Xcel Energy℠

414 Nicollet Mall
Minneapolis, Minnesota 55401-1993

August 23, 2005

Ms. Pamela Bonrud
Executive Secretary of the Commission.
Public Utilities Commission
Capitol Building, 1st Floor
500 East Capitol Avenue
Pierre, SD 57501-5070

**In The Matter Of The Application Of Xcel Energy For A Construction Permit To Build 9.6 Miles Of The Split Rock To Lakefield Junction 345 kV Transmission Line And Add Facilities To The Split Rock Substation**

**SDPUC DOCKET NO. EL05-___**

Dear Ms. Bonrud:

Northern States Power Company, a Minnesota Corporation d/b/a Xcel Energy, submits this Application for a facilities permit from the South Dakota Public Utilities Commission (Commission) pursuant to South Dakota Codified Law (SDCL) 49-41B and South Dakota Administrative Rules (ARSD) Parts 20:10:22. The particular facilities for which the permit is being requested (the Facility) include:

- A new 345 kilovolt (kV) line from the Split Rock Substation located west of Brandon, South Dakota to the Minnesota Border. This line will be approximately 9.6 miles in length and comprise the western portion of an 86-mile 345 kV transmission line between the Split Rock Substation west of Brandon, South Dakota to the Lakefield Junction Substation east of Lakefield, Minnesota.
- Improvements to the Split Rock Substation to accommodate the new 345 kV interconnection

Included with this filing are the original and ten copies of the application and a CD containing an electronic version of the application. If there are questions regarding the application, please contact Pam Rasmussen at 715-839-4661.

Sincerely,

Donald P. Jones
Director Portfolio Delivery & Integration

Enclosures

# XCEL ENERGY

## APPLICATION TO THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

## *Facilities Permit Application*

Xcel Energy
NORTHERN STATES POWER

***August 26, 2005***
***SDPUC Docket No. EL-05-____***

HDR

**SPLIT ROCK SUBSTATION TO MINNESOTA BORDER**
**345 kV TRANSMISSION LINE AND**
**SPLIT ROCK SUBSTATION IMPROVEMENTS**

# XCEL ENERGY
# APPLICATION TO THE
# SOUTH DAKOTA PUBLIC UTILITIES COMMISSION
# FOR A FACILITIES PERMIT

# SPLIT ROCK TO LAKEFIELD JUNCTION
# 345 kV TRANSMISSION LINE
# AND
# SPLIT ROCK SUBSTATION

**August 26, 2005**

**SDPUC DOCKET NO. EL05-___**

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# 1.0 EXECUTIVE SUMMARY

## 1.1 PROPOSAL SUMMARY

Northern States Power Company, a Minnesota Corporation d/b/a Xcel Energy, submits this Application for a facilities permit from the South Dakota Public Utilities Commission (Commission) pursuant to South Dakota Codified Law (SDCL) 49-41B and South Dakota Administrative Rules (ARSD) Parts 20:10:22. The particular facilities for which the permit is being requested (the Facility) include:

- A new 345 kilovolt (kV) line from the Split Rock Substation located west of Brandon, South Dakota to the Minnesota Border
- Improvements to the Split Rock Substation to accommodate the new 345 kV interconnection

This Facility will be approximately 9.6 miles in length and comprise the western portion of an 86-mile 345 kV transmission line between the Split Rock Substation west of Brandon, South Dakota to the Lakefield Junction Substation east of Lakefield, Minnesota. The Minnesota Public Utilities Commission (MPUC) established the need for this Facility in its March 11, 2003 *Order Granting Certificates of Need Subject to Conditions* (MPUC Docket No. E-002/CN-01-1958), which is described in more detail in Section 5.0. On June 16, 2005 the Minnesota Environmental Quality Board (EQB) approved a route along Interstate 90 (I-90) for the Minnesota portion of this project (Exhibit B).

This application meets the requirements set forth in SDCL Chapter 49-41B and ARSD Chapter 20:10:22. The balance of this document includes the application, supporting exhibits and supporting documents. In accordance with SDCL 49-41B-22, Xcel Energy establishes that:

1. The proposed facilities comply with all applicable laws and rules;
2. The facilities will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants in the siting area;
3. The facilities will not substantially impair the health, safety or welfare of the inhabitants; and
4. The facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

Xcel Energy requests that the South Dakota Public Utility Commission (Commission) make complete findings and render a decision to grant a permit to construct the transmission

facilities upon such terms, conditions or modifications of the construction, and operation or maintenance as the Commission may deem appropriate.

## 1.2 COMPLETENESS CHECKLIST

The contents required for an application with the Commission are described in SDCL 49-41B-11 and further clarified in ARSD 20:10:22:05 et seq. The Commission submittal requirements are listed in Table 1 with cross-references indicating where the information can be found in this Application.

**TABLE 1**
**COMPLETENESS CHECKLIST**

| SDCL | ARSD | Required Information | Location |
|---|---|---|---|
| 49-41B-11(1) | 20:10:22:06 | **Names of participants required.** The application shall contain the name, address, and telephone number of all persons participating in the proposed facility at the time of filing, as well as the names of any individuals authorized to receive communications relating to the application on behalf of those persons. | 3.0 |
| 49-41B-11(7) | 20:10:22:07 | **Name of owner and manager.** The application shall contain a complete description of the current and proposed rights of ownership of the proposed facility. It shall also contain the name of the project manager of the proposed facility. | 4.0 |
| 49-41B-11(8) | 20:10:22:08 | **Purpose of facility**. The applicant shall describe the purpose of the proposed facility. | 5.0 |
| 49-41B-11(12) | 20:10:22:09 | **Estimated cost of facility**. The applicant shall describe the estimated construction cost of the proposed facility. | 6.0 |
| 49-41B-11(9) | 20:10:22:10 | **Demand for facility**. The applicant shall provide a description of present and estimated consumer demand and estimated future energy needs of those customers to be directly served by the proposed facility. The applicant shall also provide data, data sources, assumptions, forecast methods or models, or other reasoning upon which the description is based. This statement shall also include information on the relative contribution to any power or energy distribution network or pool that the proposed facility is projected to supply and a statement on the consequences of delay or termination of the construction of the facility. | 5.0, 7.0 |
| 49-41 B-11 | 20:10:22:11 | **General site description**. The application shall contain a general site description of the proposed facility including a description of the specific site and its location with respect to state, county, and other political subdivisions; a map showing prominent features such as cities, lakes and rivers; and maps showing cemeteries, places of historical significance, transportation facilities, or other public facilities adjacent to or abutting the plant or transmission site. | 8.0 |

| SDCL | ARSD | Required Information | Location |
|---|---|---|---|
| 49-41B-11(6), 49-41B-21, 34A-9-7(4) | 20:10:22:12 | **Alternative sites**. The applicant shall present information related to its selection of the proposed site for the facility, including the following:<br>(1) The general criteria used to select alternative sites, how these criteria were measured and weighed, and reasons for selecting these criteria;<br>(2) An evaluation of alternative sites considered by the applicant for the facility;<br>(3) An evaluation of the proposed plant or transmission site and its advantages over the other alternative sites considered by the applicant, including a discussion of the extent to which reliance upon eminent domain powers could be reduced by use of an alternative site, alternative generation method, or alternative waste handling method. | 9.0 |
| **49-41B-11(11); 49-41B-21; 49-41B-22** | **20:10:22:13** | **Environmental information**. The applicant shall provide a description of the existing environment at the time of the submission of the application, estimates of changes in the existing environment which are anticipated to result from construction and operation of the proposed facility, and identification of irreversible changes which are anticipated to remain beyond the operating lifetime of the facility. The environmental effects shall be calculated to reveal and assess demonstrated or suspected hazards to the health and welfare of human, plant and animal communities which may be cumulative or synergistic consequences of siting the proposed facility in combination with any operating energy conversion facilities, existing or under construction. The applicant shall provide a list of other major industrial facilities under regulation which may have an adverse affect of the environment as a result of their construction or operation in the transmission site or siting area. | 10.0 – 17.0 |
| 49-41B-11; 49-41B-22 | 20:10:22:14 | **Effect on physical environment**. The applicant shall provide information describing the effect of the proposed facility on the physical environment. The information shall include:<br>(1) A written description of the regional land forms surrounding the proposed plant site or through which the transmission facility will pass;<br>(2) A topographic map of the transmission site or siting area;<br>(3) A written summary of the geological features of the siting area or transmission site using the topographic map as a base showing the bedrock geology and surficial geology with sufficient cross-sections to depict the major subsurface variations in the siting area;<br>(4) A description and location of economic deposits such as lignite, sand and gravel, scoria, and industrial and ceramic quality clay existent within the plan or transmission site;<br>(5) A description of the soil type at the plant site;<br>(6) An analysis of potential erosion or sedimentation which may result from site clearing, construction, or operating activities and measures which will be taken for their control;<br>(7) Information on areas of seismic risks, subsidence potential and slope instability for the siting area or transmission site; and<br>(8) An analysis of any constraints that may be imposed by geological characteristics on the design, construction, or operation of the proposed facility and a description of plans to offset such constraints. | 10.0 |

| SDCL | ARSD | Required Information | Location |
|---|---|---|---|
| 49-41B-11;<br>49-41B-21;<br>49-41B-22 | 20:10:22:15 | **Hydrology**. The applicant shall provide information concerning the hydrology in the area of the proposed plant or transmission site and the effect of the proposed site on surface and groundwater. The information shall include:<br>(1) A map drawn to scale of the plant or transmission site showing surface water drainage patterns before and anticipated patterns after construction of the facility;<br>(2) Using plans filed with any local, state, or federal agencies, indication on a map drawn to scale of the current planned water uses by communities, agriculture, recreation, fish, and wildlife which may be affected by the location of the proposed facility and a summary of those effects;<br>(3) A map drawn to scale locating any known surface or groundwater supplies within the siting area to be used as a water source or a direct water discharge site for the proposed facility and all offsite pipelines or channels required for water transmission;<br>(4) If aquifers are to be used as a source of potable water supply or process water, specifications of the aquifers to be used and definition of their characteristics, including the capacity of the aquifer to yield water, the estimated recharge rate, and the quality of ground water;<br>(5) A description of designs for storage, reprocessing, and cooling prior to discharge of heated water entering natural drainage systems;<br>(6) If deep well injection is to be used for effluent disposal, a description of the reservoir storage capacity, rate of injection, and confinement characteristics and potential negative effects on any aquifers and groundwater users which may be affected. | 11.0 |
| 49-41B-11;<br>49-41B-21;<br>49-41B-22 | 20:10:22:16 | **Effect on terrestrial ecosystems**. The applicant shall provide information on the effect of the proposed facility on the terrestrial ecosystems, including existing information resulting from biological surveys conducted to identify and quantify the terrestrial fauna and flora potentially affected within the transmission site or siting area; an analysis of the impact of construction and operation of the proposed facility on the terrestrial biotic environment, including breeding times and places and pathways of migration; important species; and planned measures to ameliorate negative biological impacts as a result of construction and operation of the proposed facility. | 12.0 |
| 49-41B-11;<br>49-41B-21;<br>49-41B-22 | 20:10:22-17 | **Effect of aquatic ecosystems**. The applicant shall provide information of the effect of the proposed facility on aquatic ecosystems, and including existing information resulting from biological surveys conducted to identify and quantify the aquatic fauna and flora, potentially affected within the transmission site or siting area, an analysis of the impact of the construction and operation of the proposed facility on the total aquatic biotic environment and planned measures to ameliorate negative biological impacts as a result of construction and operation of the proposed facility. | 13.0 |

| SDCL | ARSD | Required Information | Location |
|---|---|---|---|
| | 20:10:22-18 | **Land use**. The applicant shall provide the following information concerning present and anticipated use or condition of the land:<br>(1) A map or maps drawn to scale of the siting area and transmission site identifying existing land use according to the following classification system:<br>(a) Land used primarily for row and nonrow crops in rotation;<br>(b) Irrigated lands;<br>(c) Pasturelands and rangelands;<br>(d) Haylands;<br>(e) Undisturbed native grasslands;<br>(f) Existing and potential extractive nonrenewable resources;<br>(g) Other major industries;<br>(h) Rural residences and farmsteads, family farms, and ranches;<br>(i) Residential;<br>(j) Public, commercial, and institutional use;<br>(k) Municipal water supply and water sources for organized rural water districts; and<br>(l) Noise sensitive land uses;<br>(2) Identification of the number of persons and homes which will be displaced by the location of the proposed facility;<br>(3) An analysis of the compatibility of the proposed facility with present land use of the surrounding area, with special attention paid to the effects on rural life and the business of farming; and<br>(4) A general analysis of the effects of the proposed facility and associated facilities on land uses and the planned measures to ameliorate adverse impacts. | 14.0, Exhibit C.4 |
| | 20:10:22-19 | **Local land use controls**. The applicant shall provide a general description of local land use controls and the manner in which the proposed facility will comply with the local land use zoning or building rules, regulations or ordinances. If the proposed facility violates local land use controls, the applicant shall provide the commission with a detailed explanation of the reasons why the proposed facility should preempt the local controls. The explanation shall include a detailed description of the restrictiveness of the local controls in view of existing technology, factors of cost, economics, needs of parties, or any additional information to aid the commission in determining whether a permit may supersede or preempt a local control pursuant to SDCL 49-41B-28. | 15.0 |
| | 20:10:22:20 | **Water quality**. The applicant shall provide evidence that the proposed facility will comply with all water quality standards and regulations of any federal or state agency having jurisdiction and any variances permitted. | 16.0 |
| | 20:10:22:21 | **Air quality**. The applicant shall provide evidence that the proposed facility will comply with all air quality standards and regulations of any federal or state agency having jurisdiction and any variances permitted. | 17.0 |
| | 20:10:22:22. | **Time schedule**. The applicant shall provide estimated time schedules for accomplishment of major events in the commencement and duration of construction of the proposed facility. | 18.0 |

| SDCL | ARSD | Required Information | Location |
|---|---|---|---|
| | 20:10:22:23 | **Community impact**. The applicant shall include an identification and analysis of the effects the construction, operation, and maintenance of the proposed facility will have on the anticipated affected area including the following:<br>(1) A forecast of the impact on commercial and industrial sectors, housing, land values, labor market, health facilities, energy, sewage and water, solid waste management facilities, fire protection, law enforcement, recreational facilities, schools, transportation facilities, and other community and government facilities or services;<br>(2) A forecast of the immediate and long-range impact of property and other taxes of the affected taxing jurisdictions;<br>(3) A forecast of the impact on agricultural production and uses;<br>(4) A forecast of the impact on population, income, occupational distribution, and integration and cohesion of communities;<br>(5) A forecast of the impact on transportation facilities;<br>(6) A forecast of the impact on landmarks and cultural resources of historic, religious, archaeological, scenic, natural, or other cultural significance. The information shall include the applicant's plans to coordinate with the local and state office of disaster services in the event of accidental release of contaminants from the proposed facility; and<br>(7) An indication of means of ameliorating negative social impact of the facility development. | 19.0 |
| | 20:10:22:24 | **Employment estimates**. The application shall contain the estimated number of jobs and a description of job classifications, together with the estimated annual employment expenditures of the applicants, the contractors, and the subcontractors during the construction phase of the proposed facility. In a separate tabulation, the application shall contain the same data with respect to the operating life of the proposed facility, to be made for the first ten years of commercial operation in one-year intervals. The application shall include plans of the applicant for utilization and training of the available labor force in South Dakota by categories of special skills required. There shall also be an assessment of the adequacy of local manpower to meet temporary and permanent labor requirements during construction and operation of the proposed facility and the estimated percentage that will remain within the county and the township in which the facility is located after construction is completed. | 20.0 |
| | 20:10:22:25 | **Future additions and modifications**. The applicant shall describe any plans for future modification or expansion of the proposed facility or construction of additional facilities which the applicant may wish to be approved in the permit. | 21.0 |
| | 20:10:22:34. | **Transmission facility layout and construction**. If a transmission facility is proposed, the applicant shall submit a policy statement concerning the route clearing, construction and landscaping operations, and a description of plans for continued right-of-way maintenance, including stabilization and weed control. | 22.0 |

