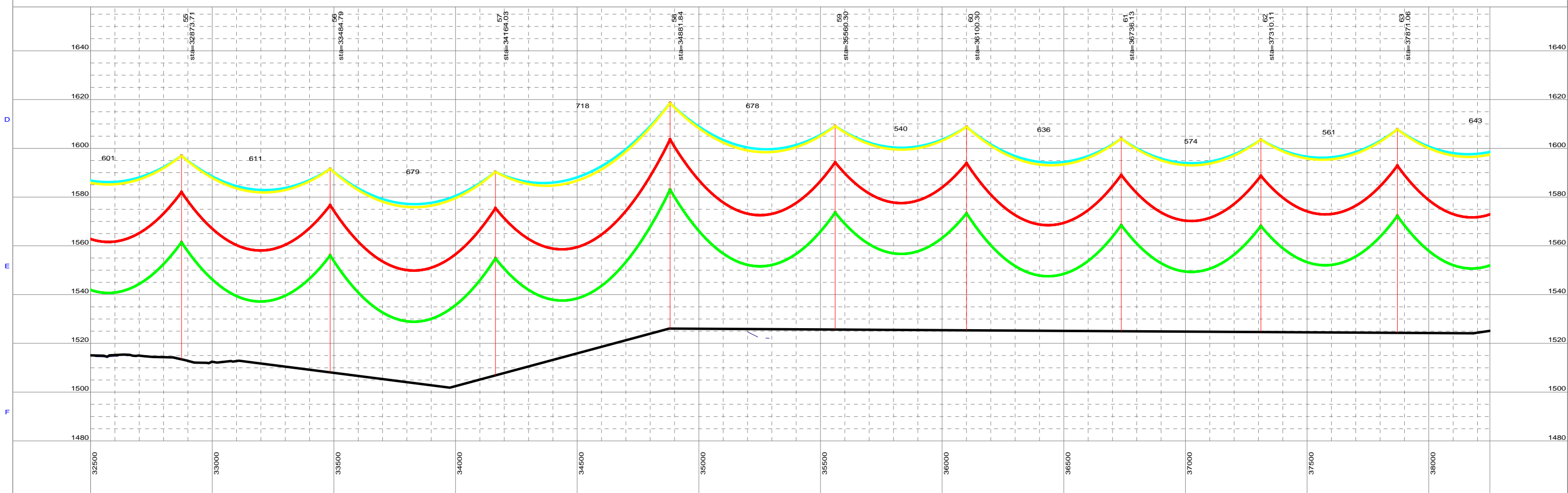
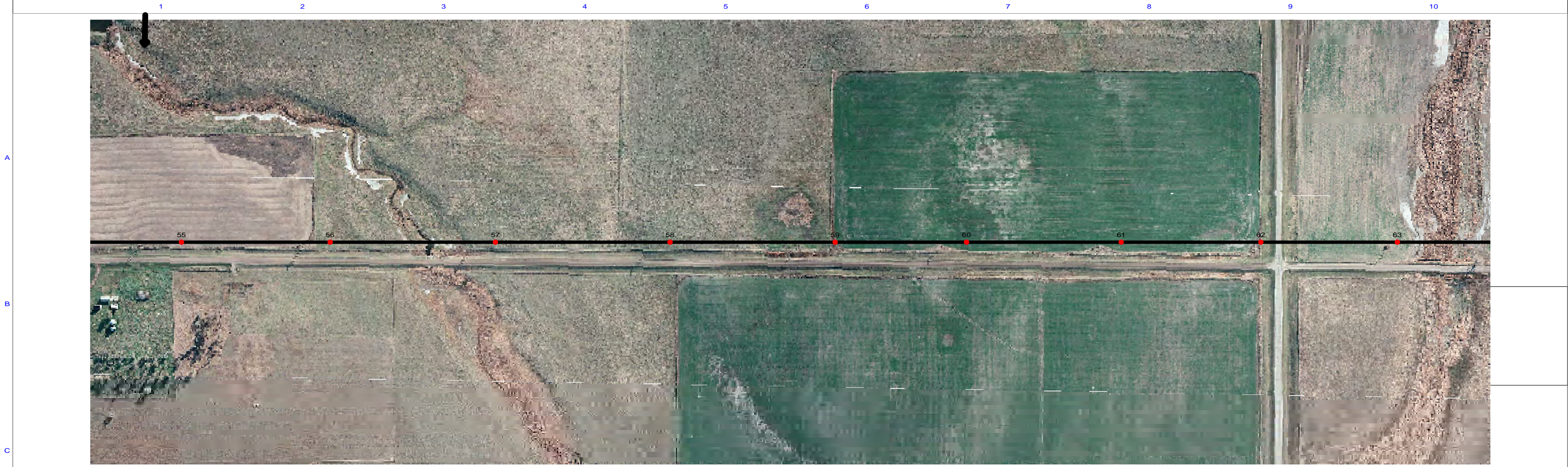
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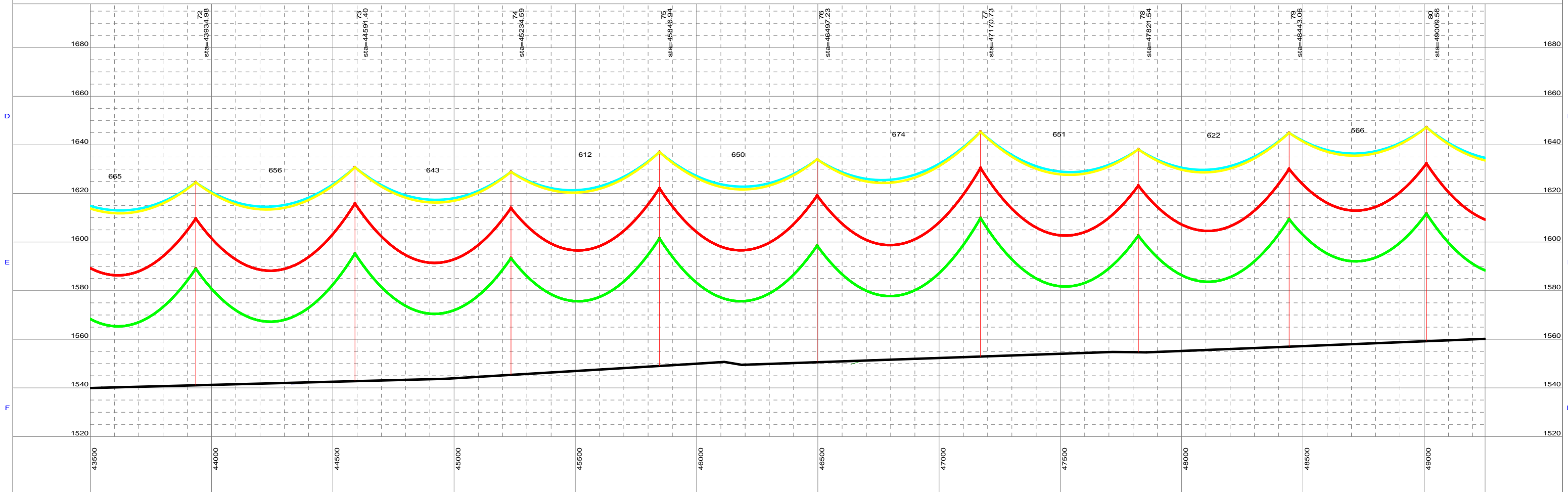
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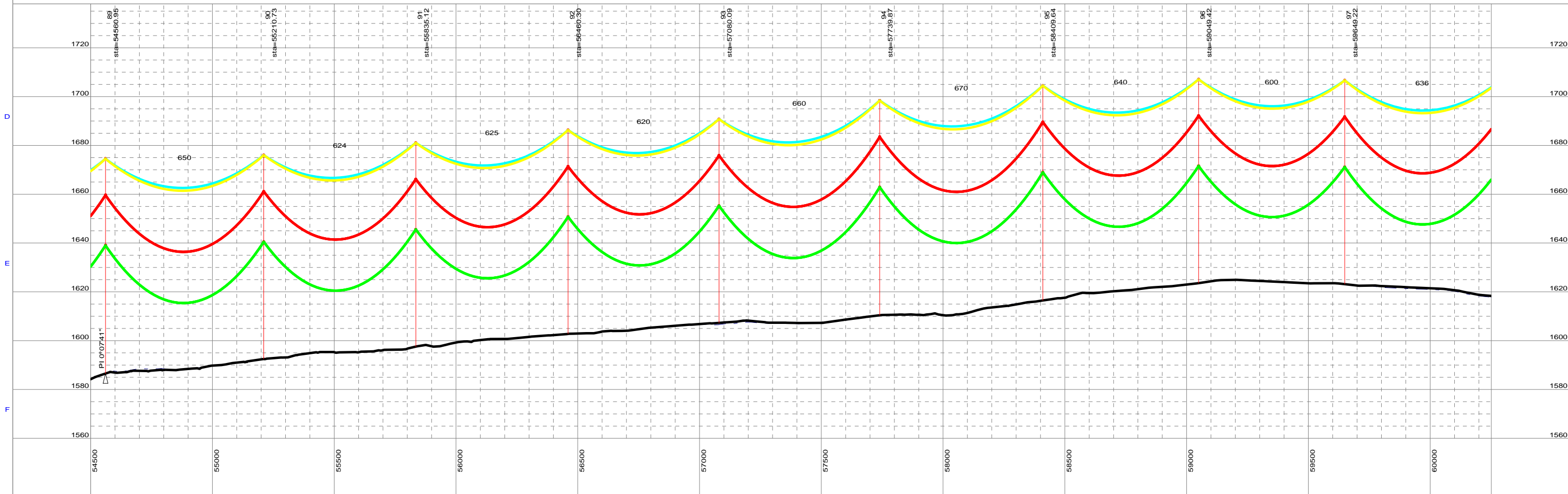
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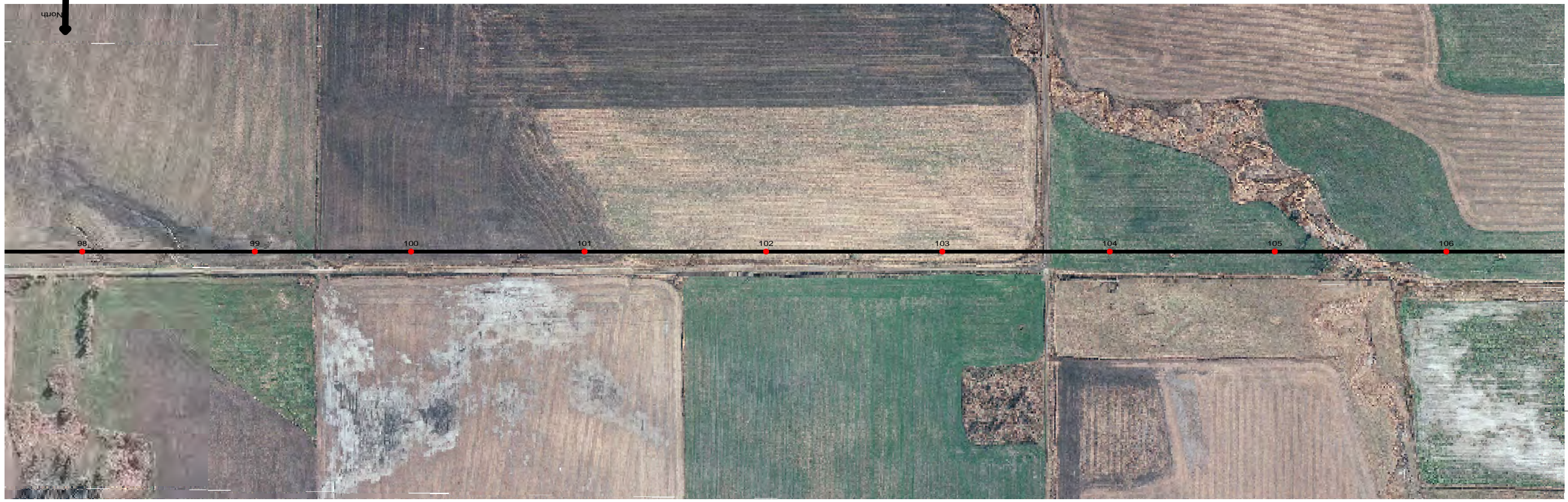