| SDCL | ARSD | Required Information | Location |
|---|---|---|---|
| | 20:10:22:35. | **Information concerning transmission facilities**. If a transmission facility is proposed, the applicant shall provide the following information as it becomes available to the applicant:<br>(1) Configuration of the towers and poles, including material, overall height and width;<br>(2) Conductor configuration and size, length of span between structures, and number of circuits per pole or tower;<br>(3) The proposed transmission site and major alternatives as depicted on overhead photographs and land use culture maps;<br>(4) Reliability and safety;<br>(5) Right-of-way or condemnation requirements;<br>(6) Necessary clearing activities; and<br>(7) If the transmission facility is placed underground, the depth of burial, distance between access points, conductor configuration and size, and number of circuits. | 23.0, Exhibit C |
| | 20:10:22:36. | **Additional information in application**. The applicant shall also submit as part of the application any additional information necessary for the local review committees to assess the effects of the proposed facility pursuant to SDCL 49-41B-7. The applicant shall also submit as part of its application any additional information necessary to meet the burden of proof specified in SDCL 49-41B-22. | 24.0 |
| | 20:10:22:37. | **Statement required describing gas or liquid transmission line standards of construction.** The applicant shall submit a statement describing existing pipeline standards and regulations that will be followed during construction and operation of the proposed transmission facility. | N/A |
| | 20:10:22:38. | **Gas or liquid transmission line description**. The applicant shall provide the following information describing the proposed gas or liquid transmission line:<br>(1) A flow diagram showing daily design capacity of the proposed transmission facility;<br>(2) Changes in flow in the transmission facilities connected to the proposed facility;<br>(3) Technical specifications of the pipe proposed to be installed, including the certified maximum operating pressure, expressed in terms of pounds per square inch gauge (psig);<br>(4) A description of each new compressor station and the specific operating characteristics of each station; and<br>(5) A description of all storage facilities associated with the proposed facility. | N/A |
| | 20:10:22:39. | **Testimony and exhibits**. Upon the filing of an application pursuant to SDCL 49-41B-11, an applicant shall also file all data, exhibits, and related testimony which the applicant intends to submit in support of its application. The application shall specifically show the witnesses supporting the information contained in the application. | 25.0 |

# 2.0 DESCRIPTION OF THE NATURE AND LOCATION OF THE PROPOSED TRANSMISSION FACILITY

Northern States Power Company, a Minnesota Corporation d/b/a Xcel Energy (Xcel Energy), proposes to construct a new 345 kilovolt (kV) transmission line between the Split Rock Substation near Sioux Falls, South Dakota and the Lakefield Junction Substation near Lakefield, Minnesota. Xcel Energy submits this Application for a Facilities Permit from the South Dakota Public Utilities Commission (Commission) for the South Dakota portion of this project. This application is made pursuant to South Dakota Codified Law (SDCL) 49-41B and South Dakota Administrative Rules (ARSD) Parts 20:10:22. The particular facilities (the Facility) for which the permit is being requested are:

- A new 9.6-mile 345 kilovolt (kV) line from the Split Rock Substation located west of Brandon, South Dakota to the Minnesota Border.

- Improvements to the Split Rock Substation to accommodate the new 345 kV interconnection. The substation expansion will require grading and fencing approximately one acre on the eastern end of the existing substation. The control house will likely be expanded as well.

The Facility for which this Application is being made is shown in Figure 1, and comprises approximately 11 percent of an 86-mile transmission project between the Split Rock Substation and the Lakefield Junction Substation near Lakefield, Minnesota. The entire Split Rock – Lakefield Junction Transmission Project is shown in Figure 2.

The Facility is located in Minnehaha County in Sections 27-30 of Red Rock Township (Township 102N, Range 47W) and in Sections 25-32 of Brandon Township (Township 102N, Range 48W) and is described in further detail in Section 8.0.

The right-of-way (ROW) for the 345 kV line will be 150 feet wide for any sections of the line that do not follow existing corridors, and approximately 80-85 feet wide, depending upon the setback from interstate, in the portions that parallel I-90. Structures will be either single or double circuit, davit arm, single, steel poles with a height of approximately 120 feet for most of the route. On average, the transmission line will span 950 feet between structures

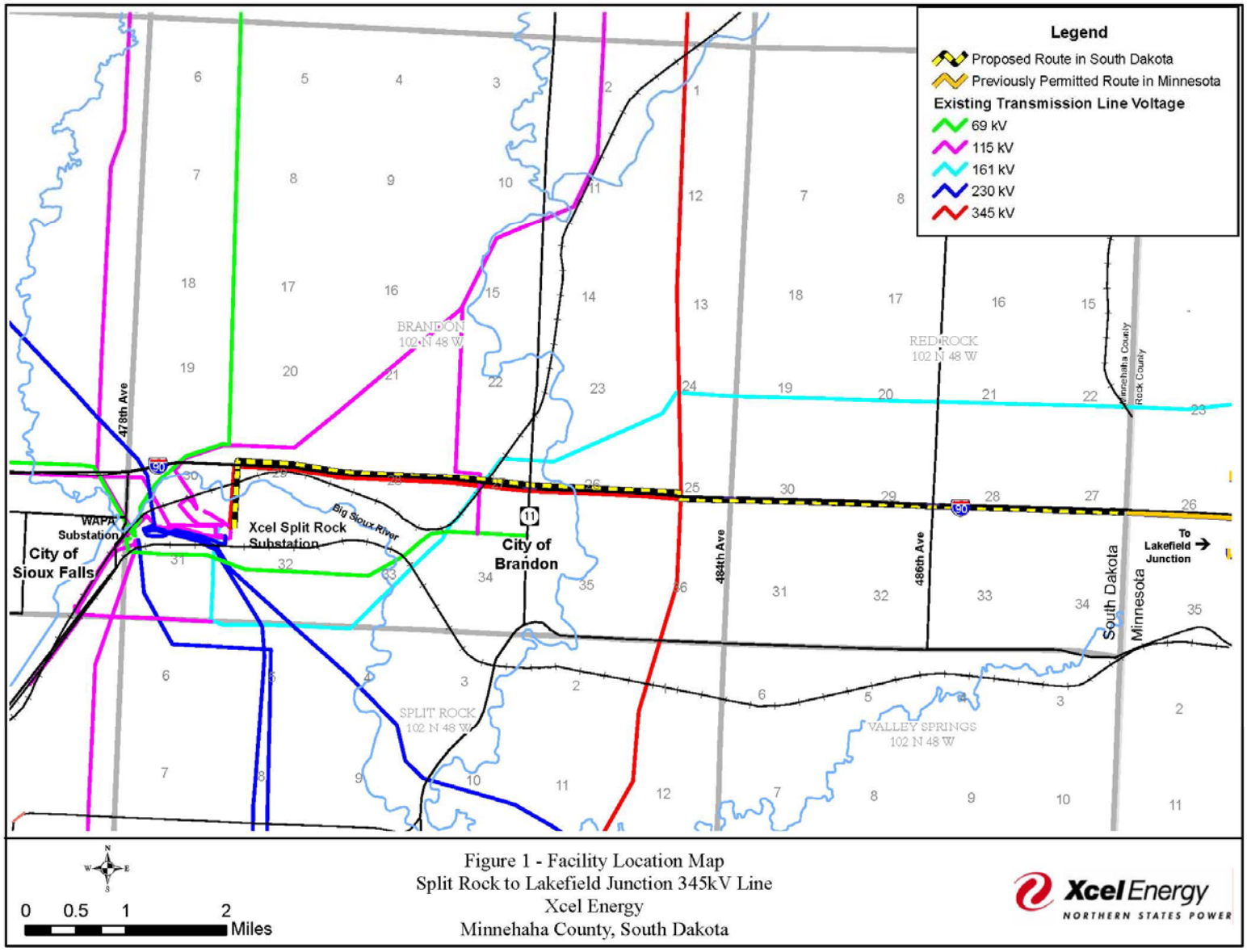
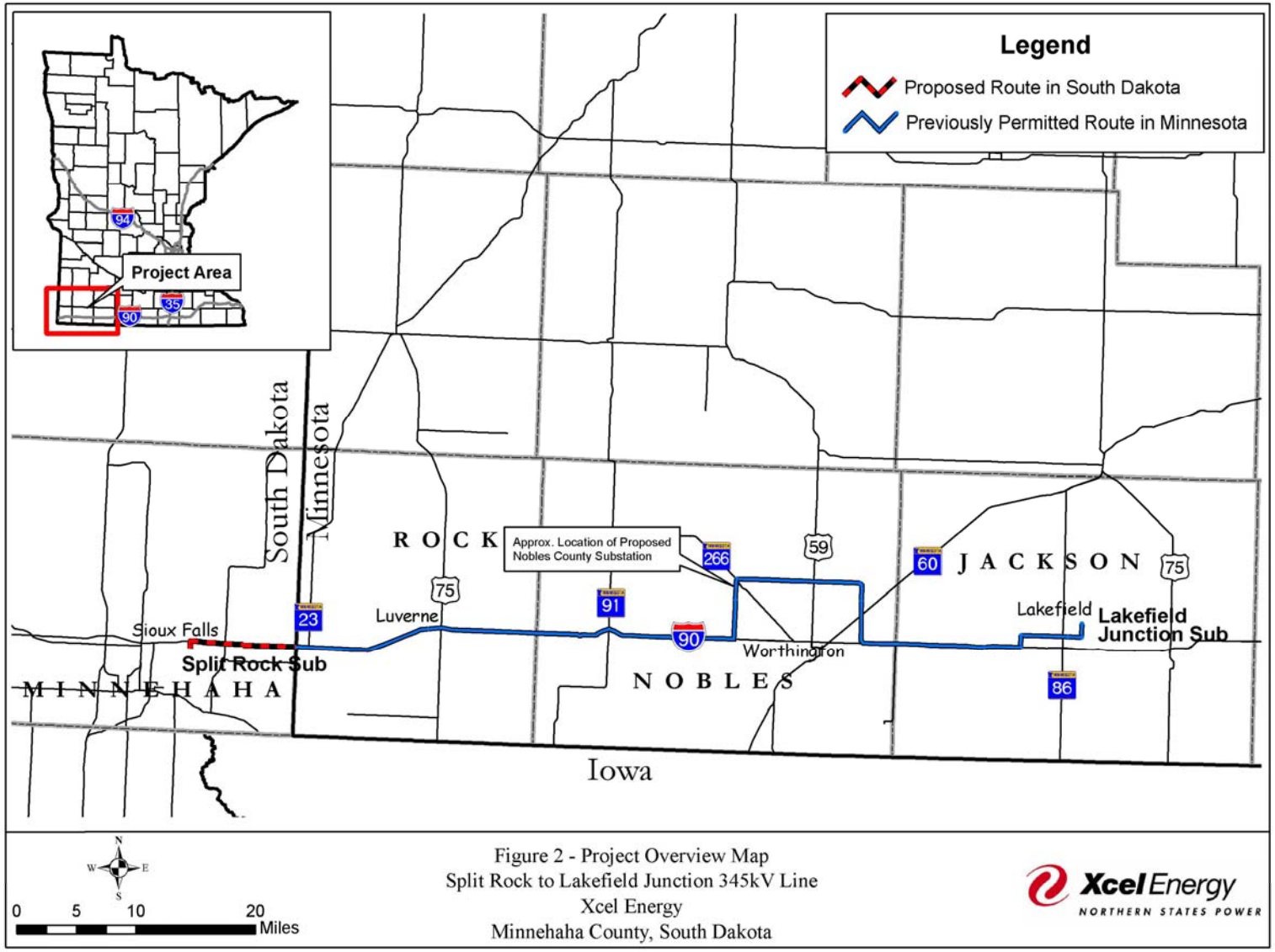



Figure 1 - Facility Location Map
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota


Legend
Proposed Route in South Dakota
Previously Permitted Route in Minnesota
Project Area
94
90
35
South Dakota
Minnesota
ROCK
Approx. Location of Proposed Nobles County Substation
266
59
60
JACKSON
75
75
Luverne
91
23
Sioux Falls
Split Rock Sub
90
Worthington
Lakefield
Lakefield Junction Sub
MINNEHAHA
NOBLES
86
Iowa
N
W
E
S
0 5 10 20
Miles
Figure 2 - Project Overview Map
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota
Xcel Energy
NORTHERN STATES POWER

## 3.0 . NAMES OF PARTICIPANTS (ARSD 20:10:22:06)

The Applicant for the Lakefield Junction to Split Rock 345 kV Transmission Line Facility is:

Northern States Power Company, a Minnesota Corporation
414 Nicollet Mall
Minneapolis, Minnesota 55401

The individuals authorized to receive communications relating to this Application on behalf of Xcel Energy are:

Pamela J. Rasmussen
Team Lead, Siting and Permitting
Xcel Energy
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## 4.0 NAME OF OWNER AND MANAGER (ARSD 20:10:22:07)

Xcel Energy will construct and own all components of the Facility. Xcel Energy owns, and will continue to own, the Split Rock Substation and the existing double circuit 345 kV transmission line between the Split Rock Substation and Western Area Power Administration's (Western) White – Sioux City 345 kV transmission line. Xcel Energy owns, and will continue to own, the structures containing the taps to Western's White – Sioux City 345 kV transmission line. Western will continue to own and operate the White – Sioux City 345 kV transmission line. Xcel Energy is the sole permittee for all portions of this Facility and will pay for the transmission line, structures, new substation equipment and substation improvements.

Xcel Energy is headquartered in Minneapolis, Minnesota. Xcel Energy is a wholly-owned subsidiary of Xcel Energy, Inc., the fourth-largest combination electricity and natural gas energy company in the United States. Xcel Energy, Inc. provides a comprehensive portfolio of energy-related products and services to 3.2 million electricity customers and 1.7 million natural gas customers through its regulated operating companies in Colorado, Kansas, Michigan, Minnesota, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Wisconsin and Wyoming. Xcel Energy owns over 240,000 circuit miles of electricity transmission and distribution lines and more than 32,700 miles of natural gas pipelines and operates regulated power plants that generate about 15,246 megawatts (MW) of electric power. Xcel Energy provides electricity service to over 75,000 customers in South Dakota. Xcel Energy serves some portions of the area that this Facility covers, while the rest of the customers are served by Sioux Valley Energy. Western, East River Power Cooperative and Xcel Energy all own transmission lines in this area and jointly operate the system through the Midwest Independent System Operator (MISO).

The Project Manager for the proposed facility is:

Pamela J. Rasmussen
Permitting Team Lead
Xcel Energy
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# 5.0 PURPOSE OF THE TRANSMISSION FACILITY (ARSD 10:22:08)

The Facility establishes a third 345 kV line into the Sioux Falls area; the resulting configuration will address present load-serving concerns associated with failure of the existing double circuit 345 kV line. The Facility also helps provide for future Sioux Falls area bulk supply needs.

The Facility will help to establish some additional transmission outlets for future generation additions in eastern South Dakota. Although further transmission additions will be required to achieve large increments of outlet capacity from South Dakota, those future improvements' effectiveness will be greatly enhanced by the capacity of the Split Rock – Lakefield Junction line.

The Facility will enhance the transmission system in and around the Buffalo Ridge area and allow the output of additional wind generation. The Buffalo Ridge is a 62-mile-long segment of the Bemis Moraine located in Lincoln and Pipestone Counties in southwest Minnesota and Brookings County, South Dakota. The transmission system in and around Buffalo Ridge currently has authorized generator outlet capability of approximately 260 MW and is fully subscribed. More transmission capacity is needed to allow for increased wind generation in that region. To address this need, Xcel Energy filed an application with the MPUC on December 28, 2001 for certificates of need (CON) to construct a series of transmission projects in southwestern Minnesota and eastern South Dakota.. On March 11, 2003, the MPUC concluded that Xcel Energy had demonstrated the need for transmission facilities to move 825 MW of wind generation from Buffalo Ridge and authorized Xcel Energy to construct four new transmission lines.

- A new 161 kV transmission line connecting Lakefield Junction – Fox Lake (route approved by EQB on September 16, 2004, EQB Docket 03-64-TR-Xcel);
- A new 345 kV transmission line connecting Lakefield Junction – Split Rock in South Dakota (route approved by EQB on June 16, 2005, EQB Docket 03-73-TR-Xcel);
- A new 115 kV transmission line connecting a new Nobles County Substation, located on the Lakefield Junction – Split Rock 345 kV line, with a new "Fenton Substation" and the existing Chanarambie Substation on Buffalo Ridge (route approve by EQB on June 16, 2005, EQB Docket 03-73-TR-Xcel);

- A new 115 kV transmission line connecting the Buffalo Ridge Substation – White Substation in Lincoln County and South Dakota (route approved by EQB on March 17, 2005, EQB Docket 04-84-TR-Xcel) .

The Facility described herein is a portion of the new 345 kV transmission line that will help meet this need.

## 6.0 ESTIMATED COST OF FACILITY (ARSD 10:22:09)

The costs for the Facility are estimated at approximately $7.9 million. Table 2 provides a breakdown of the transmission and substation costs for the Facility.

**TABLE 2**
**FACILITY COSTS**

| Route | Transmission Line Costs | ROW Costs | Total Cost |
|---|---|---|---|
| Proposed Route | $5,000,000 | $404,000 | $5,404,000 |
| Split Rock Substation Modifications | $2,500,000 | N/A | $2,500,000 |
| **Total Facility Costs** | **$7,500,000** | **$404,000** | **$7,904,000** |

Transmission line costs include items related to engineering, surveying, materials, labor and equipment. Costs for ROW are estimated costs associated with the acquisition of ROW and include expenses and labor. These costs do not include any costs related to restoration or mitigation.

Operating and maintenance costs for the transmission line will be nominal for several years since the line will be new and there is minimal vegetation maintenance required. Annual operating and maintenance costs for the 345 kV transmission voltages across Xcel Energy's Upper Midwest system have averaged $1,000 per mile of transmission ROW over the last five years. The principal operating and maintenance cost will be inspections, usually done by fixed wing aircraft on a monthly basis and by helicopter with infrared equipment once a year.

Xcel Energy performs periodic inspections of substations and equipment. The type and frequency of inspection varies depending on the type of equipment. Typical inspection intervals are semi-annually or annually. Because maintenance and repair are performed on an as-needed basis the cost varies from substation to substation.

# 7.0 DEMAND FOR TRANSMISSION FACILITY (ARSD 10:22:10)

The immediate demand for the Facility is necessitated by existing and proposed wind development in the region, primarily on Buffalo Ridge in Southwest Minnesota and Northeast South Dakota. In addition, the Facility serves as part of a major regional transmission development to increase the import capability into Minnesota from the West, which includes a significant increase in delivery capability from generation in the Buffalo Ridge region. This regional enhancement will also allow for the import into Minnesota of further generation resource development such as wind generation further west into South Dakota. This transmission line will also enhance the reliability of the transmission system serving the City of Sioux Falls and surrounding system. The demand for the Facility is discussed in greater detail in Section 5.0.

A delay or termination of the Facility would result in a major delay in development of wind generation on the Buffalo Ridge in Minnesota and South Dakota. Also, as this line is expected to be a significant component of the future regional transmission grid, significant delays in developing major future import capability, especially from the South Dakota region, will occur while new regional plans are developed and analyzed. Major delays in developing further wind generation in the South Dakota portion of the Buffalo Ridge would be encountered.

## 8.0 GENERAL SITE DESCRIPTION (ARSD 10:22:11)

The Facility for which this Application is being made will be located entirely in Minnehaha County and is shown against an aerial photo backdrop in Exhibits C.1a and 1b. The Facility is a 9.6-mile portion of an 86-mile 345 kV transmission project, which will be located in both Minnesota and South Dakota (Figure 2).

The Facility can be broken into five segments (shown as Segments A-E in Figure 3). The Facility will require the construction of three new segments over approximately 9.6 miles. Segments A and D will not require physical construction, but changes at the Split Rock Substation will result in changes to the flow of power over these segments of existing 345 kV lines. These changes will allow the new line to avoid crossing over or under the existing 345 kV lines. Additionally, Western requested that Xcel Energy place the existing Split Rock – White and Split Rock – Sioux City segments on separate structures to enhance reliability. That request will be accommodated pending review and approval by Western representatives. Existing and new power flows diagrams are shown in Figure 4.

The five Facility segments are described from west to east as follows:

**Segment A:** This 0.6-mile segment consists of the existing double circuit 345 kV transmission structures between the Split Rock Substation and I-90. This segment will require no new construction. The existing Split Rock – White 345 kV circuit will remain on the western side of the structures, but the existing circuit on the east will remain but will not be energized. The existing Split Rock – Sioux City 345 kV circuit will be transferred to a new set of structures (Segment B) by connecting it to a new line termination structure at the Split Rock Substation. This portion of the Facility crosses the Big Sioux River.

**Segment B:** This 0.6-mile segment will consist of new double circuit 345 kV structures constructed east of, and parallel to, Segment A. The western circuit will hold the new Split Rock – Lakefield Junction 345 kV circuit, while the existing Split Rock – Sioux City 345 kV circuit will occupy the eastern circuit. This portion of the Facility crosses the Big Sioux River.

**Segment C:** This 4.6-mile segment will consist of single circuit 345 kV structures that will hold the Split Rock – White 345 kV circuit. This segment will continue the Split Rock – White 345 kV circuit northward across I-90 from Segment A. Once the segment crosses I-90 it will turn eastward along the north side of I-90 until it reaches the White – Sioux City 345 kV line owned an operated by Western. A new single, steel pole tower will be

constructed within the ROW of the existing line to connect this segment with the White – Sioux City 345 kV transmission line. This portion of the Facility crosses Split Rock Creek.

**Segment D:** This 4.5-mile segment consists of existing double circuit 345 kV transmission structures south of I-90. This segment will require no new construction, but will continue the circuits identified in Segment B eastward to Western's White – Sioux City 345 kV line. The new Split Rock – Lakefield Junction 345 kV circuit will occupy the northern circuit and the Split Rock – Western Tap circuit will occupy the southern circuit. This portion of the Facility crosses Split Rock Creek.

**Segment E:** This 4.5-mile segment will continue the new Split Rock – Lakefield Junction 345 kV transmission line on single circuit structures eastward from WAPA's White - Sioux City 345 kV transmission line to the Minnesota border where it will continue eastward to the Lakefield Junction Substation. This segment will be connected to Segment D either at the existing lattice tower structure or at a new single, steel pole constructed at approximately the same location. This portion of the Facility crosses Beaver Creek.

Additionally, the Facility will expand and make improvements to the Split Rock Substation. The Split Rock Substation is located east of Sioux Falls, South Dakota in the SE ¼ of Section 30, NE ¼ of Section 31, and the NW ¼ of Section 32 in Township 102N, Range 48W. The substation is owned and operated by Xcel Energy. Modifications to the substation will include upgrading the existing 345 kV, four-position ring-bus configuration into a five-position ring to provide a line termination for the new 345 kV transmission line and installing a line-termination dead end, one new breaker and associated switches and line relaying. The substation expansion will require grading and fencing approximately one acre on the eastern end of the existing substation. The control house will be expanded as well. A schematic of the proposed substation improvements is attached as Exhibit C.7.

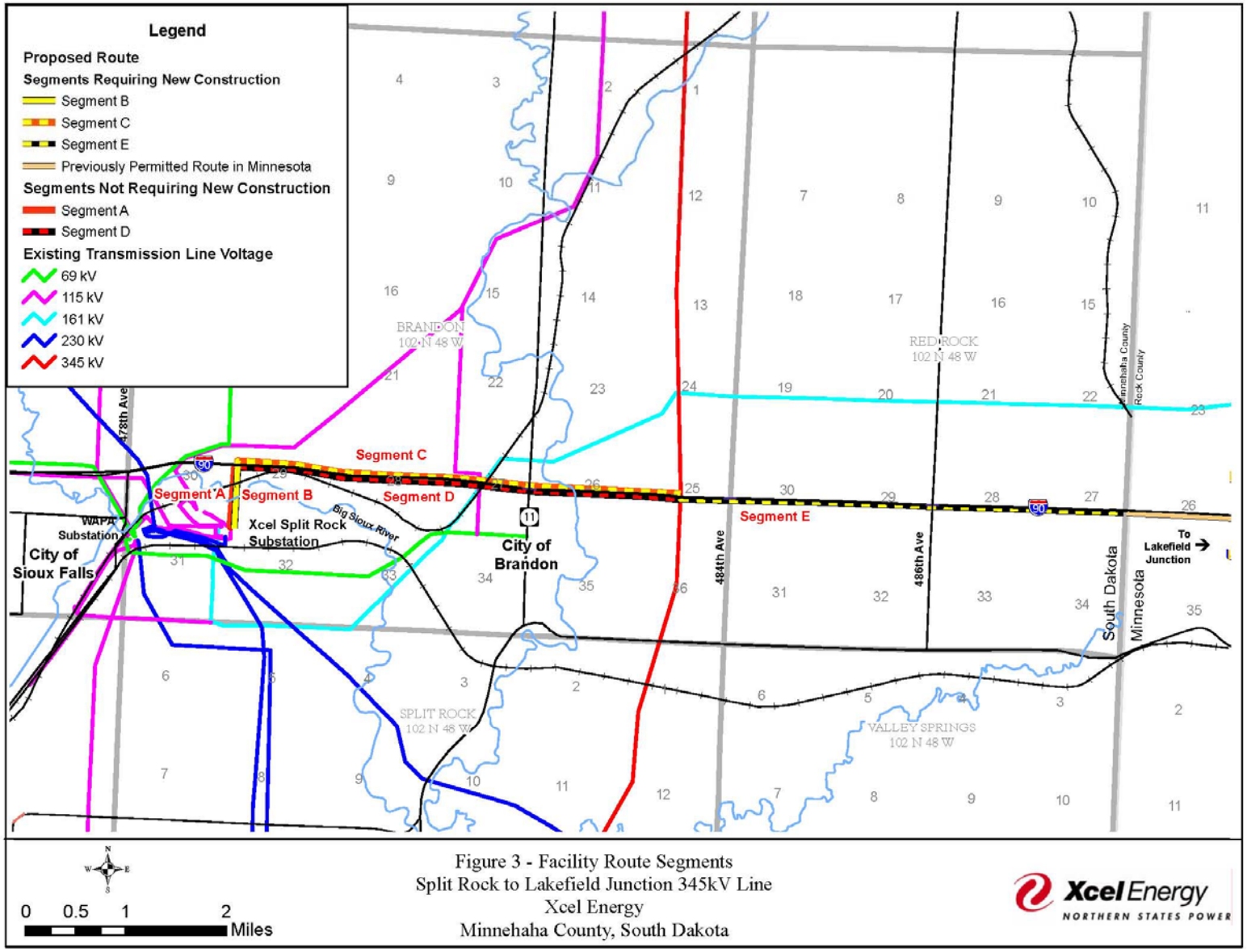
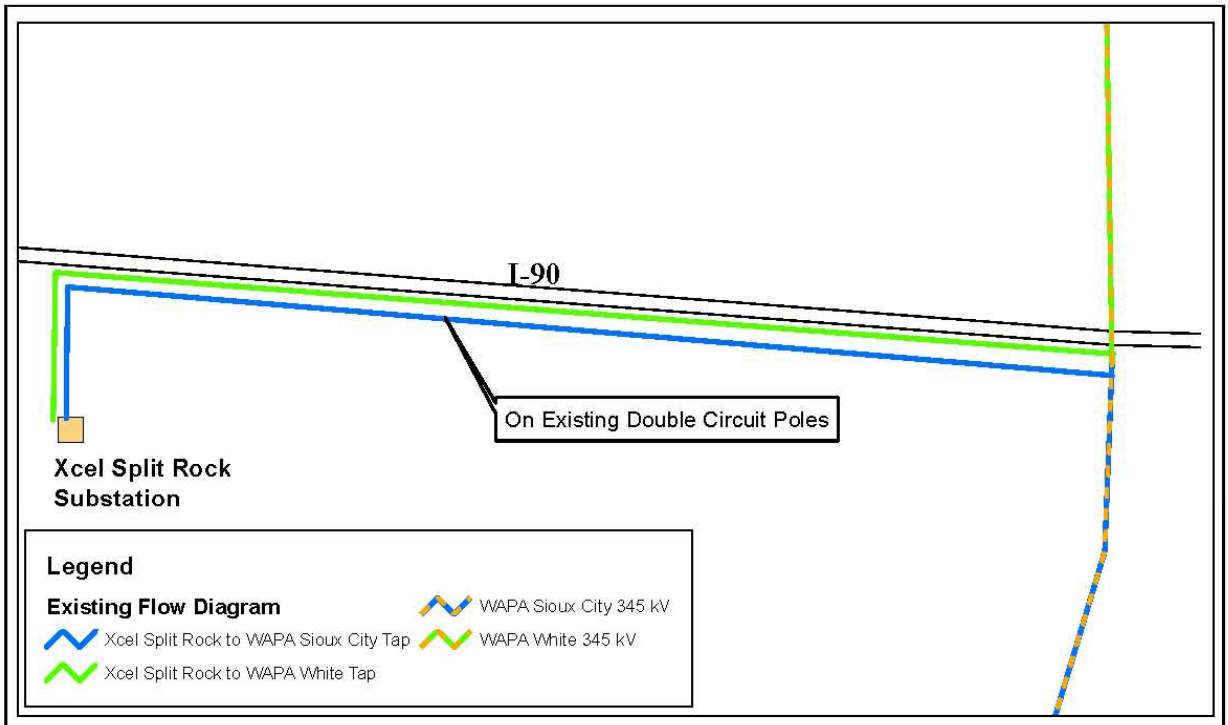
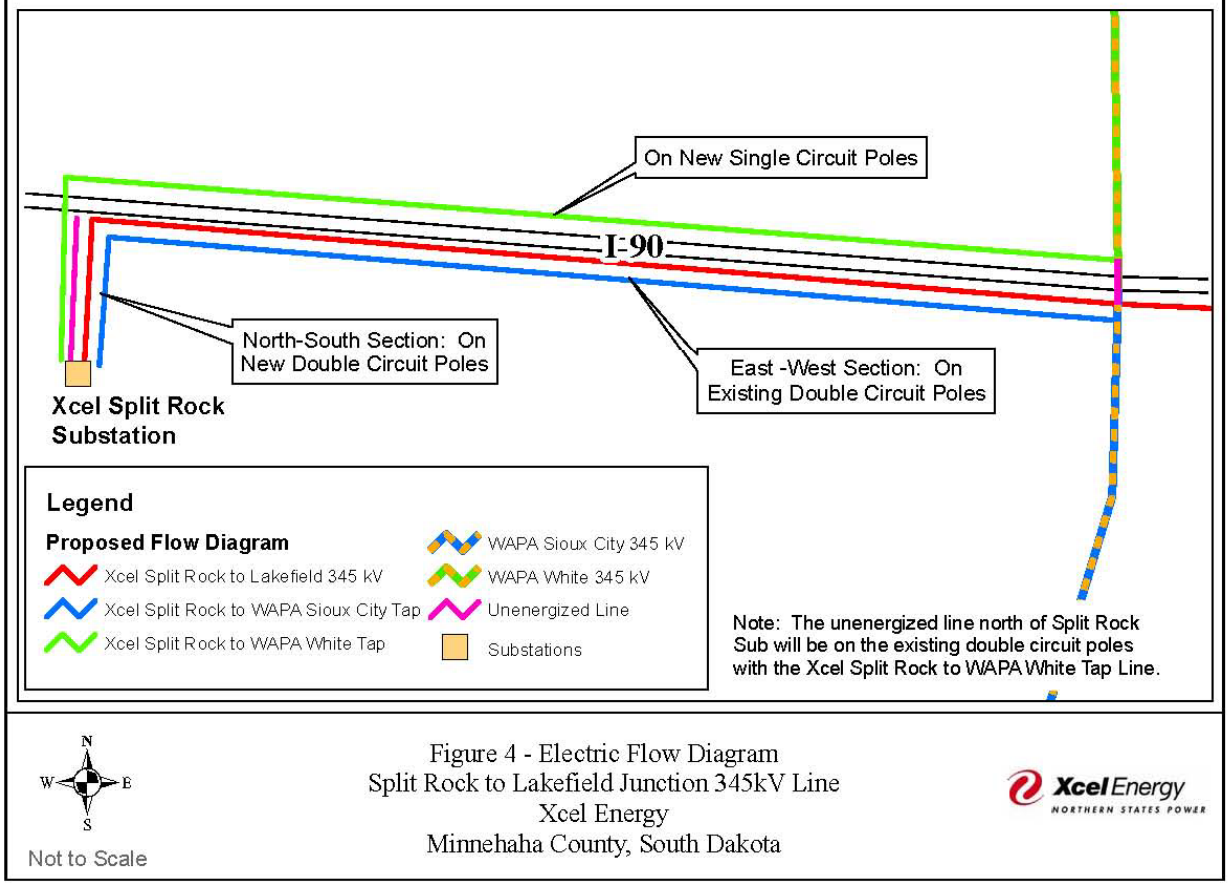