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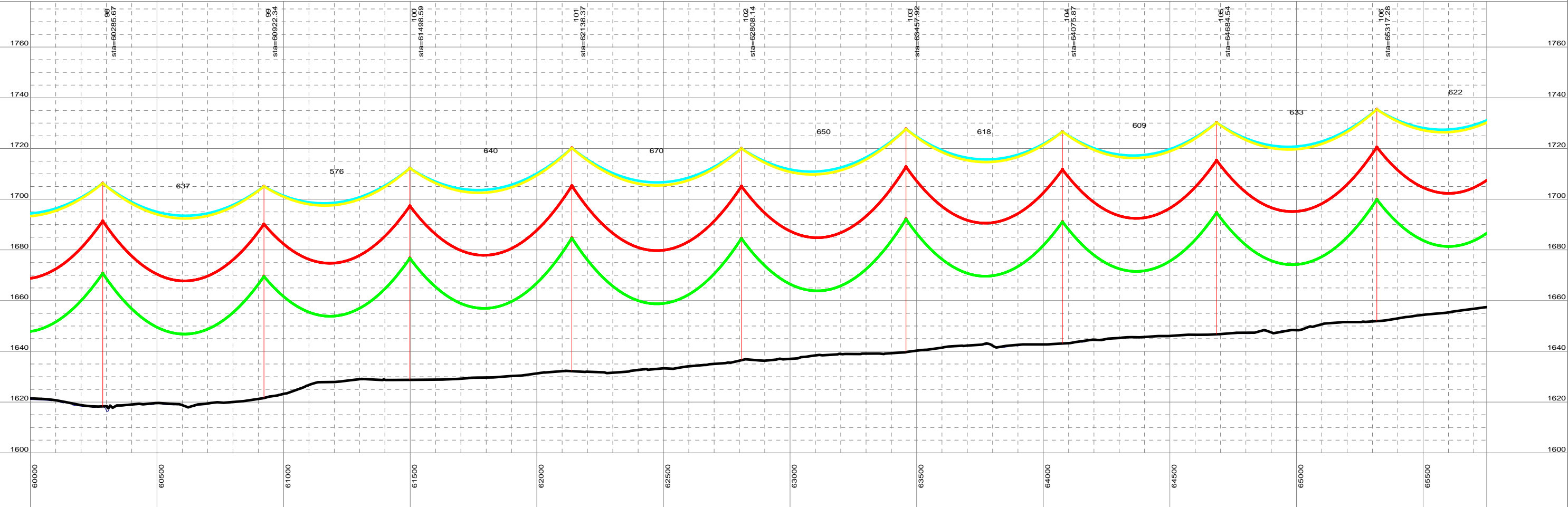
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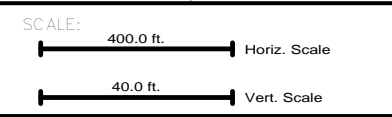
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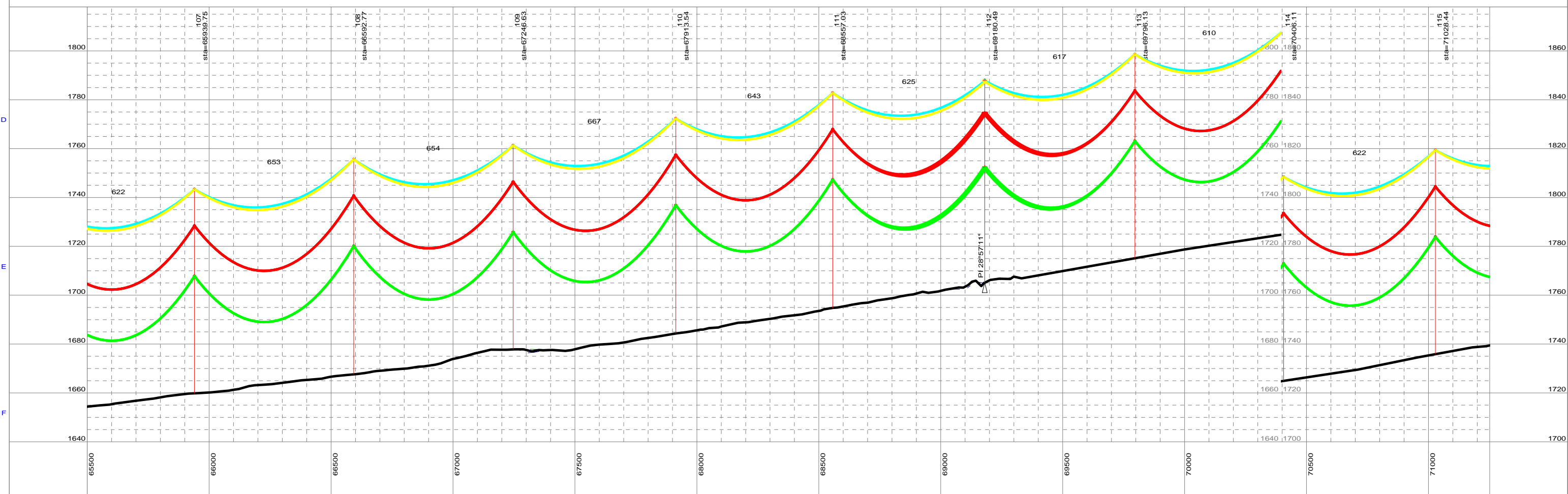