Figure 3 - Facility Route Segments
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota







Not to Scale

Figure 4 - Electric Flow Diagram
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota

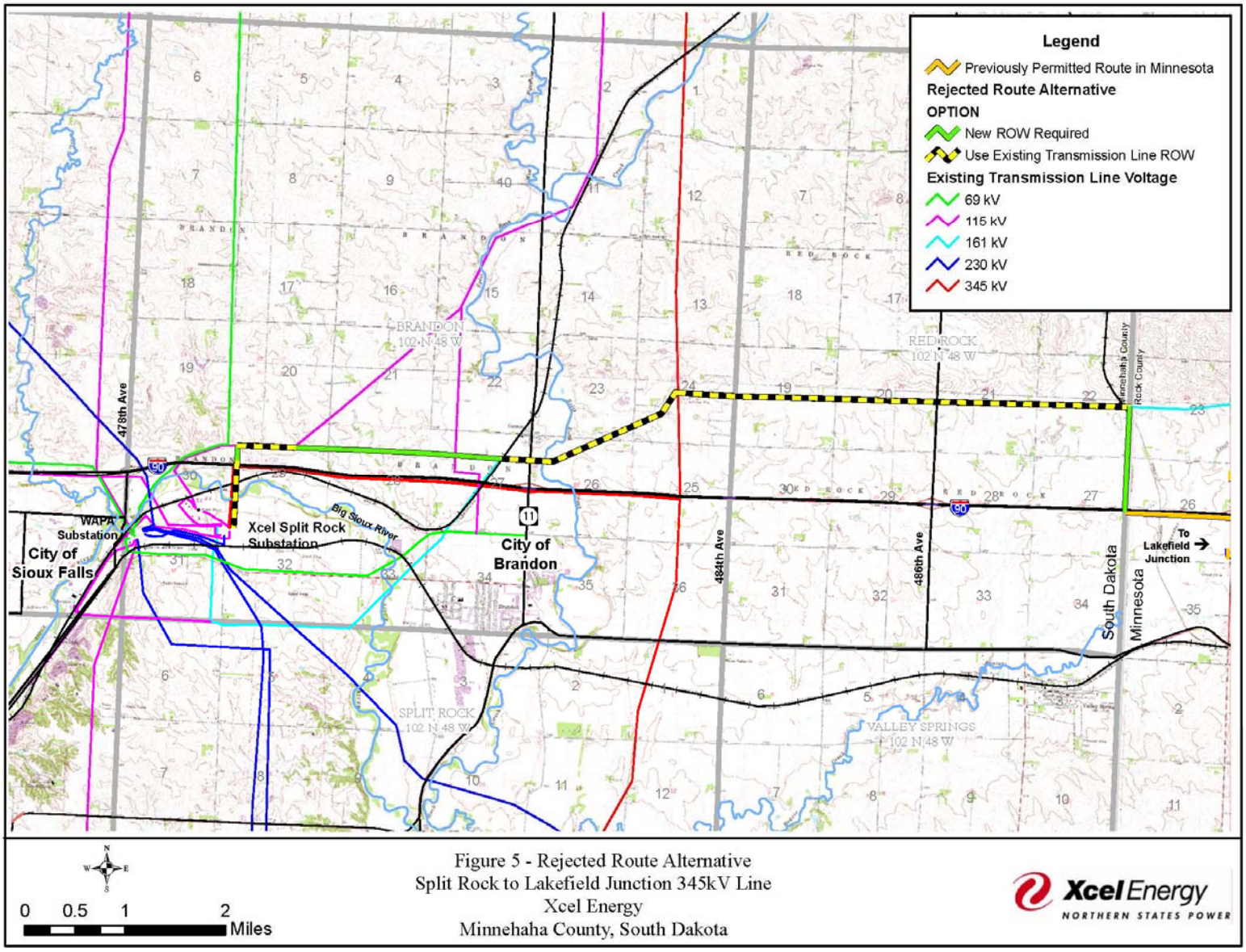



Figure 5 - Rejected Route Alternative
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota

# 9.0 ALTERNATIVE SITES (ARSD 10:22:12)

## 9.1 ROUTE IDENTIFICATION

Routes for the Facility were selected after careful consideration by several planning entities within Xcel Energy. The general location of the Facility was originally identified during the transmission planning process by a team of siting, ROW and engineering personnel. The team used a variety of digital data such as aerials and topographic maps as well as site visits to the facility area and information gathered at public meetings to develop the proposed route.

Xcel Energy uses a multidisciplinary team approach to develop transmission line routes in several iterative steps that can be summarized as follows:

1) Develop Preliminary Route Options by:

- Identifying existing corridors such as transmission lines, property lines, field lines, roadways, pipelines and railroads
- Reviewing project specific siting criteria
- Minimizing length and cost
- Avoiding major environmental features
- Minimizing impacts to reliability

2) Refine Preliminary Route Options by:

- Avoiding and minimizing impacts to high density residential areas
- Identifying areas with limited clearances
- Avoiding and minimizing impacts to environmentally sensitive sites such as: wetlands; archaeologically significant sites; areas with threatened, endangered or species of special concern; areas of significant biological or cultural significance; and state and federal lands
- Reviewing routes on maps with additional data from state agencies and other resources

3) Field Check Preliminary Route Options by:

- Driving and walking preliminary routes to verify land use conflicts and other problems identified on maps

4) Obtain Agency, Public and Utility Input on Preliminary Route Options by:

- Holding public meetings
- Meeting with regulatory agency personnel
- Sending letters out for comment

5) Select Routes for Permit Application by:

- Reviewing and comparing all information about the routes
- Follow up with any major concerns
- Review and compare costs

6) Prepare Proposed Routes for Route Permit Application based on the best combination of the following:

- Minimizing environmental impacts to agriculture, residents, wildlife and wetlands
- Minimizing costs
- Minimizing impacts to reliability

For this Facility, the primary routing considerations were:

- Consistency with the Minnesota Portion of the Route: In the approval process for the Minnesota portion of the route, the Minnesota Environmental Quality Board (EQB) considered two alternative routes, one along I-90 and one along an existing 161 kV transmission line route. As noted previously, on June 16, 2005, the EQB issued a permit for a route along I-90.

- Use of Existing Linear Corridors: Xcel Energy prefers to use existing linear corridors to the extent possible to ensure good access to the line and minimize impacts to adjacent land uses. Several linear corridors already exist in the area. Given the presence of existing corridors, Xcel Energy's preference is to use existing corridors and avoid new cross-country ROW to the extent possible.

- Minimizing Impacts to Residences: Although the area is not densely populated, Xcel Energy attempts to minimize impacts to residences to the extent possible by

routing through areas with sufficient setbacks from the line and avoiding areas that would require significant tree clearing.

## 9.2 ALTERNATIVES CONSIDERED

Because of uncertainty over the route that the EQB would approve for the Minnesota portion of the line, Xcel Energy considered two route alternatives between the Minnesota border and the Split Rock Substation. In addition to the proposed route, Xcel Energy considered double-circuiting the new 345 kV transmission line with existing Xcel Energy 161 kV and 115 kV transmission lines located approximately one-half mile north of the proposed route (Figure 5 and Exhibit C.6). Xcel Energy presented this alternative route at a public meeting in Brandon, South Dakota on February 24, 2005.

Based on public comments received on the route proposed at that meeting and additional analysis by the project team, Xcel Energy revised the proposed route to follow I-90 (northern route). This revised route was presented at a public meeting held in Brandon,South Dakota on June 30, 2005. Xcel Energy considered the following factors when revising the route:

- Consistency with the Minnesota Portion of the Route: At the time of the February meeting, Xcel Energy did not have a clear indication of which route the EQB would choose. On June 16, 2005, the EQB issued a permit for a route along I-90.

- Use of Existing Linear Corridors: The proposed I-90 route does not require new cross-country ROW. The northern route requires 2.2 miles of new cross-country ROW.

- Impacts to Residences: The proposed I-90 route is within 1,000 feet of eight homes; none of these homes is located within 300 feet of the proposed route. The northern route passes within 1,000 feet of 23 homes; three of these homes are within 300 feet of the transmission line.

- Impacts to Landowners: Xcel Energy attempts to minimize impacts to landowners by closely paralleling road ROW to the extent possible. Xcel Energy's standard practice is to place poles approximately five feet outside of the road ROW. Xcel Energy believes that the I-90 alternative will reduce the likelihood that eminent domain will be used.

- Impact to Economic Development: Xcel Energy believes that the Facility will promote economic development in the area by enhancing electric reliability and

providing additional outlets for wind generation in eastern South Dakota. Residents of Brandon Township voiced concern that the northern route would be a detriment to the Brandon Development Park and to the economic development of the area (see Brandon Township March 14, 2005 letter, Exhibit H).

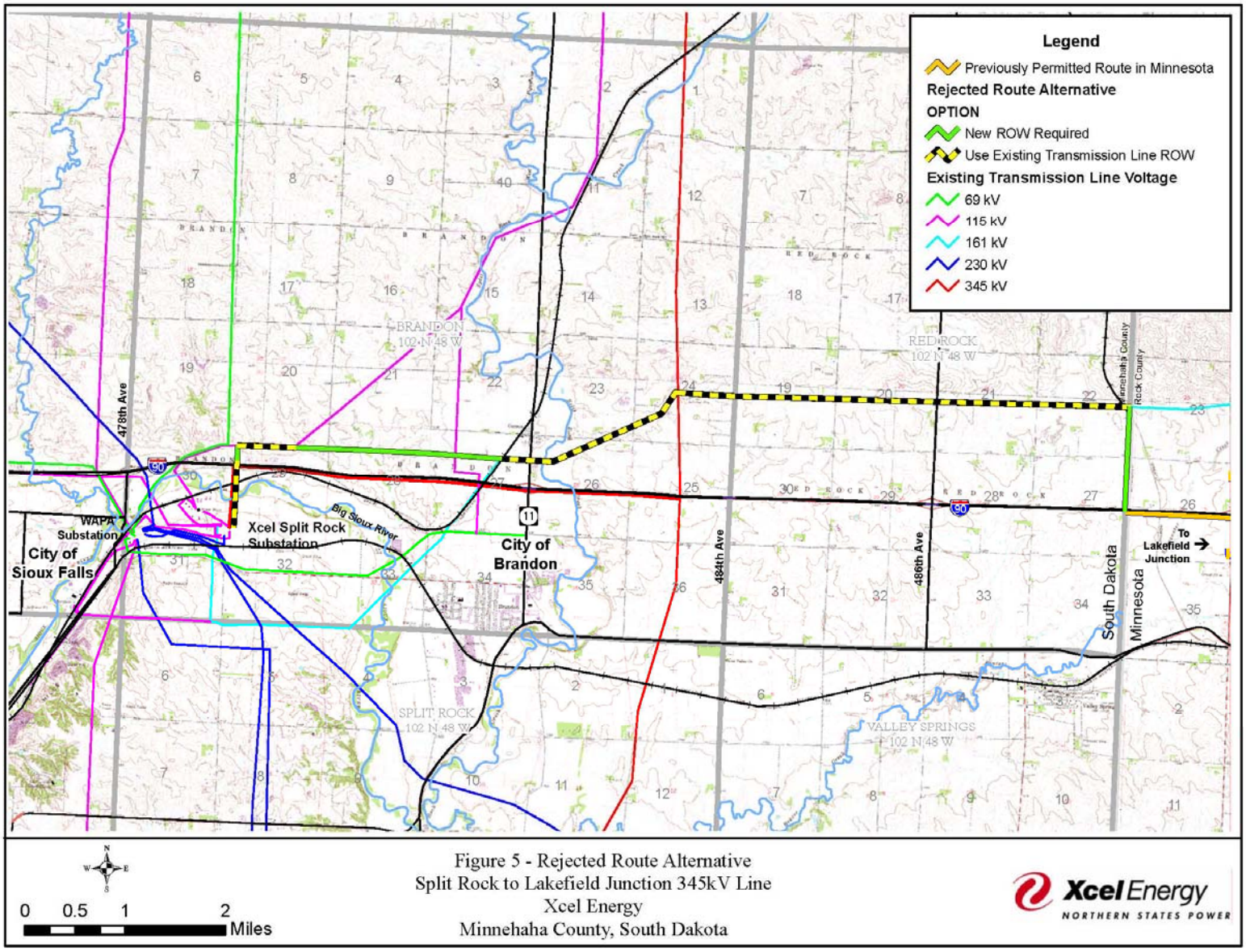



Figure 5 - Rejected Route Alternative
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota

# 10.0 EFFECT ON PHYSICAL ENVIRONMENT (ARSD 10:22:14)

## 10.1 EXISTING PHYSICAL ENVIRONMENT

The topography through the Facility area is fairly flat with rolling hills. A topographic map can be found in Exhibit C.2. The elevations range from 1,450 feet above mean sea level (AMSL) at the state border to approximately 1,350 feet to 1,300 feet AMSL near the Split Rock Substation. The topographic features in this area are influenced by the many small streams and rivers present in this corridor. The Facility passes over two large water bodies: Split Rock Creek and the Big Sioux River.

### 10.1.1 GEOLOGY

The surficial geology of most of the corridor as it approaches the substation consists of ground moraine deposited during the Illinoian glacial advance. The moraine is described as a boulder-clay till that ranges in color from olive-gray to olive-brown. The till is made up of mostly calcareous clay and silt with inclusions of rock fragments. The till is compact and is typically oxidized and leached in the upper part. The till can be covered with as much as 40 feet of calcareous loess deposits.

The surfical geology of some areas of the corridor west of the Split Rock Creek consists of deposits from the Middle and Early Cary Outwash. The outwash is described as stratified deposits of coarse, poorly-sorted sands and gravels. These deposits range in thickness of 50 feet to over 100 feet in areas.

The bedrock geology of this area consists of cretaceous shale, the Coroson Intrusion and the Sioux Formation. The cretaceous shale underlies most of the surficial deposits. It is described as a brown to gray plastic shale that is exposed in the Big Sioux Valley. The Coroson Intrusion is located near its name-sake just north of the corridor. The intrusion consists of a dark-gray to black gabbroic diabase with inclusions of labordorite, hornblende, olivine and many other minerals. The Sioux Formation is the dominant bedrock of the area to just west of the Missouri River. The formation consists of a pink to red, highly resistant quartzite. The quartzite is made up wholly of silica-cemented, rounded, sorted quartz sand inter-bedded with flaggy red to purple mudstone and coarse pebble conglomerates. The Sioux Quartzite outcrops in small areas to the north and south of the corridor.

### 10.1.2 ECONOMIC DEPOSITS

The Sioux Falls area is listed as a principal mineral-producing locality for the state of South Dakota. The primary economic uses in this area are for crushed stone and sand and gravel. Several gravel pits are indicated on the topographic map within several miles of the Facility, but the route does not pass through any mineral mining areas (Exhibit C.2).

### 10.1.3 SOIL TYPE

Soils within the Facility area can be grouped soil associations. An association is a group of individual soil series that occur together in a characteristic geographic pattern with a distinctive pattern of soils, relief and drainage. Each soil association is typically composed of one or more major soils and one or more minor soil components. Soil associations are defined by each county's National Resources Conservation Service (NRCS) office. Within the Facility area, five soil associations occur: 103, 104, 106, 110 and 113. These associations are described in greater detail below.

**Soil Association 103:** This association generally consists of gently to moderately sloping, well-drained to somewhat excessively-drained soils formed in glacial outwash plains. The major soil series are the Enet loam, the Delmont loam and the Graceville silty clay loam.

**Soil Association 104:** This association generally consists of gently sloping, well-drained soils found on uplands that formed in loess deposits. The major soil series are the Moody silty clay loam, the Nora silty clay loam and the Crofton silt loam. This association makes up approximately half of the Facility area.

**Soil Association 106:** This association generally consists of gently sloping, well-drained and somewhat poorly-drained soils formed in glacial outwash plains and alluvium. The major soil series are the Graceville silty clay loam, the Dempster silt loam and the Lamo silty clay loam.

**Soil Association 110:** This association generally consists of gently sloping, well-drained, somewhat poorly-drained and poorly-drained soils formed in glacial outwash and loess deposits. The major soil series are the Moody silty clay loam, the Trent silty clay loam and the Marcus silty clay loam.

**Soil Association 113:** This association generally consists of gently sloping, well-drained, moderately well-drained and poorly-drained soils formed on clayey and loamy alluvium and

loess in uplands. The major soil series are the Clamo silty clay loam, the Lamo silt loam and the Davis loam.

The Facility site crosses 32 soil series and is dominated by Davis and Delmont loams, Nora and Moody silty clay loams and the Crofton silt loam. A description of each soil unit is attached as Exhibit G.

Approximately half of the soil within the Facility area is listed as prime farmland; approximately a quarter of the soil is listed as prime farmland when drained. Prime farmlands are determined by the South Dakota NRCS to have adequate potential of Hydrogen (pH), water supply, growing season length and temperature for growing crops and are not excessively erodible or wet throughout the growing season.

### 10.1.4 SEISMIC RISKS

The seismic activity in South Dakota, especially in the eastern portions of the state, is fairly low. An earthquake registering 4.1 on the Richter Scale was recorded in the vicinity of the proposed corridor near Sioux Falls, South Dakota in October, 1938. In March, 1921, a small earthquake, measuring less than three on the Richter Scale, was registered south of the site along the Minnehaha and Lincoln county border.

## 10.2 FACILITY IMPACTS

### 10.2.1 POTENTIAL FOR EROSION OR SEDIMENTATION

The Minnehaha County Soil Survey does not contain information regarding the potential for erosion or sedimentation associated with specific soil series. In general, areas with steep slopes, dry soils and/or minimal vegetative cover are at the greatest risk of erosion. Within the Facility area, the potential for erosion would be highest along steep stream banks along the Big Sioux River and its tributaries. Soil units within the Facility area that have moderately steep to steep slopes (nine to 40 percent slopes) include the Shindler-Houdek complex, the Shindler-Talmo complex, the Talmo-Delmont complex and the Houdek-Shindler complex.

The potential for erosion near the Big Sioux River will be minimized since construction equipment will not cross the River. In addition, the construction plans will be developed to keep equipement away from these areas. Best management practices (BMP), such as sediment fences and revegetation within steep areas are proposed to minimize erosion and

sedimentation resulting from the Facility. Specific plans to address these issues will be developed prior to construction, based on the locations of the structures and access roads.

### 10.2.2 GEOLOGICAL CONSTRAINTS ON DESIGN, CONSTRUCTION OR OPERATION OF PROPOSED FACILITY

Xcel Energy does not expect that the area geology will impose significant constraints on the design or operation of the Facility. Xcel Energy does not that blasting in bedrock will be required to establish footings for the facility. There are no active mineral extraction areas close enough to pose a constraint on the design, construction or operation of the Facility.

# 11.0 HYDROLOGY (ARSD 20:10:22:15)

## 11.1 EXISTING HYDROLOGY

The Facility area is in the Big Sioux River Basin. A map showing the hydrology of the Facility area is attached as Exhibit C.3. The Big Sioux River flows east and south through the proposed Facility area (under Segments A and B south of I-90); ultimately the river joins the Missouri River in Sioux City, Iowa. Split Rock Creek, a tributary to the Big Sioux River, runs south through Segments C and D of the Facility approximately one half mile east of Highway 11. A tributary to Beaver Creek crosses under Segment E of the Facility area approximately one mile west of the Minnesota/South Dakota state border.

The Big Sioux River Basin drains approximately 4,280 square miles in South Dakota and approximately 3,000 square miles in Minnesota and Iowa. The average annual flow of the Big Sioux River, measured at the Brandon, South Dakota United States Geological Survey (USGS) gauging station, is approximately 340 cubic feet per second (cfs). Peak flows historically occur in the spring and early summer with a maximum flow of 36,800 cfs recorded in April 1969. Low flows occur in December and January.

Within the Facility area, surface water generally flows into the Big Sioux River or its tributaries where it then flows south and east. Existing Surface water drainage patterns are shown in Exhibit C.3.

**Segments A and B:** The Big Sioux River flows east under these segments. Surface water flows directly into the River in this portion of the Facility.

**Segments C and D:** Within these segments, surface water generally flows into ephemeral streams and tributaries south toward the Big Sioux River. In the western portion of these segments, the terrain is fairly rolling. There is a high point approximately 250 feet west of the section line between Sections 27 and 28, Township 102N, Range 48W. From this point, water flows west into a channel that runs south through the Facility through the middle of Section 28 and east into Split Rock Creek. There is another high point approximately 1,500 feet west of the eastern end of Segments C and D. From this point, water flows south and west into Split Rock Creek and south and east into an ephemeral channel that eventually joins Split Rock Creek.

**Segment E:** There is a high point approximately 200 feet west of the section line between Sections 29 and 30 in Township 102N, Range 47W. From this point, water flows southwest

into an ephemeral channel that ultimately joins Split Rock Creek and southeast towards Beaver Creek, which runs through the Facility area in the eastern half of Section 28. There is another highpoint approximately one half mile west of the Minnesota/South Dakota border (near the Beaver Creek Travel Center). From this point, water flows southwest into Beaver Creek and southeast out of the Facility area.

## 11.2 FACILITY IMPACTS

### 11.2.1 EFFECT ON CURRENT OR PLANNED WATER USE

The Facility will not require any groundwater for consumption or dewatering. The Facility will have no impact on either municipal or private water uses in the Facility area. No water storage, reprocessing or cooling is required for either the construction or operation of the Facility. The Facility will not require deep well injection.

### 11.2.2 SURFACE AND GROUNDWATER IMPACTS

The only changes to existing water drainage patterns from the Facility will be from grading the expansion area of the Split Rock Substation. Detailed grading plans have not been developed at this time, but surface water from the substation expansion will continue to drain towards the Big Sioux River.

The proposed transmission line runs across two major rivers/streams in the area along with many small tributaries. Erosion of sediment in these surface water bodies from construction may occur if BMPs to prevent sediment runoff are not taken, however Xcel Energy does employ BMPs during facility construction to prevent erosion. Xcel Energy's standard construction practices are summarized in Sections 22.3 and 22.4 and water quality impacts are discussed in Section 16.2.

Isolated groundwater impacts may occur if dewatering is necessary for the construction of the footings

# 12.0 EFFECT ON TERRESTRIAL ECOSYSTEMS (ARSD 20:10:22:16)

Information from the Biological Survey of the Facility area performed in June, 2005 is summarized in this section. More detailed information can be found in the *Xcel Energy 345 kV South Dakota Corridor Sensitive Species Survey Report*, attached as Exhibit E.

## 12.1 EXISTING TERRESTRIAL ECOSYSTEM

The Facility lies within the Inner Coteau des Prairies sub-subsection regional landscape ecosystem, characterized as tallgrass prairie prior to European settlement. The tallgrass prairie ecosystem has ceased to exist except in small isolated sites (i.e. on steep slopes, in ditches along road or railroad corridors, and on lands that have escaped plowing) throughout the Midwest. The tallgrass prairie has been converted to agriculturally related land uses and few areas that are dominated by remnant prairie vegetation remain along the proposed route. Many of the small lakes, streams, and wetlands in the region have been drained or utilized for agricultural purposes. No game production areas, state recreation areas, lake side use areas or state game refuges are located along the proposed route.

A biological survey of the proposed route identified ten (10) different land types were within 0.25 mile of proposed corridor route. A more detailed description of the survey results can be found in the survey report, attached as Exhibit E. The land types included four different natural communities including; Mesic Prairie, Dry Prairie, Floodplain Forest, and Mixed Emergent Marsh. The majorities of remaining natural communities occur within three (3) miles of the Split Rock substation and have been significantly altered by agricultural practices or the construction of roads, buildings, or maintained landscaping.

A majority of the vegetation surrounding the Facility corridor is crops planted on agricultural land and field margins populated primarily by invasive or pioneering species such as smooth brome (*Bromus inermis*), ragweeds (*Ambrosia artemissiifolia*, *A. trifida*). The proposed route follows existing highway and transmission line corridors for the entire route and crosses several natural and altered vegetation community types. The principal natural community types encountered include; Mesic Prairies, Dry Prairies, Mixed Emergent Marsh, and Floodplain Forest. These classifications are based on the dominant plant community assemblages present at a particular location.

### 12.1.1 NATURAL COMMUNITIES

**Mesic Prairie**

Mesic Prairies are dry to wet-mesic plant communities dominated by grasses and sedges that are located on level to rolling glacial till. Mesic Prairie communities are fire-dependent and

where fire is absent woody species invade. Big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and prairie dropseed (*Sporobolus heterolepis*) are typically the dominant species with numerous other species of grasses occurring at different levels of dominance based upon moisture availability or disturbance. Invasive species such as Kentucky bluegrass (*Poa pratensis*) and Canada bluegrass (*P. compressa*) occur in varying abundance on these sites depending upon the level of disturbance at a particular site. Forbs on remnant Mesic Prairie sites are abundant and have a high level of diversity. Forb communities also vary in diversity and makeup with available soil moisture levels and levels of disturbance. Soils are generally classified as Molisolls.

**Dry Prairie**

Dry Prairies are dry to dry-mesic plant communities that are dominated by grasses and sedges. Dry Prairies are maintained by fire but require less frequent fires than Mesic Prairies due to the droughty conditions where they occur. These dry and poor soil conditions slow the advance of woody species. Generally, Dry Prairies have a greater component of Great Plains species than remnant Mesic Prairies. Midheight and short grasses and sedges are usually dominant in remnant Dry Prairie communities. Porcupine grass (*Stipa spartea*), prairie junegrass (*Koeleria macrantha*) and sun-loving sedge (*Carex heliophila*) were the most readily identified species observed on remnant dry prairie during a review of the corridor. Invasive species such as musk thistle (*Carduu nutans*) and yellow sweet clover (*Melilotus officinalis*) vary based upon frequency and duration of grazing on these sites. Low shrubs such as leadplant (*Amorpha canescens*), prairie rose (*Rosa arkansana*), and wolfberry (*Symphoricarpos occidentalis*) were also present in varying amounts.