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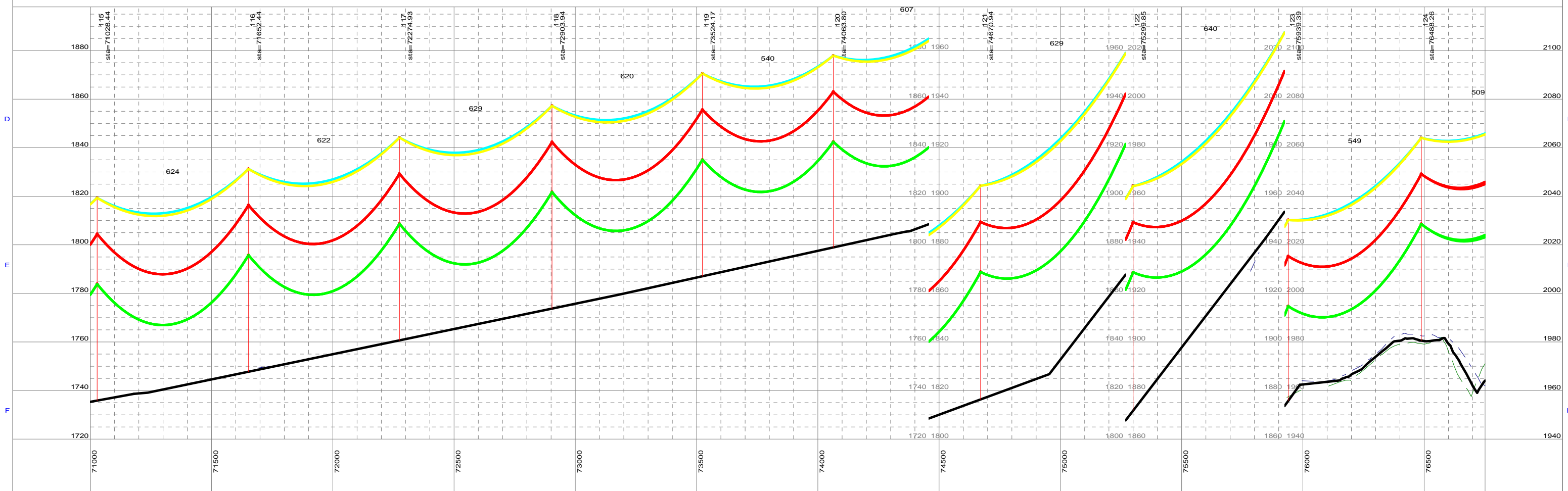
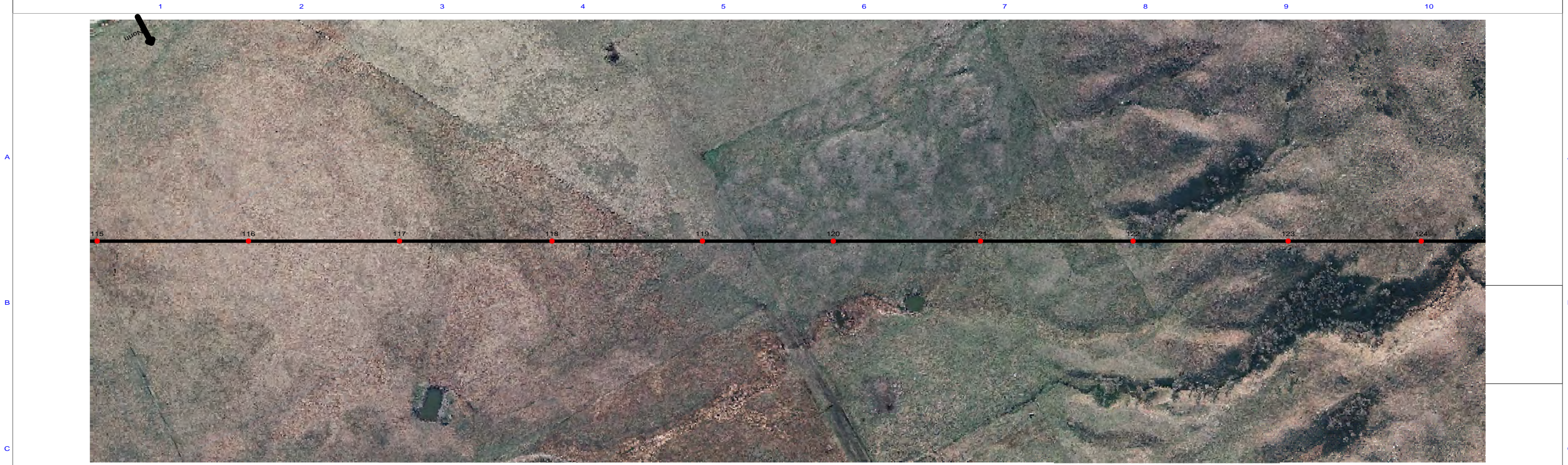
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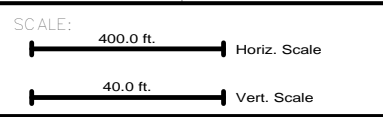
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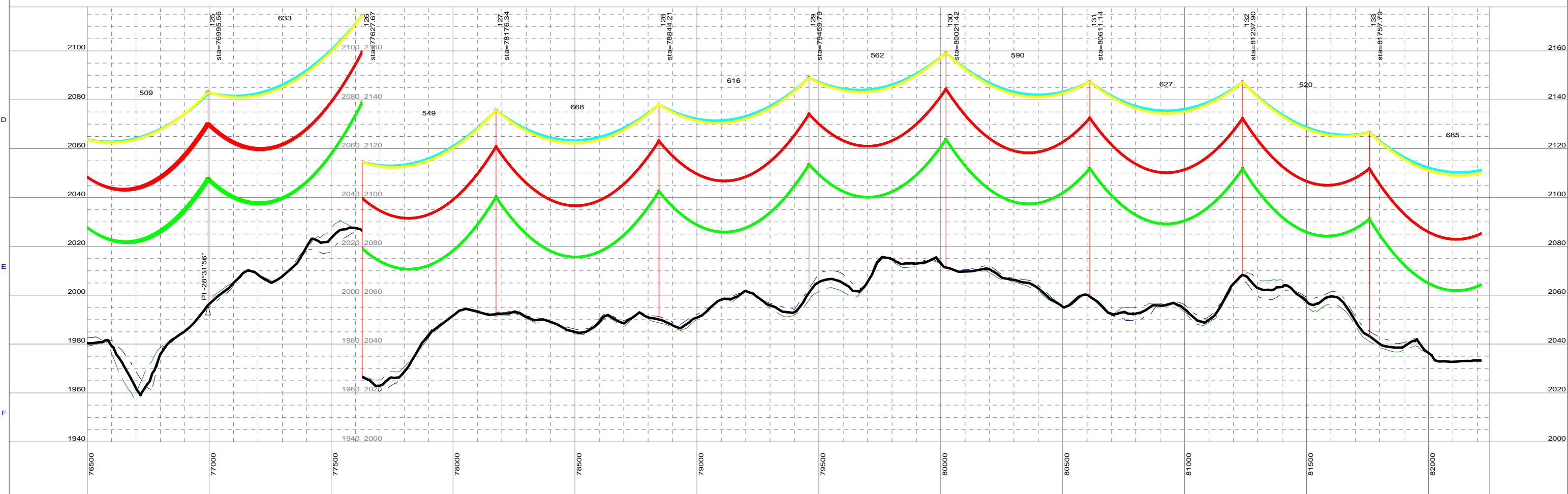
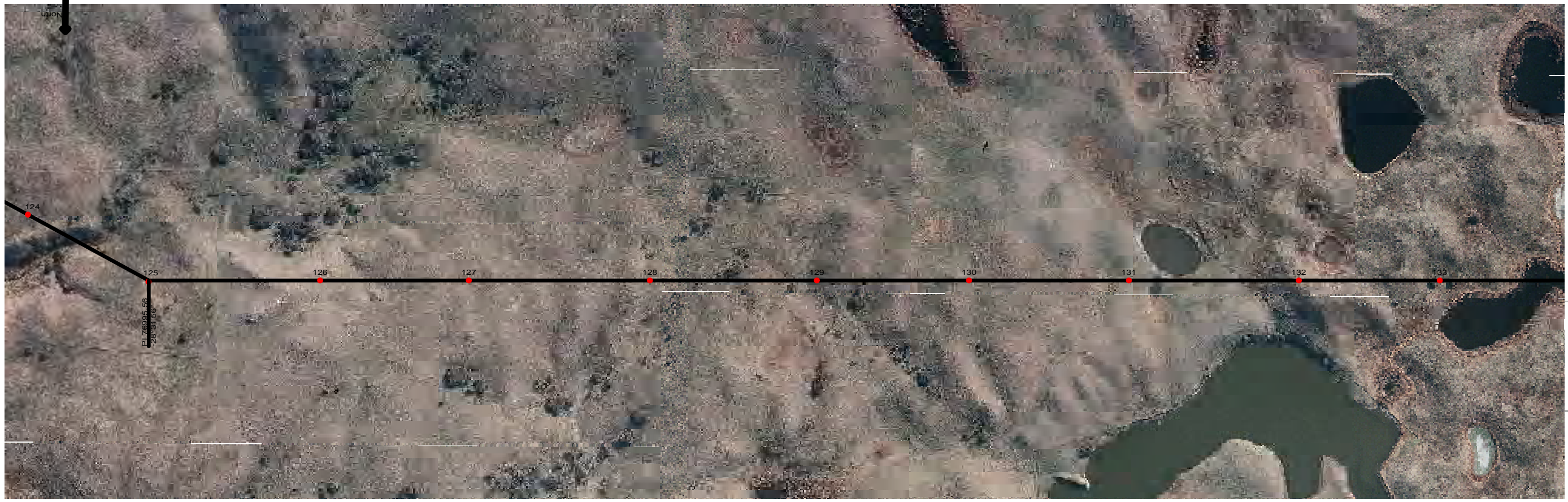