**Floodplain Forest**

These forests are seasonally flooded lands within the floodplains of major rivers and tributaries. Floodplain Forests are dominated by tree species that tolerate inundation early in the growing season. The canopy dominants vary according to the length and duration of flooding. The canopy species of Floodplain Forest within the proposed 345kV transmission line are silver maple (*Acer saccharinum*), eastern cottonwood (*Populus deltoides*), box elder (*Acer negundo*), black willow (*Salix nigra*), and green ash (*Fraxinus pennsylvanica*). Areas beneath openings in the canopy are dominated by wood nettle (*Laportea canadensis*), riverbank grape (*Vitis riparia*), Virginia creeper (*Parthenocissus quinquefolia*), or are dominated by sapling willows and box elders.

**Mixed Emergent Marsh**

Wetlands documented along the proposed 345kV transmission line corridor were primarily seasonally flooded systems, old oxbows, or isolated depressions dominated by persistent

emergent species including; cattails (*Typha latifolia*), squirrel tail (*Hordeum jubatum*), hairy-leaved sedge (*Carex atherodes*), marsh spike rush (*Eleocharis smallii*),lady's thumb (*Polygonum persicaria*), and water smartweed (*Polygonum amphibium*). These wetlands all had an abundance of reed canary grass (*Phalaris arundinacea*) that indicates an accumulation of nutrients due to agricultural disturbance. A list of species observed in Floodplain Forest and Mixed Emergent Marsh along the proposed corridor is attached in Exhibit E.

### 12.1.2 SENSITIVE SPECIES

There is a bald eagle (*Haliaeetus leucocephalus*) nest located near the Split Rock Substation, approximately 500 feet south of the railroad tracks, ¼ mile south of I-90, about 200 feet from the existing transmission lines. Xcel Energy has worked with the United State Fish and Wildlife Service (USFWS) to develop an Eagle Protection Plan (EPP), which was implemented during the recent construction of the second unit at the Angus Anson plant. This plan will be utilized again for the transmission line construction. The plan will be modified to address specific construction requirements for the transmission lie and substation faclities. Xcel Energy will consult with the USFWS in the development and management of this plan.

The South Dakota Department of Game, Fish and Parks (GFP) and the USFWS were contacted to identify concerns related to the proposed route (Exhibit H). The GFP identified a bald eagle nest near the line, identified previously. The USFWS also expressed interest in the potential impacts to this active bald eagle nest. Nesting season for the bald eagle is between January and August.

Additionally, the USFWS identified possible habitat for the western prairie fringed orchid (Platanthera praeclara) in the area. The orchid typically blooms in July in Minnesota. The western prairie fringed orchid is typically found in native tallgrass prairie with sedge/wet meadow habitats. These types of habitats exist in the Cactus Hills area located approximately two miles southwest of the Facility area. The Cactus Hills area was identified by the USFWS as an environmentally sensitive area that contains threatened and endangered species such as the lined snake (*Tropidoclonion lineatum*), native prairie, wet meadows, fens and habitat for a wide variety of wildlife. There are no recent records of the western prairie fringed orchid in South Dakota; however, extant populations exist in neighboring states, particularly the southeastern corner of Minnesota, which is near the Facility. Impact to Terrestrial Ecosystem.

The potential to impact terrestrial ecosystems is minimal. No additional habitat removal or fragmentation will result from the Facility. The entire Facility follows previously disturbed

transmission line corridors and the highway corridor along I-90. No impacts will occur to the Cactus Hills area, which is located approximately two miles south of and across the Big Sioux River from the Facility.

There is minimal potential for the displacement of wildlife and loss of habitat from construction of the Facility. Wildlife that inhabits natural areas, such as those near water bodies, could be impacted in the short-term within the immediate area of construction. The distance that animals will be displaced will depend on the species. Impacts to wildlife are anticipated to be short-term since the route primarily will be constructed along an existing transmission line ROW. Additionally, these animals will be typical of those found in agricultural and urban settings and should not incur population level effects due to construction.

None of the target species was observed in any of the natural community types during the survey. In the few areas that exhibited suitable habitat conditions for targeted species there was no access to the properties so these areas were not intensively surveyed.

The Facility will not impact the bald eagle nest located near the Split Rock Substation. Xcel Energy has filed an EPP with the USFWS. This plan will be updated and followed during the transmission line construction.

Raptors, waterfowl and other bird species may also 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.

Additionally, electrocution of large birds, such as raptors, is a concern related to distribution lines. Electrocution occurs when birds with large wingspans come in contact with either two conductors or a conductor and a grounding device. Xcel Energy transmission line design standards provide adequate spacing to eliminate the risk of raptor electrocution. As such, electrocution is not a concern related to the Facility.

Xcel Energy has been working with various state and federal agencies over the past twenty years to address these issues. Company personnel work to address problem areas as quickly and efficiently as possible. In 2002, Xcel Energy, Inc.'s operating companies, including Xcel Energy, entered into a voluntary memorandum of understanding (MOU) to work together to address avian issues throughout its territory. This includes the development of avian

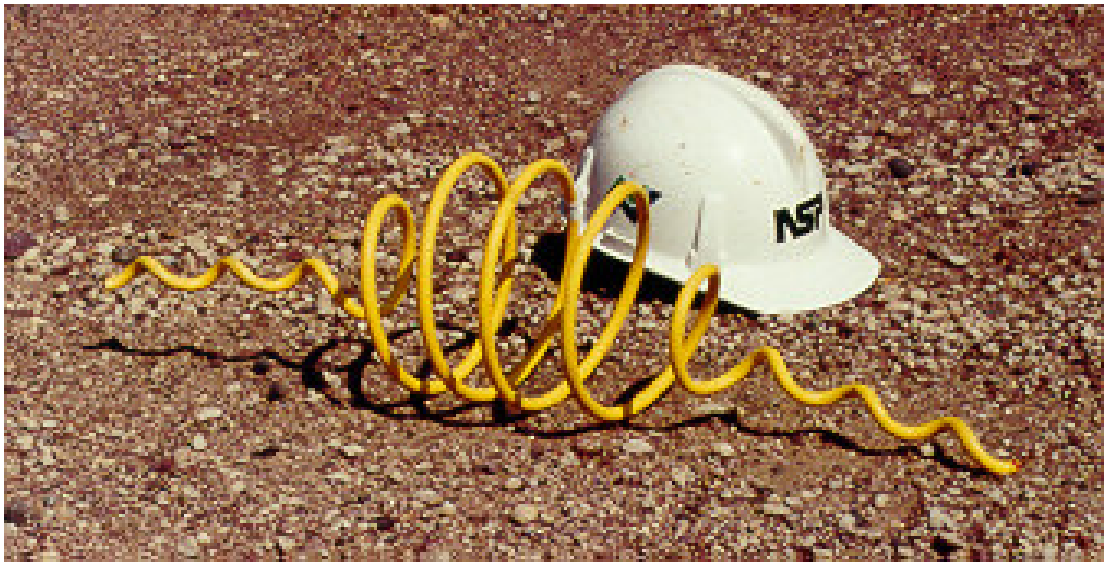
protection plans (APP) for each state Xcel Energy, Inc. serves. Currently, Xcel Energy, Inc. is finalizing the APP for Colorado and will begin work on other states. Standard reporting methods were also developed.

The primary methods Xcel Energy uses to address avian issues for transmission projects include:

- Working with the GFP to identify any areas that may require marking transmission line shield wires and/or to use alternate structures to reduce collisions;
- Attempting to avoid areas known as major flyways or migratory resting spots.

Xcel Energy has had success in reducing collisions on transmission lines by marking the shield wires with Swan Flight Diverters (SFDs), preformed spiral shaped devices made of polyvinyl chloride that are wrapped around the shield wire (Figure 6). Xcel Energy will work with the USFWS and GFP to determine if there are areas that should be marked when the line is constructed.

**FIGURE 6**
**SWAN FLIGHT DIVERTER**



# 13.0 EFFECT ON AQUATIC ECOSYSTEMS (ARSD 20:10:22:17)

## 13.1 EXISTING AQUATIC ECOSYSTEMS

The primary aquatic ecosystems within the Facility area are the Big Sioux River and Split Rock Creek. The National Wetland Inventory (NWI) maps indicate there are seven small wetlands along the Facility corridor. NWI wetland areas are shown in the area hydrology map attached as Exhibit C.3. These wetlands are primarily palustrine wetlands. None of these wetlands are greater than 7,000 square feet in size and none are greater than 90 feet across.

The USFWS and the GFP identified four rare aquatic organisms within the Facility area:

- trout-perch (*Percopsis omiscomaycus*) – State Threatened
- Topeka shiner (*Notorpis topeka*) – Federally Endangered
- blackside darter (*Percina maculata*) – No status
- spiny softshell (*Apalone spinifera*) – No status

The trout-perch is a state-listed threatened species in South Dakota. It has been identified as recently as 2001 in Split Rock Creek. The trout-perch spawns from May through August and is an important prey species for northern pike, yellow perch and walleye.

The Topeka shiner is a federally-listed endangered species. Topeka shiners inhabit small clear streams. The USFWS and GFP have records of Topeka shiners in Split Rock Creek in 1998. The USFWS is concerned about work adjacent to any streams with Topeka shiners. The spawning period for these fish is from May 15th to July 31st.

## 13.2 IMPACTS TO AQUATIC ECOSYSTEMS AND MITIGATION

During construction there is the possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading and construction traffic. Once the Facility is completed, it will have no impact on surface water quality. Maintaining water quality throughout the Facility will minimize potential impacts to rare and common aquatic organisms and the aquatic environment.

Xcel Energy will avoid major disturbance of individual wetlands and drainage systems during construction. All wetlands along the Facility corridor can be spanned by the transmission lines, which will have average spans of 950 feet. No construction will occur within the Big

Sioux River and Split Rock Creek. These waterways will be spanned by the transmission lines, however construction may impact areas adjacent to these streams.

Xcel Energy will avoid construction within 100 feet of Split Rock Creek and Beaver Creek between May 15th and July 31st, the spawning period for Topeka Shiners. Xcel Energy will also implement appropriate BMPs to minimize the amount of erosion and sedimentation that could potentially impact wetlands and waterways. Temporary erosion and sediment control methods will be properly placed, monitored and maintained adjacent to water resources. These erosion control methods will remain in place until work areas become re-vegetated or are stable. BMPs may include silt fencing, mulching, seeding and hay bales. Where appropriate, Xcel Energy will re-vegetate disturbed areas.

# 14.0 LAND USE (ARSD 20:10:22:18)

## 14.1 EXISTING LAND USE

Land use in the Facility area has traditionally been largely agricultural with a mixture of row crops and pastureland. A land cover map is attached as Exhibit C.4. and a map showing Minnehaha County zoning designations is attached as Exhibit C.5. Population in the area has grown considerably in the past decade and the land use is increasingly rural residential and is dotted with hobby farms and rural residential land uses.

In addition to the agricultural and rural residential land uses that dominate the Facility area, there are pockets of commercial land use at the Highway 11 exit. The Split Rock Substation and Angus Anson Power Plant are zoned for industrial use. The Brandon Industrial Park is located north of I-90 at Highway 11.

## 14.2 LAND USE IMPACTS

The Facility will be located primarily on private land that is zoned as agricultural and regulated by Minnehaha County land use plans and ordinances. The only publicly owned land directly affected by the Facility is the Beaver Creek rest stop, located on the south side of I-90 just west of the Minnesota border. This parcel is owned by the Minnesota Department of Transportation (MDOT). The Facility will not require any rezoning and will not result in any land use changes beyond the immediate footprint of the Facility.

The Facility is compatible with the existing land uses in the area. The entire length of the proposed route parallels existing linear corridors, 0.6 miles of new double circuit transmission structures parallels the existing 345 kV structures and the remaining 9.0 miles parallels I-90 to the Minnesota Border. The proposed route does not require any new cross-country ROW. Impacts to land uses adjacent to the transmission line will be minimized by using single, steel poles.

There will be some short-term impacts to agriculture from construction. Once the line is in operation, only approximately 0.07 acres will be permanently removed from agricultural production in order to accommodate the foundations for the structures. Agricultural impacts are discussed in Section 19.2.2.

### 14.2.1 DISPLACEMENT

No homes or businesses will be displaced by the Facility. The proposed route comes within 1,000 feet of eight homes; the nearest of these homes is approximately 310 feet from the transmission line and approximately 3,000 feet from the Split Rock Substation.

### 14.2.2 NOISE

Noise is defined as unwanted sound. It may be comprised of a variety of sounds of different intensities, across the entire frequency spectrum. Humans perceive sound when sound pressure waves encounter the auditory components in the ear. These components convert these pressure waves into perceivable sound. Transmission conductors and transformers at substations produce noise under certain conditions. The level of noise or its loudness depends on conductor conditions, voltage level and weather conditions.

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

**TABLE 3**
**COMMON NOISE SOURCES AND LEVELS**

| Sound Pressure Level (dB) | Typical Sources |
|---|---|
| 120 | Jet aircraft takeoff at 100 |
| 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

The noise levels from the Facility are comparable to the existing noise environment and will not have a significant impact on humans or the environment. Corona on transmission line conductors can generate electromagnetic noise at the frequencies at which radio and television signals are transmitted. This noise can cause interference (primarily with AM radio stations and the video portion of TV signals) with the reception of these signals depending on the frequency and strength of the radio and television signal. Although radio and television interference sometimes occurs, Xcel Energy investigates all such problems and corrects those problems caused by Xcel Energy facilities. Xcel Energy does not expect that there will be any impacts from the operation of the new line.

Improvements to the Split Rock Substation will add a single line termination and circuit breaker. These improvements will not produce any appreciable change in sound levels. Measurements of noise at the Split Rock Substation indicated an average noise level of approximately 52 dB(A). Noise monitoring was also done at the nearest residence, approximately 3,000 feet southeast of the substation, and showed a day-night noise level of 55 dB(A). A propagation of substation noise to the residence show a calculated contribution of approximately 22 dB(A). This contribution does not contain the level of sound energy required to increase background noise levels at the nearest sensitive receptor. Noise monitoring results are included in Exhibit E.

### 14.2.3 AESTHETICS

The Facility will be a contrast to the open agricultural areas and will be visible to travelers along I-90, some township and county roads and to residents along the route. However, the degree to which the poles are visible will vary by location. Xcel Energy has tried to minimize aesthetic impacts from the Facility by routing along I-90, a previously disturbed corridor, and by using single, steel poles. This route is already impacted by the presence of existing transmission lines. Xcel Energy has not identified any unique aesthetic resources that would be impacted by this transmission line.

## 15.0 LOCAL LAND USE CONTROLS (ARSD 20:10:22:19)

The majority of the Facility will be constructed on agricultural land regulated by Minnehaha County land use plans and ordinances (Exhibit D). The Facility will not require any rezoning. Construction of the line will require a building permit from Minnehaha County and the City of Brandon, South Dakota.