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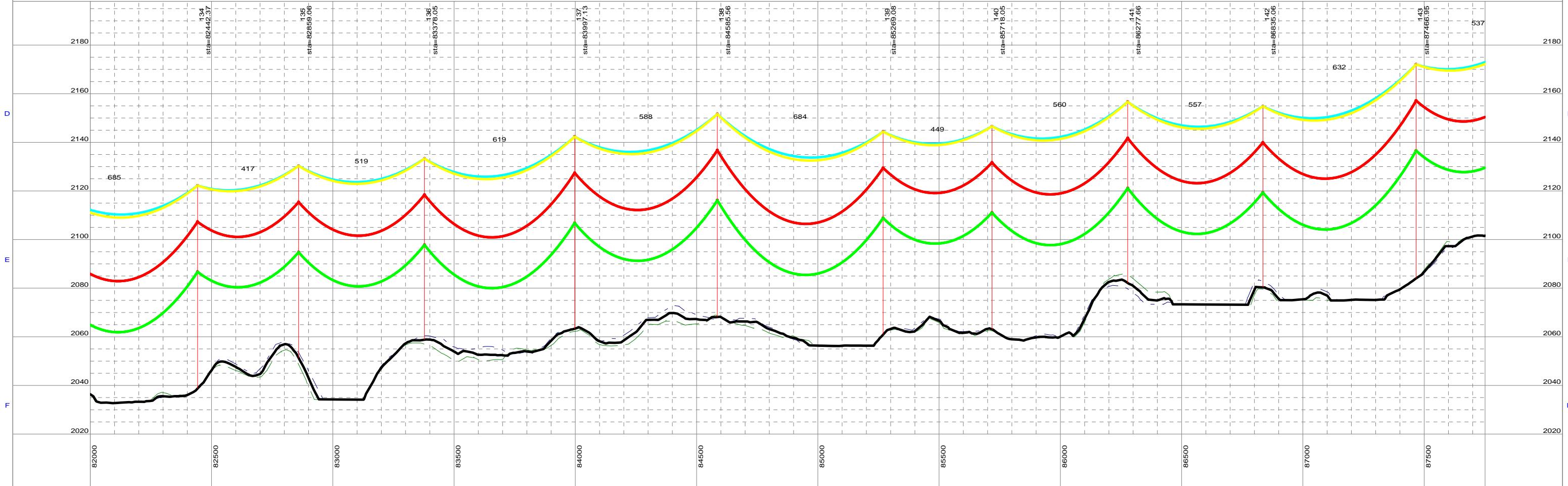
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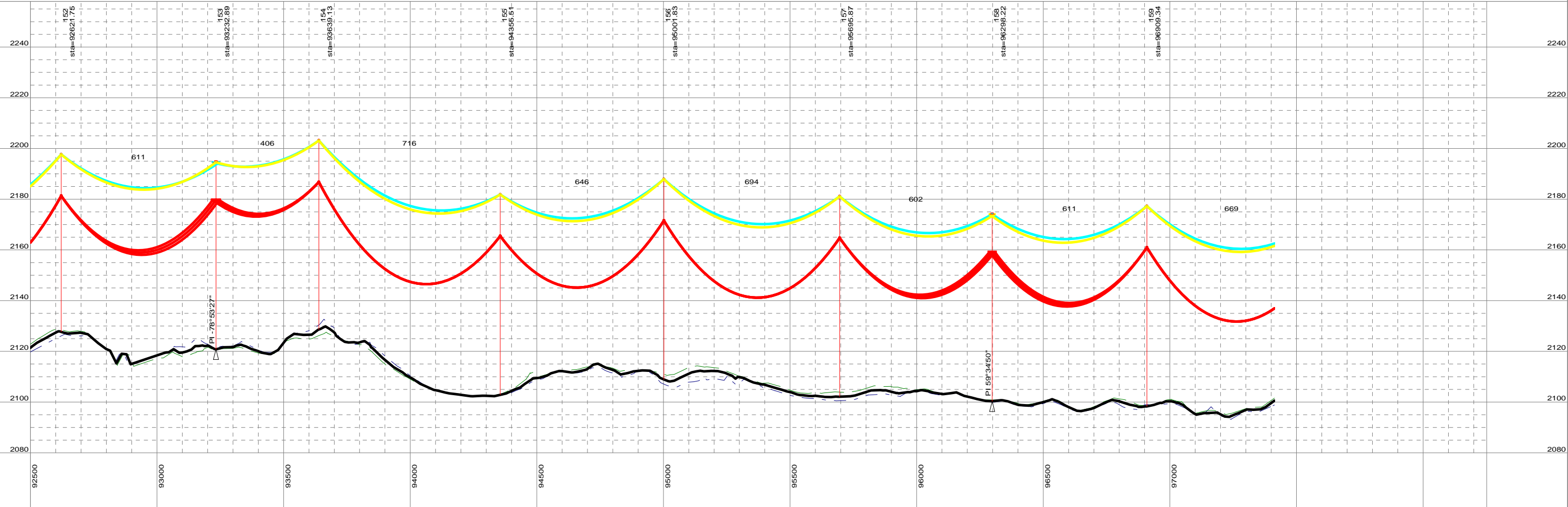
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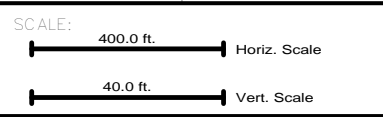
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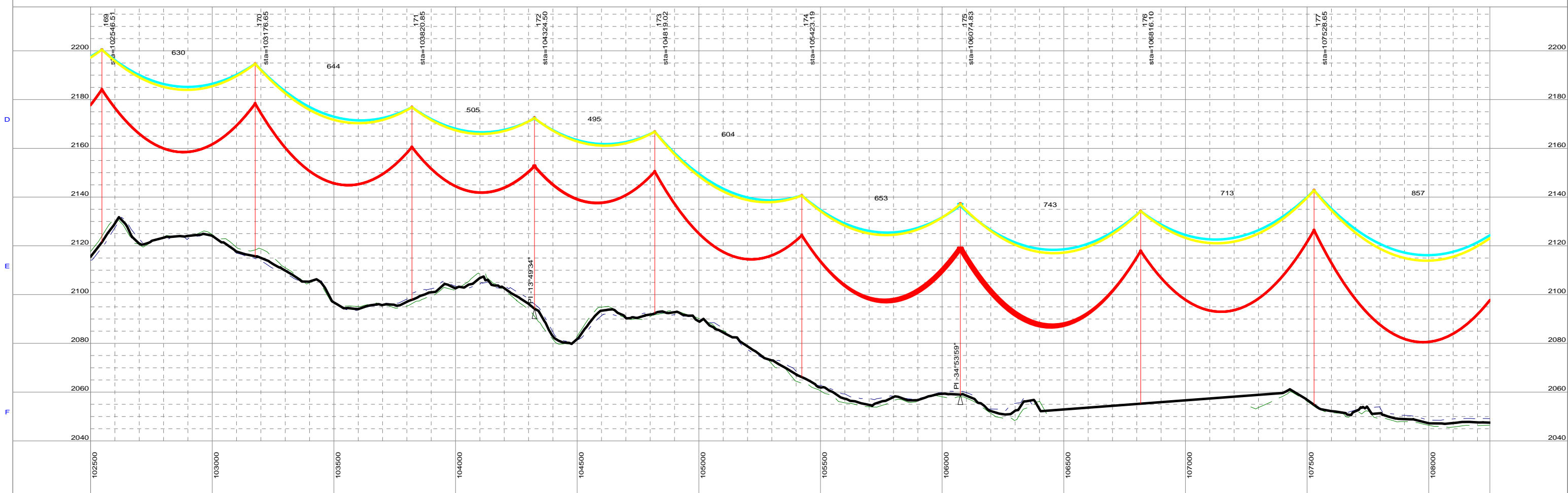