# 16.0 WATER QUALITY (ARSD 20:10:22:20)

## 16.1 EXISTING WATER RESOURCES

Water resources are shown in Exhibit C.3. Within the Facility area, Split Rock Creek and Big Sioux River are classified by the South Dakota Department of Environment and Natural Resources (DENR) as having the following beneficial uses: warm water semi permanent fish life propagation, immersion recreation, limited contact recreation, fish and wildlife propagation, recreation and stock watering and irrigation. The DENR includes the section of the Big Sioux River within the Facility area on its 2004 list of impaired (303(d)) waters. Impaired waters are those which require studies to determine the total amount of pollution, or total maximum daily load (TMDL), that a water body can receive before water quality standards are violated. The river is considered impaired for meeting DENR's "immersion recreation" (i.e., swimming) and "limited contact recreation" (i.e., boating) uses, due to fecal coliform from livestock and wastewater sources. This section of the Big Sioux River is also listed as having unacceptably high levels of total suspended solids (TSS), leading to impairment in the warm water semi permanent fish life propagation use. Stream bank erosion and runoff from feedlots and croplands within the drainage basin likely lead to the high TSS levels in this section of the river. South Dakota has listed this section of the river as high priority for TMDL development, and watershed management programs have been implemented in order to reduce nutrient and sediment loading. The current TMDL for TSS within both Split Rock Creek and Big Sioux River is 90 milligrams per liter (mg/L).

## 16.2 FACILITY IMPACTS AND MITIGATION

During construction there is the possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading and construction traffic. This is of particular concern to the Big Sioux River because of the high levels of suspended solids already in the river; it is also important to maintain the acceptable TSS levels within Split Rock Creek so that its beneficial uses can continue to be fully supported. The Facility is not expected to affect fecal coliform or TSS levels within the watershed. Once the Facility is completed, it will have no impact on surface water quality.

Temporary impacts to wetlands may occur if these areas need to be crossed during construction of the transmission line. No permanent impacts to wetlands are anticipated.

The use of BMPs such as sediment fences will minimize the amount of erosion and sedimentation into the water bodies within the Facility area. Xcel Energy will maintain

sound water and soil conservation practices during construction and operation of the Facility to protect topsoil and adjacent water resources and minimize soil erosion and ensure that the TSS TMDL of 90 mg/L is not violated. Practices may include containing excavated material, protecting exposed soil and stabilizing restored soil.

# 17.0 AIR QUALITY (ARSD 20:10:22:21)

## 17.1 EXISTING AIR QUALITY

The entire area of the proposed Facility is currently in attainment for both National and South Dakota Ambient Air Quality Standards. There are two Ambient Air Quality Monitoring Site located in Sioux Falls, South Dakota.; the closest monitoring site is approximately five miles southwest of the Facility area on Bahnson Avenue in Sioux Falls, South Dakota.

The primary sources of criteria pollutants in Minnehaha County come from facilities in the grain processing industry, utilities and industrial manufacturing. These industries include companies such as Northern States Power Company, Norcraft Industries LLC, Land O' Lakes and numerous farmer co-ops and elevators.

## 17.2 FACILITY IMPACTS

During construction of the Facility, there will be limited emissions from vehicles and other construction equipment and fugitive dust from ROW clearing. Temporary air quality impacts caused by the proposed construction-related emissions are expected to occur during this phase of activity.

The magnitude of the construction emissions is influenced heavily by weather conditions and the specific construction activity occurring. Exhaust emissions from primarily diesel equipment will vary according to the phase of construction, but will be minimal and temporary. Adverse impacts to the surrounding environment will be minimal because of the short and intermittent nature of the emission and dust-producing construction phases.

Once the line is operational, there will be minor level of ozone from the line. The national standard for ozone and oxides of nitrogen is 0.08 parts per million (ppm) on an eight-hour averaging period. Calculations, using the Bonneville Power Administration (BPA) *Corona and Field Effects Program Version 3* for a standard single circuit 345 kV transmission line, predicted the maximum concentration of 0.008 ppm near the conductor and 0.0003 ppm at one meter above ground during foul weather or worst-case conditions (rain at four inches per hour). During a mist rain (rain at 0.01 inch per hour) the maximum concentrations decreased to 0.0003 ppm near the conductor and 0.0001 ppm at one meter above ground level. For both cases, these conservative calculations of ozone levels are well below the federal standards. Studies designed to monitor the production of ozone under transmission lines have generally

been unable to detect any increase due to the transmission line facility. Given this, there will be no measurable impacts relating to ozone for the Facility.

## 18.0 TIME SCHEDULE (ARSD 20:10:22:22)

Xcel Energy proposes an in-service date of August 2007 for the 345 kV line. A permitting and construction schedule for the Split Rock Substation – Lakefield Junction Substation 345 kV transmission line summary is provided below:

| | |
|---|---|
| Submit Public Utilities Commission (PUC) Route Permit Application | August, 2005 |
| PUC Route Permit | December, 2005 |
| Survey Permission and Survey | March, 2006 to June, 2006 |
| Line and Substation Design | March, 2006 to November, 2006 |
| ROW Acquisition | September, 2006 to December 2006 |
| Transmission Line and Substation Construction | January, 2007 to August 2007 |
| Final ROW Contacts, Damage Settlements and Cleanup | August 2007 to October 2007 |

# 19.0 COMMUNITY IMPACT (ARSD 20:10:22:23)

## 19.1 EXISTING SOCIOECONOMIC AND COMMUNITY RESOURCES

### 19.1.1 COMMUNITIES

The entire Facility is located in Minnehaha County and passes through Red Rock Township, Brandon Township and the City of Brandon, South Dakota. This area has seen significant population growth in the past 15 years, particularly in the City of Brandon, South Dakota, which saw a 92.3 percent growth in population between 1990 and 2004. This growth is a reflection of the growth in the greater Sioux Falls area.

**TABLE 4**
**DEMOGRAPHIC CHARACTERISTICS OF THE FACILITY AREA**

| Location | Population | | | % Change 1990-2004 | % White (Self-identified) | % in Poverty | Median Income |
|---|---|---|---|---|---|---|---|
| | 1990 | 2000 | 2004 | | | | |
| City of Brandon, South Dakota | 3,543 | 5,693 | 6,813 | 92.3 | 98.2 | 2.4 | $58,421 |
| Brandon Township | 612 | 678 | 723 | 18.1 | 99.7 | 10.2 | $48,611 |
| Red Lake Township | 342 | 392 | 424 | 24.0 | 99.2 | 0.3 | $53,125 |
| Minnehaha County | 123,809 | 148,281 | 157,366 | 27.1 | 93.0 | 7.3 | $42,566 |
| South Dakota | 696,004 | 754,844 | 770,883 | 10.8 | 88.7 | 12.7 | $35,282 |

Source: U.S. Census Bureau. All data from *Census 2000*, except 1990 population data from *Census 1990* and 2004 Population Estimates from Population Estimates Program

### 19.1.2 AGRICULTURE

The 2002 United States Department of Agriculture (USDA) Census of Agriculture identified 1,209 farms in Minnehaha County. The median farm size is 200 acres and approximately 32 percent of Minnehaha County farms are less than 50 acres. Agriculture in the Facility area along I-90 is a mixture of row crops and livestock, primarily cattle.

### 19.1.3 TRANSPORTATION

The major transportation corridor in the Facility area is I-90, which is the major east-west highway connection through Sioux Falls, South Dakota. There are two exits from I-90 that provide north-south routes through the Facility corridor: South Dakota Highway 11 and 484th Avenue. Segment D currently overhangs the south side of I-90 and will remain.

In addition to the highways, the Burlington Northern railroad tracks will cross under the Facility near Corson, immediately north of Brandon, South Dakota.

### 19.1.4 CULTURAL RESOURCES

A review of records available at the South Dakota Archaeological Research Center (SDACR) identified 18 cultural resource surveys and reports previously conducted in the Facility area. Surveys in the area include investigations for housing and land development, water systems, dam and electrical projects, highway upgrades and material pit excavation.

Survey reports identified 27 previously recorded archaeological resources within one mile of the Facility. Previously recorded sites consisting of prehistoric and historic period archaeological resources are identified in more detail in Exhibit F. These sites consist of burial and associated prehistoric artifact scatter, earthworks, a stone circle, a prehistoric occupation, an isolated find, and artifact scatters. The isolated find is considered not eligible for listing on the National Record of Historic Places (NRHP) and the eligibility of the prehistoric occupation is listed as unknown. The remaining archaeological resources have not been evaluated for NRHP eligibility.

One prehistoric artifact scatter containing lithic materials is underneath Segment A in Section 29, Township 102N, Range 48W. The site was originally recorded during a 1994 survey and then revisited in 1997. During the 1997 site visit, no cultural materials were noted. Also, two prehistoric sites, a stone circle and a prehistoric artifact scatter are adjacent to Segment B.

Historic period cultural resources include one farmstead, one foundation and cistern, one depression (reported as a trapper's dugout) and two railroad segments. One depression of unknown cultural affiliation was also noted within one mile of the Facility area. The two railroad segments are considered eligible for the NRHP; the farmstead is considered not eligible. The remaining historic resources have not been evaluated for the NRHP.

Standing historic structures were identified by reviewing the *Cultural Resource Geographic Research Information Display* (CRGRID) maintained by the South Dakota State Historical Preservation Office (SHPO). Historic structures are presented in greater detail in Exhibit F. Within one mile of the Facility area there are 13 previously inventoried architectural historic standing structures. Two structures, a railroad bridge over the Big Stone River and the Ole Christopherson Homestead, appear to be in close proximity to the transmission line. The railroad bridge is considered not eligible for inclusion in the NRHP, and the Ole Christopherson Homestead is considered eligible for the NRHP.

The 11 additional structures within one mile of the Facility area include one railroad bridge, one stone bridge, four farmsteads, one bank, one motel, one community center, one house and one unidentified building. Building construction dates range from 1877 to 1935. Of the 11 additional recorded structures, two, the bank and the community center, are considered not eligible for listing on the NRHP. The remaining nine structures are considered NRHP eligible.

## 19.2 SOCIOECONOMIC AND COMMUNITY IMPACTS

### 19.2.1 COMMUNITY IMPACTS

The Facility will not have a significant short-term impact on population, income, occupational distribution or the integration or cohesion of communities in the Facility area.

There will be some long-term beneficial impacts from the new lines. These benefits include an increase to the counties' tax base resulting from the incremental increase in revenues from utility property taxes, which are based on the value of the Facility. The availability of reliable power in the area will have a positive effect on local businesses and the quality of service provided to the general public. This transmission line will improve the capability of local wind generators to transport energy generated in the region. This in turn may increase the amount of wind development in the area and will contribute to the local economy through easement dollars and taxes generated due to wind farm construction and operation.

The development of wind energy in this region has been important in diversifying and strengthening the economic base of southwestern Minnesota, and it is expected that this Facility, together with other transmission improvements in southwestern Minnesota and eastern South Dakota, will make wind development opportunities more attractive in South Dakota. Northwest Economic Associates (NEA) prepared a report, *Assessing the Economic Development Impacts of Wind Power*, that includes a case study of the Lake Benton I wind project in Lincoln County, Minnesota. The study stated that the construction phase of Lake Benton supported a total of eight jobs and $98,000 in personal income primarily in the trade and services industries. During the operation and maintenance phase of Lake Benton I, a total of 31 jobs, primarily in the transportation, communication and public utilities industries, supported $909,000 in annual personal income in Lincoln County.

Although Xcel Energy will pay taxes on the Facility and the Facility will increase Minnehaha County's tax base, the Facility will not result in any significant impact to the affected taxing jurisdiction.

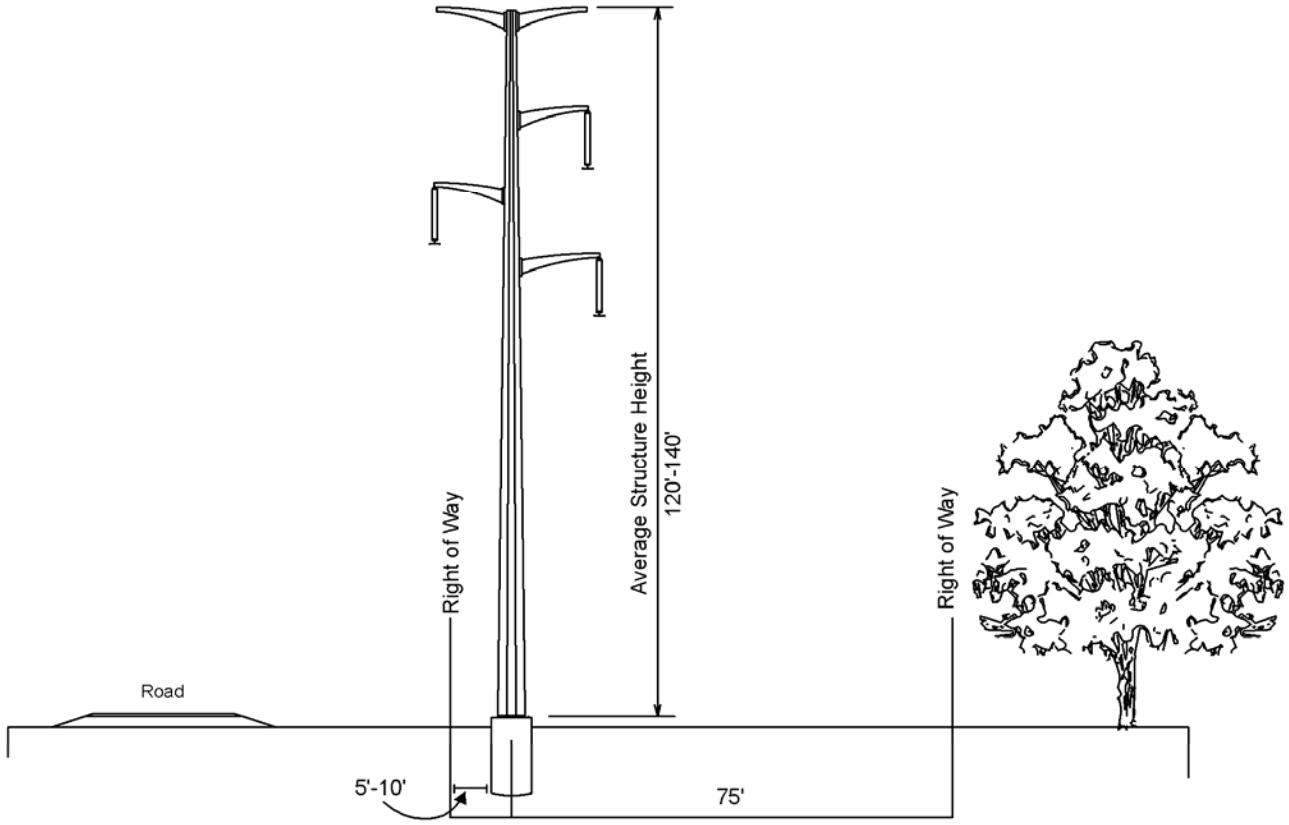
### 19.2.2 AGRICULTURAL IMPACT

Permanent impacts will occur to farmland throughout the corridor; no impacts are anticipated to livestock operations. However, these impacts will be minimal and will occur primarily due to pole placement. During construction, temporary impacts such as soil compaction and crop damages within the ROW are likely to occur. Approximately 22 acres of agricultural land will be impacted temporarily by the Facility. This temporary impact is from a temporary road located along the length of the route to allow construction access to the Facility. Permanent impacts to agricultural lands will result in areas where poles are placed and are estimated at approximately 0.07 acres.