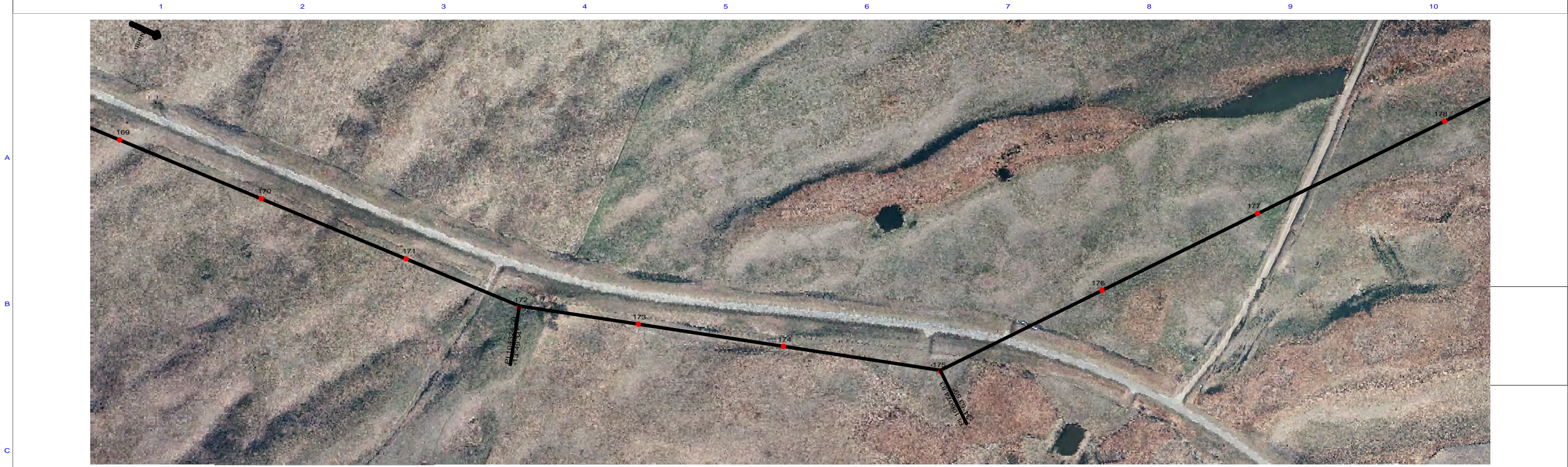
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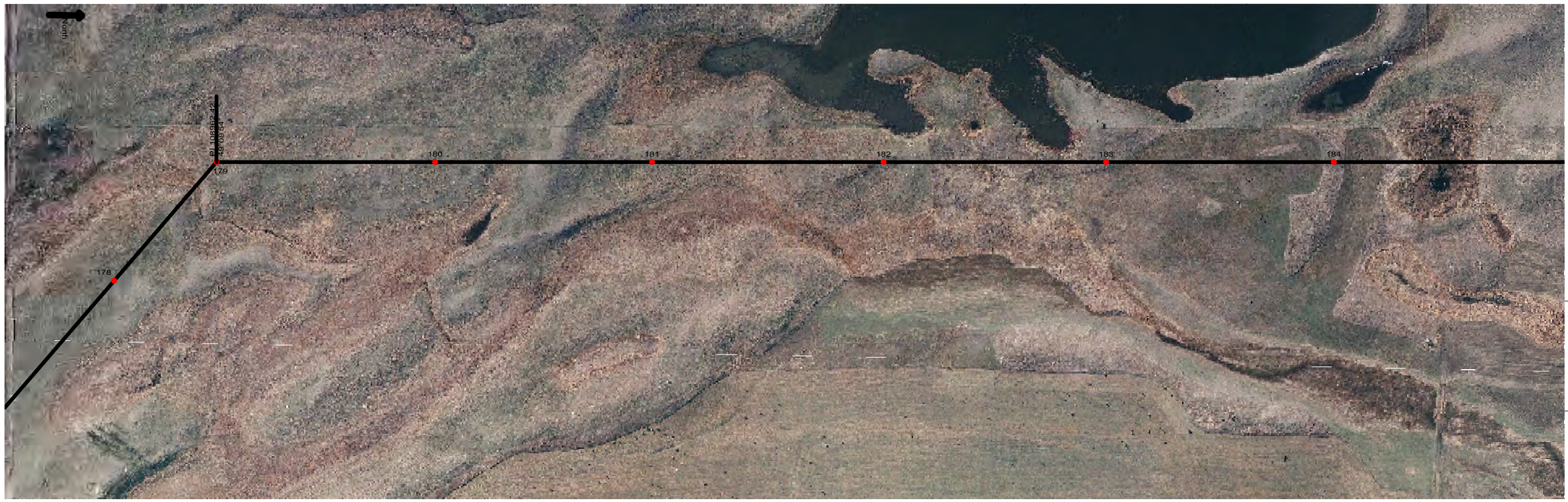
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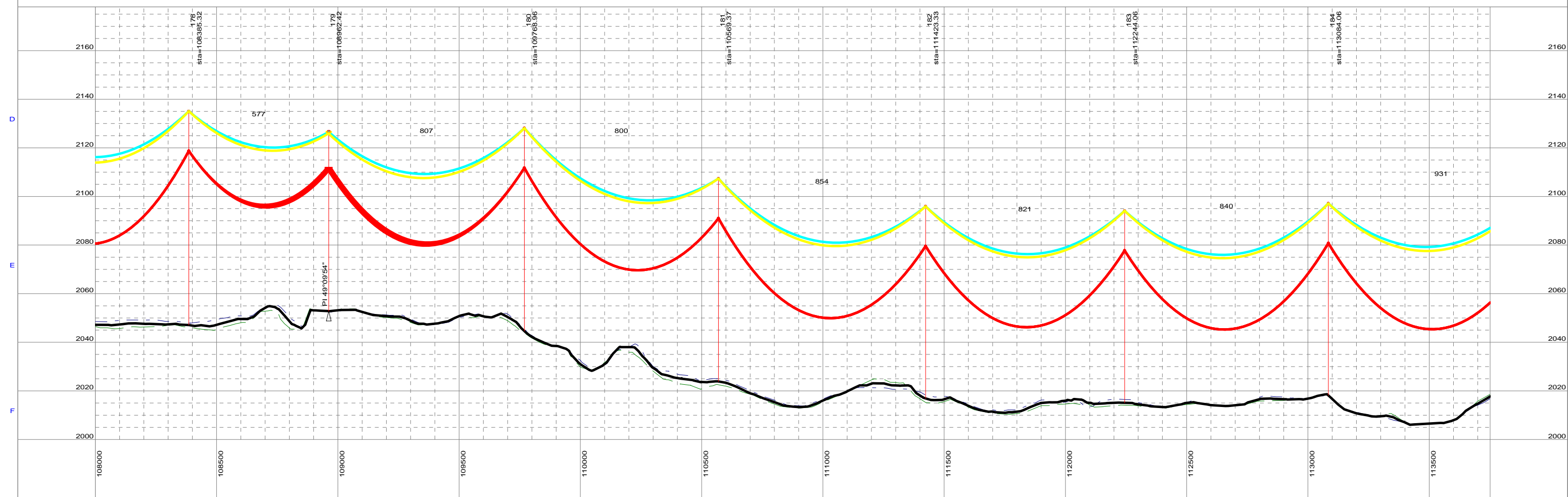
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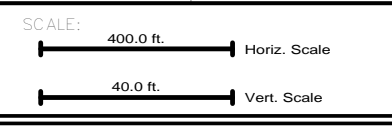
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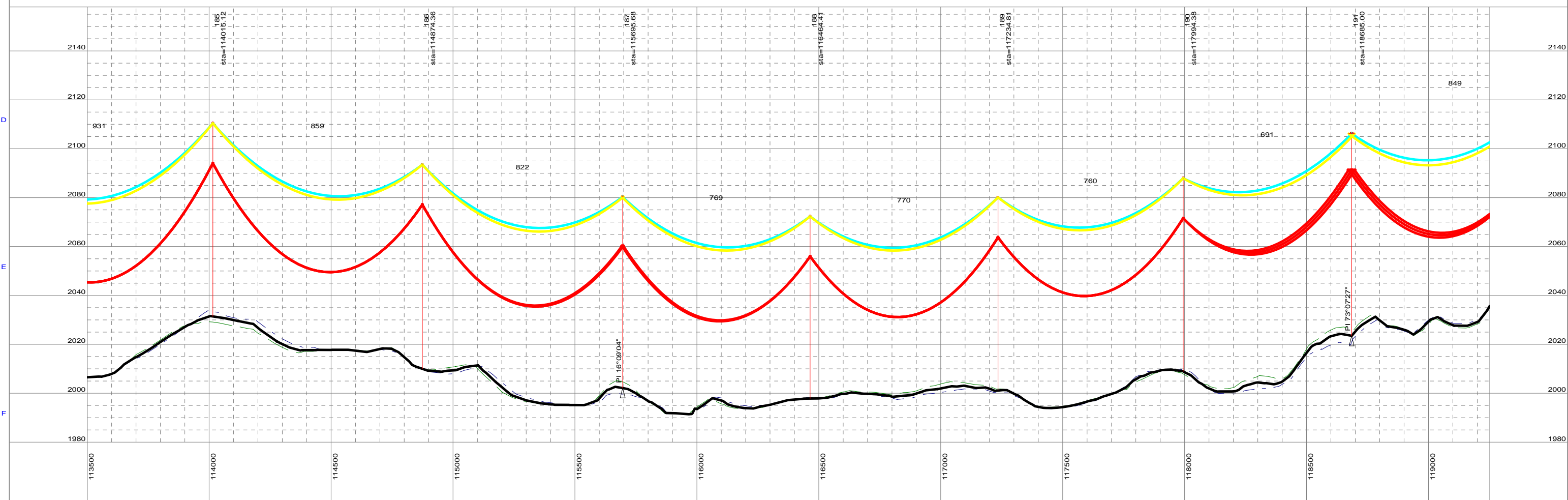
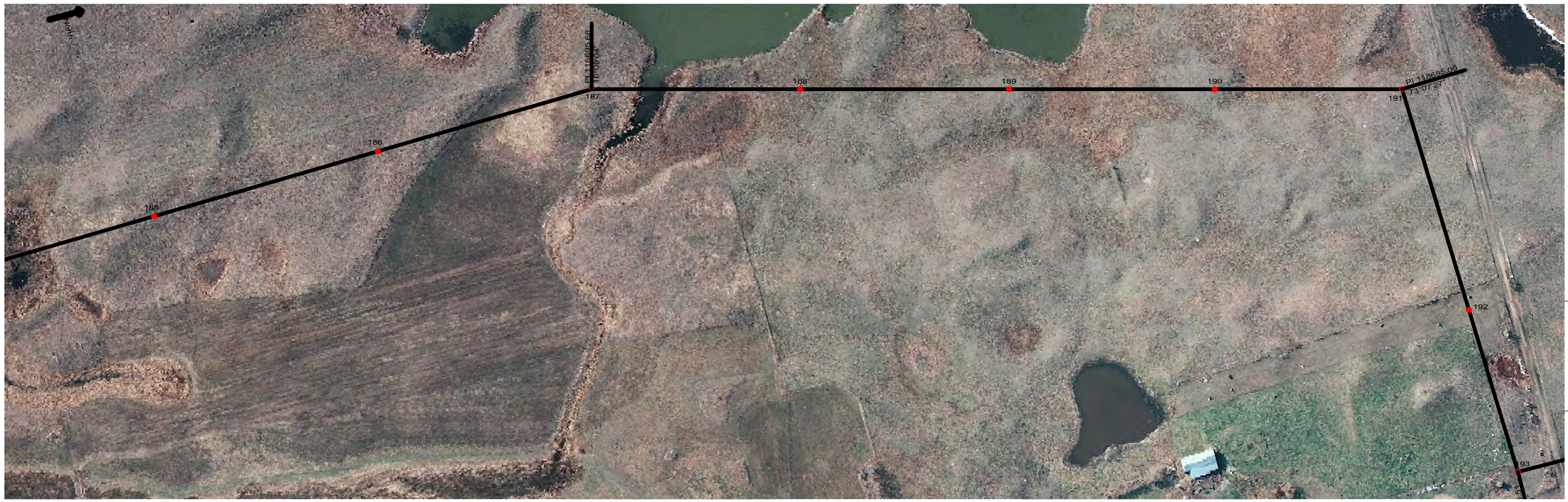
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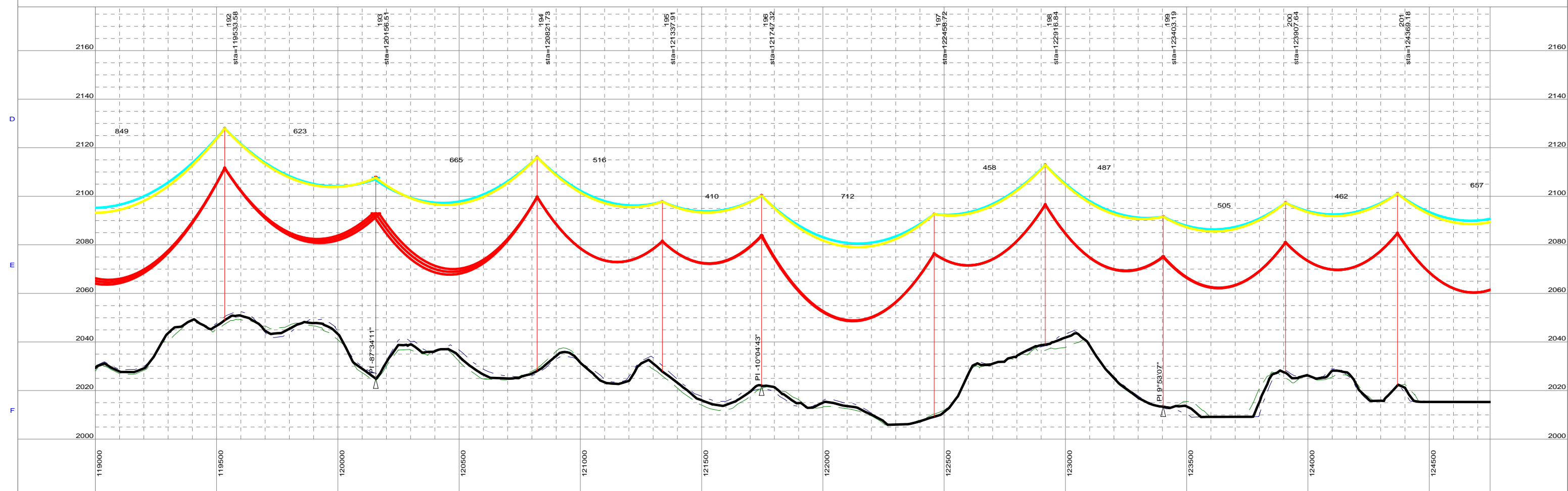
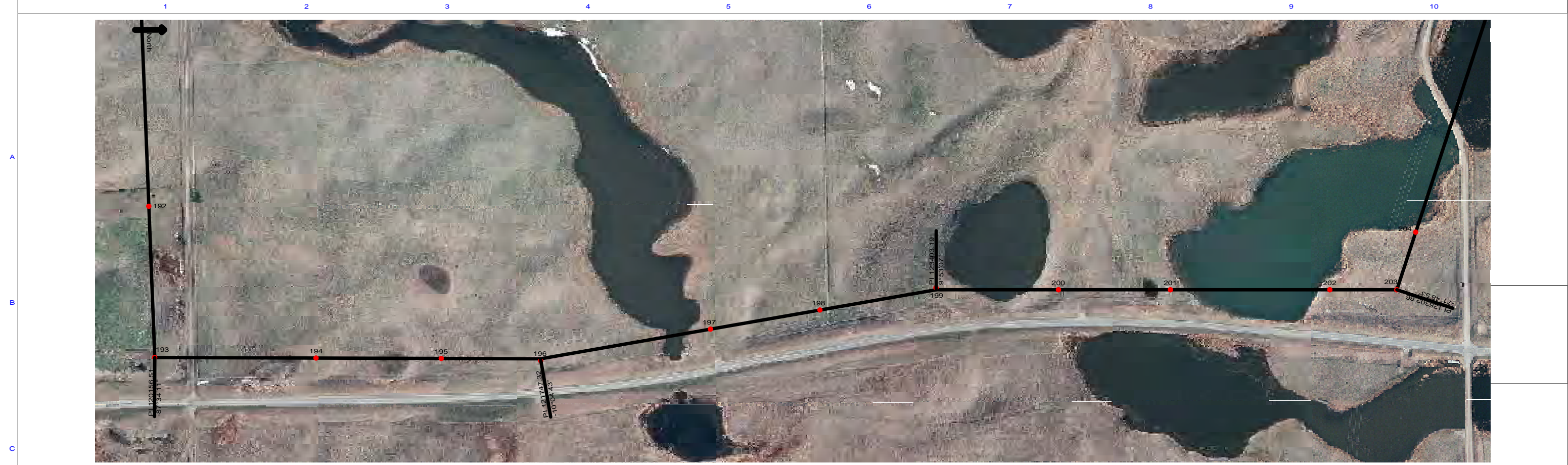
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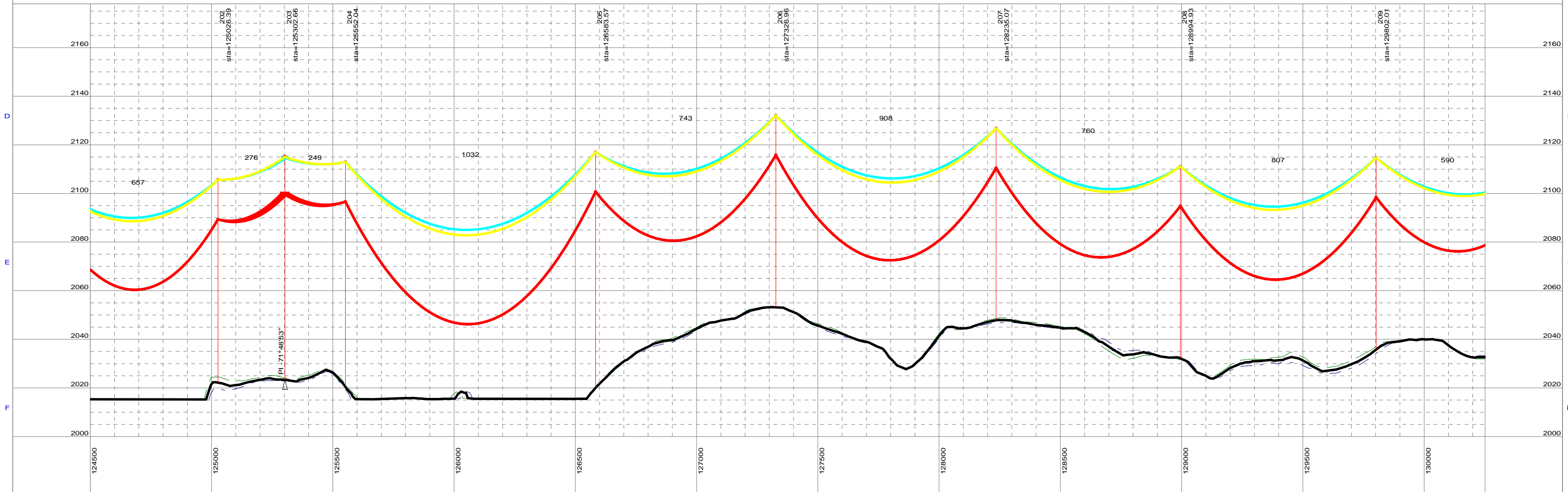
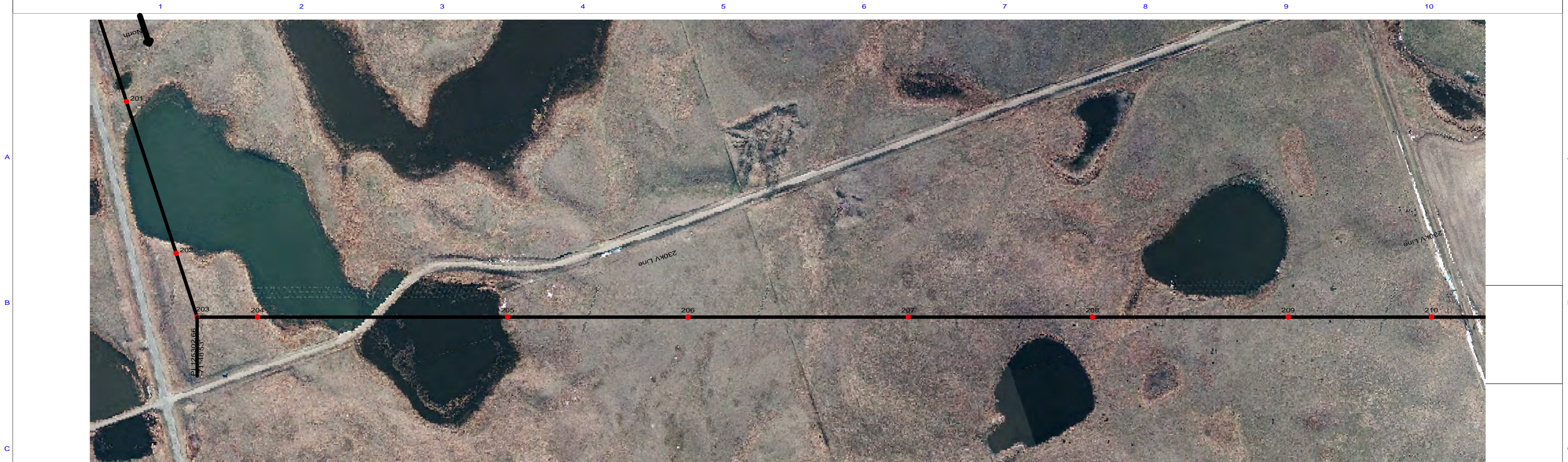
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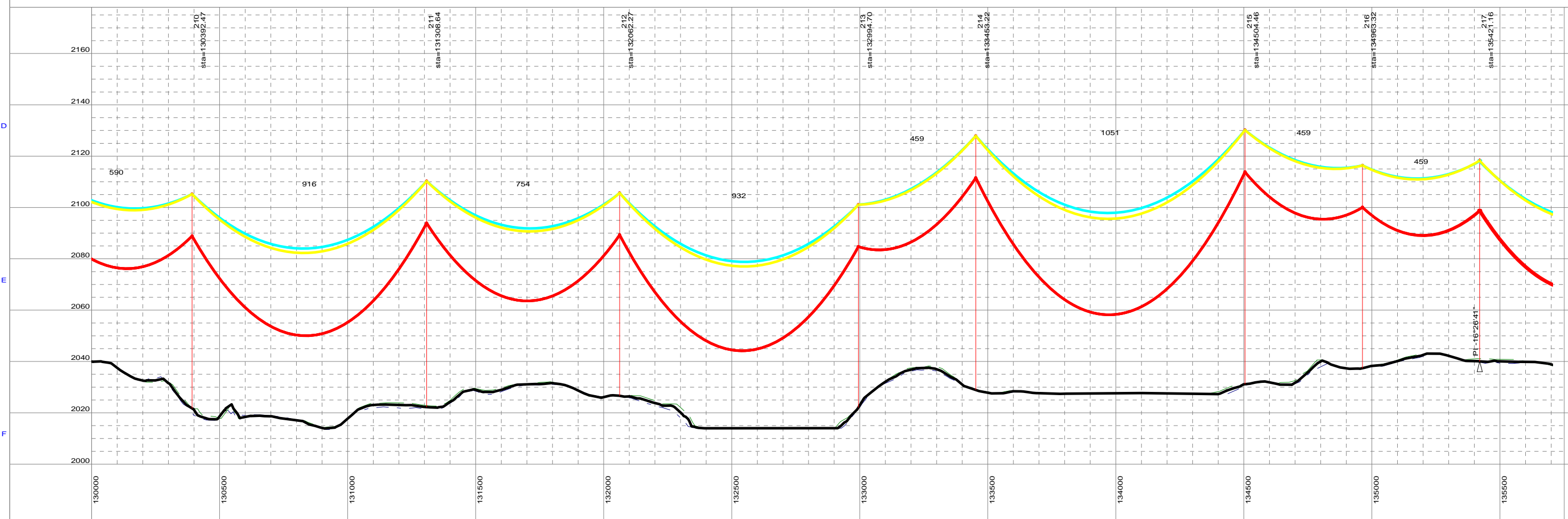
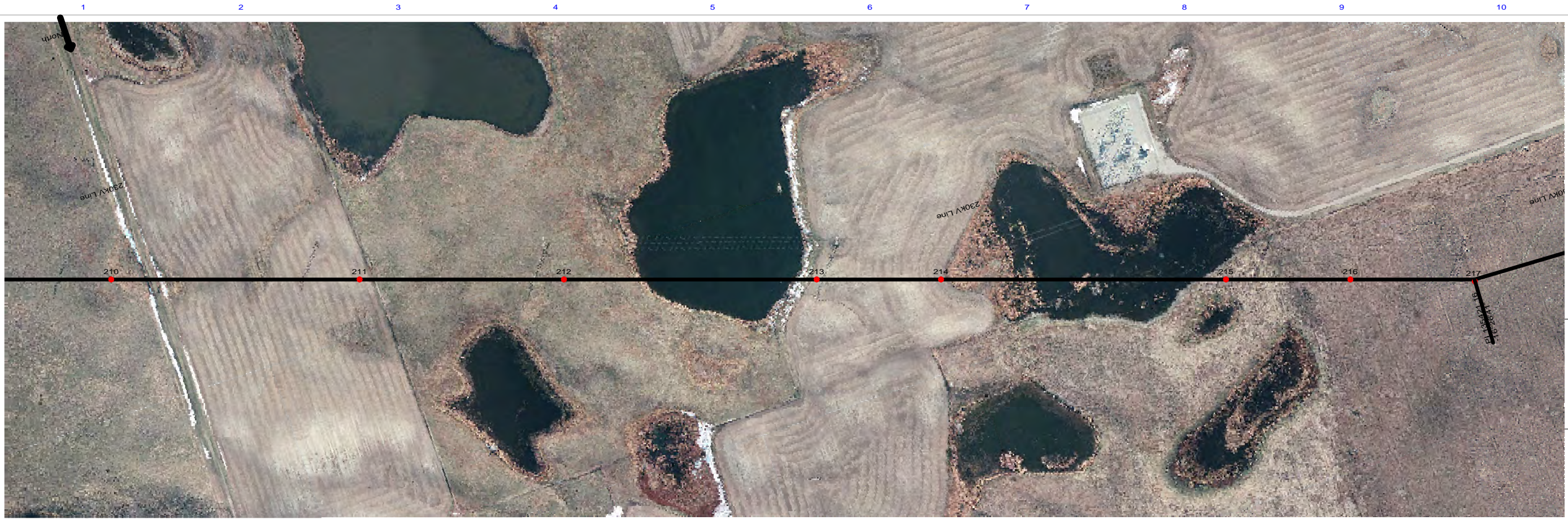
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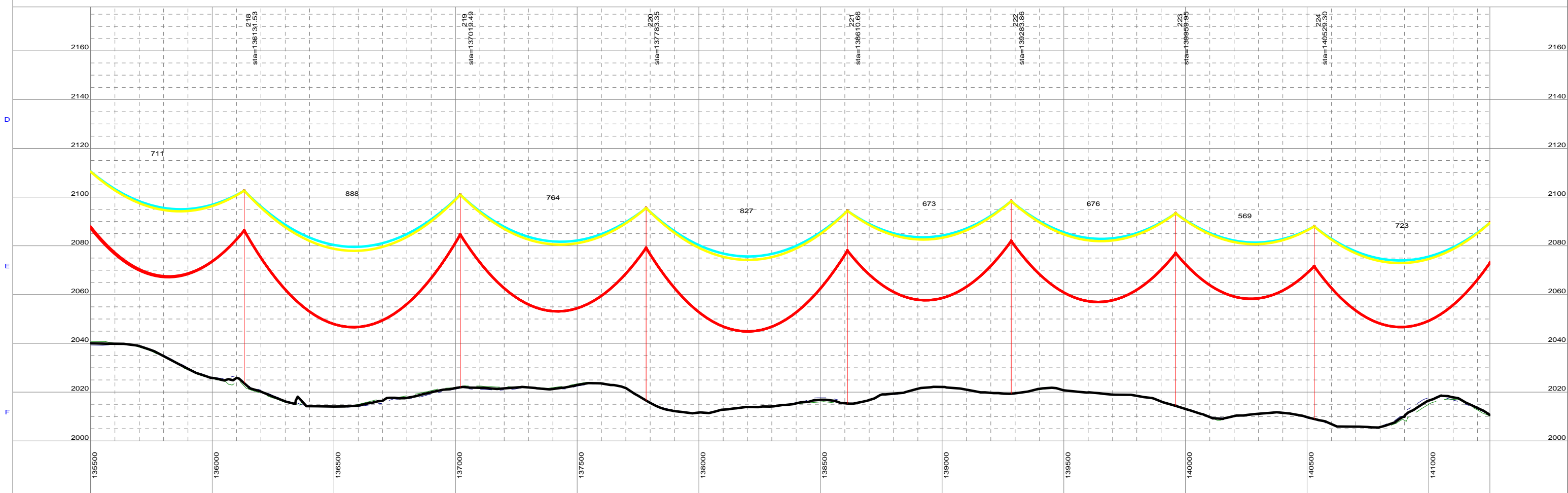
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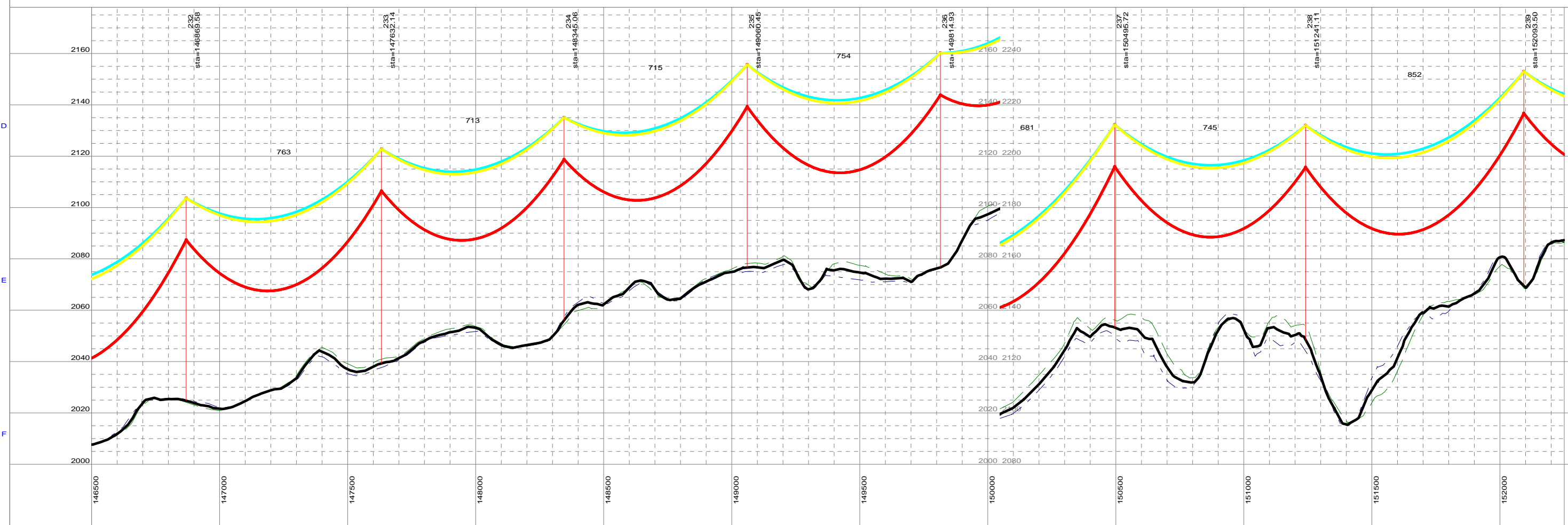
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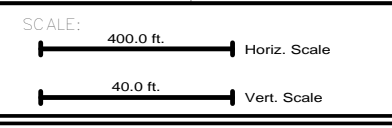
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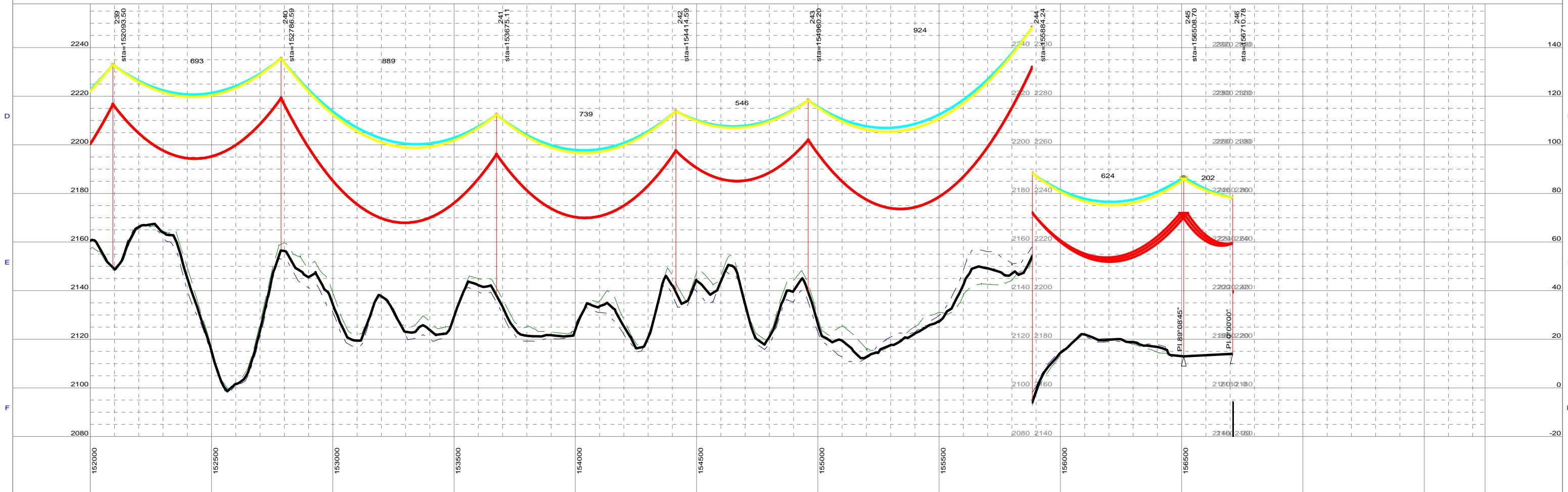
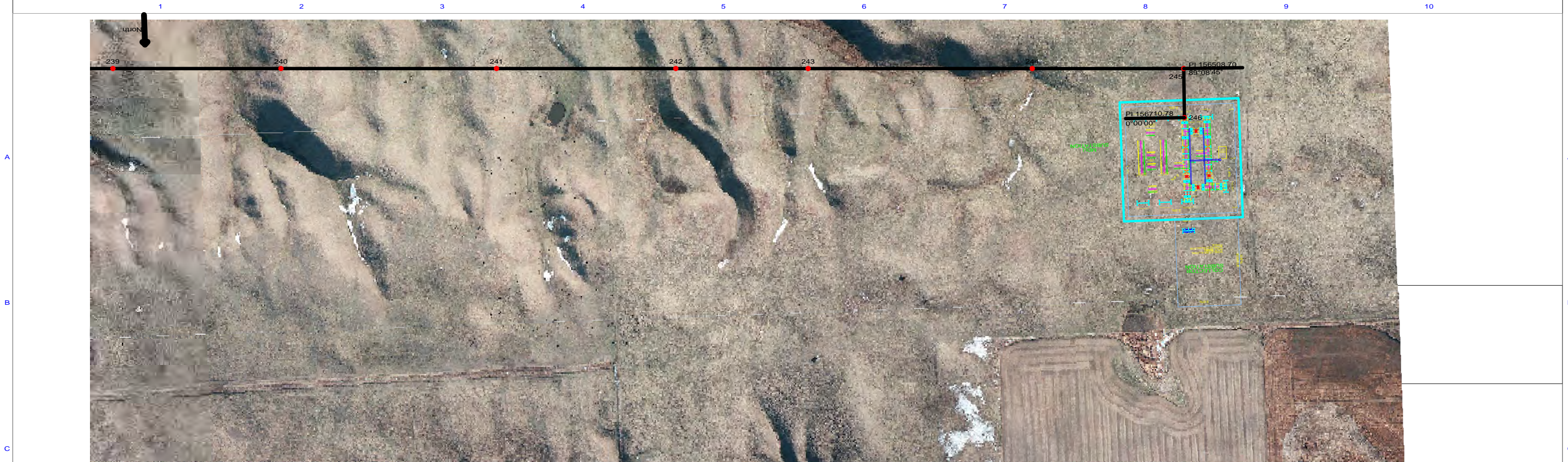
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