Impacts to land uses adjacent to the transmission line will be minimized by using single, steel poles, which will minimize impacts to agriculture, the primary land use along the route. Xcel Energy considered using H-frame structures, which would have been shorter, but are wider and utilize two poles; however, H-frame structures require a wider ROW and would increase impacts on farming activities and other land uses adjacent to the route.

Wherever possible, poles will be placed so that they closely follow the roadway ROW, minimizing permanent impacts to agricultural land. To minimize loss of farmland and ensure reasonable access to the land near the poles, Xcel Energy intends to place the poles approximately five to ten feet from the interstate ROW. Figure 7 shows the placement of poles in relation to the interstate ROW. This placement will result in the conductors overhanging highway ROW, though not the actual roadway. The poles on the existing double circuit transmission line in Segment D are set back approximately eight feet from the interstate ROW. This is standard practice for Xcel Energy transmission lines since it will minimize the overall impact to landowners by placing the poles adjacent to their property lines. This reduces potential conflicts for farmers to maneuver equipment around the poles and reduces the amount of ROW required for the Facility.

**FIGURE 7**
**ROW WHEN PARALLELING EXISTING ROAD**




**Xcel Energy 345 kV Davit Arm Structure**
**Right-of-Way Requirements**
**Adjacent to a Road Right of Way**

Xcel Energy will apply to the South Dakota Department of Transportation (SDDOT) for a Permit to Occupy highway ROW for these segments, as it has for the Minnesota portion of the project. In its application, Xcel Energy will demonstrate that:

- highway and traffic safety are not adversely affected;
- alternative location aren't available or aren't financially or operationally reasonable; accommodation will not adversely affect design, operation, maintenance or current or future se of the highway;
- disapproval of the permit will result in the loss of additional agricultural land or productivity, and
- restrictions on access for construction and maintenance are complied with.

The SDDOT has the discretion to grant such a permit. If the SDDOT does not approve Xcel Energy's request to occupy highway ROW, Xcel Energy will move the poles farther into agricultural fields, resulting in loss of additional agricultural land.

When possible, Xcel Energy will attempt to construct the transmission line before crops are planted or following harvest. However, due to the Facility's tight timeline, Xcel Energy cannot guarantee that construction will occur only outside the growing season. The Company will compensate landowners for crop damage and soil compaction that occurs as a result of the Facility. Soil compaction will be addressed by compensating the farmer to repair the ground or by using contractors to come in and chisel plow the site. Normally, a declining scale of payments is set up over a period of a few years.

No permanent impacts to livestock farms will result from the Facility.

### 19.2.3 TRANSPORTATION IMPACTS

The Facility will not result in any permanent impacts to the area's transportation resources. There may be some temporary impacts to local roads during the construction phase of the Facility. Xcel Energy will work with Minnehaha County to minimize any impacts to area transportation from the Facility.

There will be no impacts to I-90 since all construction and maintenance access will be from private ROW. The poles for the existing Segment D are constructed approximately eight feet outside of the highway ROW and this segment currently overhangs the highway ROW. Xcel Energy will apply to the SDDOT for a Permit to Occupy highway ROW for these segments. (see Section 19.2.2 for further discussion). Xcel Energy has notified the SDDOT

about this project and will continue to coordinate efforts with the agency to address concerns that may arise. Xcel Energy will apply for the same permit from the MN DOT for the Minnesota portion of the line.

There will be no impacts to the rail infrastructure, as the Facility will span the Burlington Northern Railroad tracks near Corson, immediately north of Brandon, South Dakota.

## 19.3 CULTURAL RESOURCE IMPACTS

The placement of the transmission line will determine the potential impacts to previously identified archaeological and architectural resources. Prior to construction activities, Xcel Energy will plan a site visit and locate the three previously recorded archaeological sites underneath Segment A and adjacent to Segment B. Site boundaries will be defined and recorded in relation to the proposed pole placements. Xcel Energy will also contact the SHPO with site boundaries, Facility location and information regarding potential impacts to the three cultural resources. Xcel Energy does not anticipate adverse impacts to previously identified resources as a result of the Facility and will make every effort to avoid identified resources throughout the life of the Facility.

In the event that an impact would occur, Xcel Energy would determine the nature of the impact and consult with the SHPO on whether or not the resource is eligible for listing in the NRHP. Mitigation for Facility-related impacts on NRHP-eligible archaeological resources may include an effort to minimize Facility impacts on the resource and/or additional documentation through data recovery.

If human remains should be inadvertently encountered during the excavation and construction, Xcel Energy will appropriately handle such a discovery in a manner compliant with SDCL 34-27.

## 20.0 EMPLOYMENT ESTIMATES (ARSD 20:10:22:24)

The relatively short-term nature of the Facility construction and the number of workers who will be hired from outside of the Facility area should result in short-term positive economic impacts in the form of increased spending on lodging, meals and other consumer goods and services. It is not anticipated that the Facility will create new permanent jobs, but it will create temporary construction jobs that will provide a one-time influx of income to the area. Table 5 summarizes the number of people Xcel Energy estimates will work on this Facility.

**TABLE 5**
**ESTIMATED NUMBERS OF WORKERS**

| Type of Work | Number of Employees | Comments |
|---|---|---|
| Land Rights | 4 | |
| Survey | 2 | |
| Construction – Foundations | 10-12 | |
| Construction – Poles | 35-40 | |
| Construction – Substation | 8-12 | |
| Office Personnel | 4 | Infrequent Visits |

# 21.0 FUTURE ADDITIONS AND MODIFICATIONS (ARSD 20:10:22:25)

Xcel Energy does not plan any additions or modifications to the Facility in the foreseeable future.

# 22.0 TRANSMISSION FACILITY LAYOUT AND CONSTRUCTION (ARSD 20:10:22:34)

## 22.1 ROUTE CLEARING

During the acquisition phase, individual property owners will be advised as to the construction schedules, needed access to the site and any vegetation clearing required for the Facility. The ROW will be cleared of the amount of vegetation necessary to construct, operate and maintain the Facility. All tree species whose mature height will be a hazard to the safe operation of the transmission line will be removed. Bushes and other low growing vegetation within the ROW shall be left when possible. Clear cutting, being the removal of all trees, brush and other low growing vegetation, will be used at construction and maintenance access roads and at structure erection sites. Danger trees outside the ROW limits are those trees which could, in falling, hit the transmission line. Other trees, which are decayed or leaning or may become a potential hazard to the line, will also be removed. Disposal of timber, tree tops, limbs and slash will comply with state and local ordinances. Wood from the clearing operation will be offered to the landowner or removed from the site.

## 22.2 STAGING AND LAY DOWN AREAS

Where possible, staging and lay down areas will be located within the ROW and limited to previously disturbed or developed areas. When additional property is temporarily required for construction, temporary limited easements (TLE) may be obtained from landowners for the duration of construction. TLEs will be limited to special construction access needs or additional staging or lay down areas required outside of the transmission line ROW. Xcel Energy expects that the Split Rock Substation property will be used for the storage of materials during construction.

## 22.3 TRANSMISSION CONSTRUCTION PROCEDURES

Construction is planned to begin once required approvals are obtained and easement acquisition is completed. A detailed construction schedule will be developed based upon availability of crews, outage restrictions for lines that may be affected, weather conditions, spring load restrictions on roads and any restrictions placed on certain areas for minimizing permanent impacts from construction.

The Facility will be constructed from existing grade for the majority of the ROW. Generally, moderately sloping terrain conditions have minimal impact on site access by most

construction equipment. Flat, level terrain conditions are preferred at, and immediately around, the structure foundation location. Grading is anticipated where it may be necessary to create a level area for foundation construction, construction access and activities at the structure sites. Since the majority of the terrain is flat in this Facility area, Xcel Energy does not expect to conduct a significant amount of grading or to construct major access roads. If a contiguous area of more than one acre is graded, Xcel Energy or an Xcel Energy contractor will acquire the appropriate permits.

The single, steel poles will be approximately four to six feet in diameter for the 345 kV line, and will require six to eight foot diameter, drilled pier foundations approximately 30 to 40 feet deep. Excess soil will be removed from the site unless otherwise requested by the landowner. Structures located in poor or wet soil conditions may require a specially engineered foundation such as a pile foundation or steel caisson that would be vibrated into the ground.

Erosion control methods will be implemented to minimize runoff during construction. Construction crews will comply with local, state, National Electric Safety Code (NESC) and Xcel Energy standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, ROW widths, erection of power poles and stringing of transmission line conductors.

Poles will be delivered to the staked location, the Split Rock substation site, or a temporary storage yard leased from a local landowner. If the poles are delivered to the location where they will be installed, they will be placed on the ROW out of the clear zone of any adjacent roadways or designated pathways. Insulators and other hardware will be attached while the pole is on the ground. The pole will then be lifted, placed and secured on the foundation by a crane.

Once the structures have been erected, conductors will be installed by establishing stringing setup areas within the ROW. The stringing setup areas will usually be established every two miles along the Facility route. Conductor stringing operations will also require brief access to each structure to secure the conductor wire to the insulators and to install shield wire clamps once final sag is established. Temporary guard or clearance poles will be installed as needed over existing distribution lines, communication lines, streets, roads, highways, railways 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.

## 22.4 SUBSTATION CONSTRUCTION PROCEDURES

Xcel Energy will grade approximately one acre on the east side of the Split Rock Substation to accommodate the improvements there. Once the expansion area is graded, a perimeter fence will be installed to secure the site and concrete foundations will be poured to support the substation equipment. At that point, erection of the substation equipment would commence. Final grade will be established by placing crushed rock or gravel over the graded area.

Xcel Energy provides erosion control methods to be implemented to minimize runoff during substation construction and since the Facility will impact more than one acre, a National Pollutant Discharge Elimination System (NPDES) permit will be acquired. Xcel Energy construction crews or an Xcel Energy contractor will comply with local, state, NESC and Xcel Energy standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, ROW widths, erection of power poles and stringing of transmission line conductors. Additionally, a Storm Water Pollution Prevention Plan (SWPPP) will be implemented in compliance with the NPDES permit.

### 22.4.1 RESTORATION PROCEDURES

During construction, crews will attempt to limit ground disturbance wherever possible. Upon completion of construction activities, ruts will be leveled and landowners will be contacted to determine if any additional restoration due to construction damage is necessary. Disturbed areas will be restored to their original condition to the maximum extent practicable and as negotiated with the landowner. Post-construction reclamation activities include the removing and disposing of debris, dismantling all temporary facilities (including staging and lay down areas), employing appropriate erosion control measures and reseeding areas disturbed by construction activities with vegetation similar to that which was removed. Xcel Energy will compensate landowners for crop damage and soil compaction that occurs as a result of the Facility. Soil compaction will be addressed by compensating the farmer to repair the ground or by using contractors to come in and chisel plow the site. Normally, a declining scale of payments is set up over a period of a few years.

### 22.4.2 MAINTENANCE PROCEDURES

Xcel Energy will periodically use the ROW to perform inspections, maintain equipment and make repairs over the life of the line. Xcel Energy will also conduct routine maintenance to remove undesired vegetation that may interfere with the safe and reliable operation of the Facility.

Xcel Energy will perform periodic inspections, maintain equipment and make repairs over the life of the substation. Xcel Energy will also conduct routine maintenance as required to remove undesired vegetation that may interfere with the safe and reliable operation of the substation.

# 23.0 INFORMATION CONCERNING TRANSMISSION FACILITIES (ARSD 20:10:22:35)

## 23.1 CONFIGURATION OF TOWERS AND POLES

Xcel Energy is proposing to use davit arm, single pole, galvanized steel structures for the 345 kV transmission line. These structures will be erected on concrete foundations approximately six to eight feet in diameter, and approximately 30 to 40 feet in depth. The structures will have an average height of 120 to 140 feet and an average span of 950 feet.

Figure 8 shows a single circuit 345 kV structure of the type that would be used in Segments C and E.

Figure 9 shows a 345 kV/345 kV double circuit structure of the type that is in use on Segments B and D and would be used in Segment A.

Special structures may be utilized in areas where long spans, corner structures or special issues arise such as wetland or avian issues.

**FIGURE 8**
**SINGLE CIRCUIT 345 KV STRUCTURE**

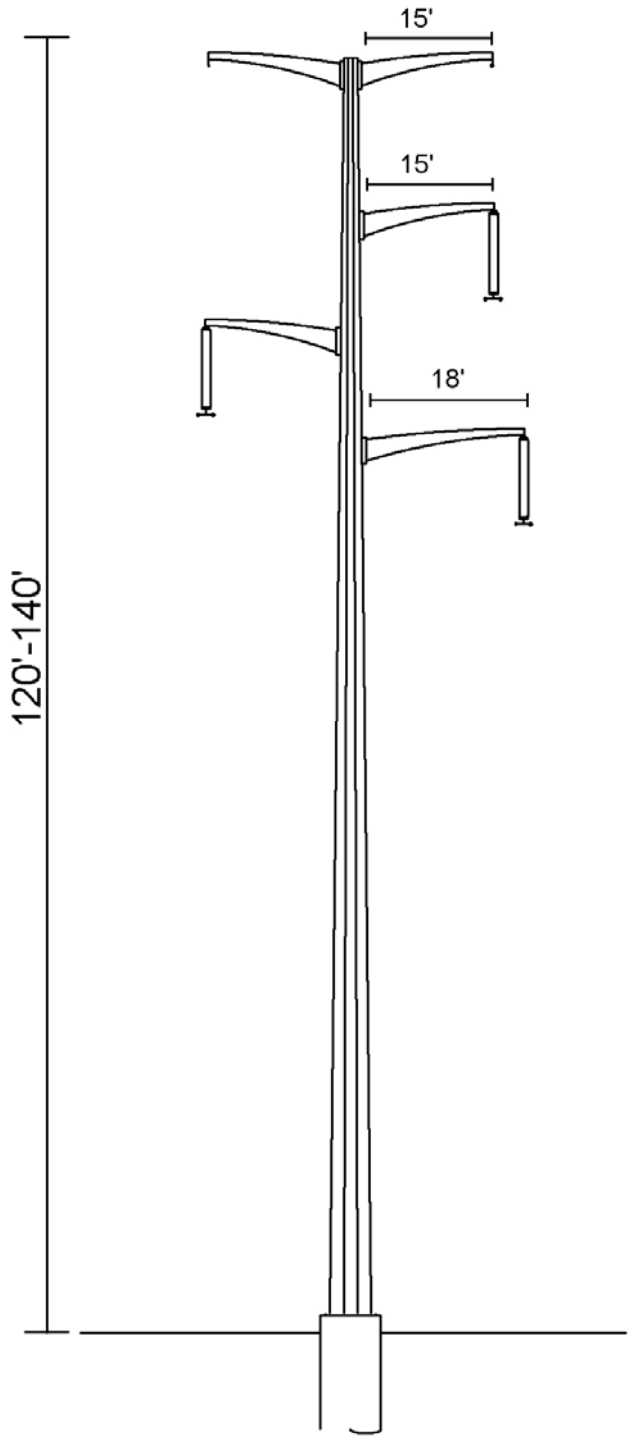
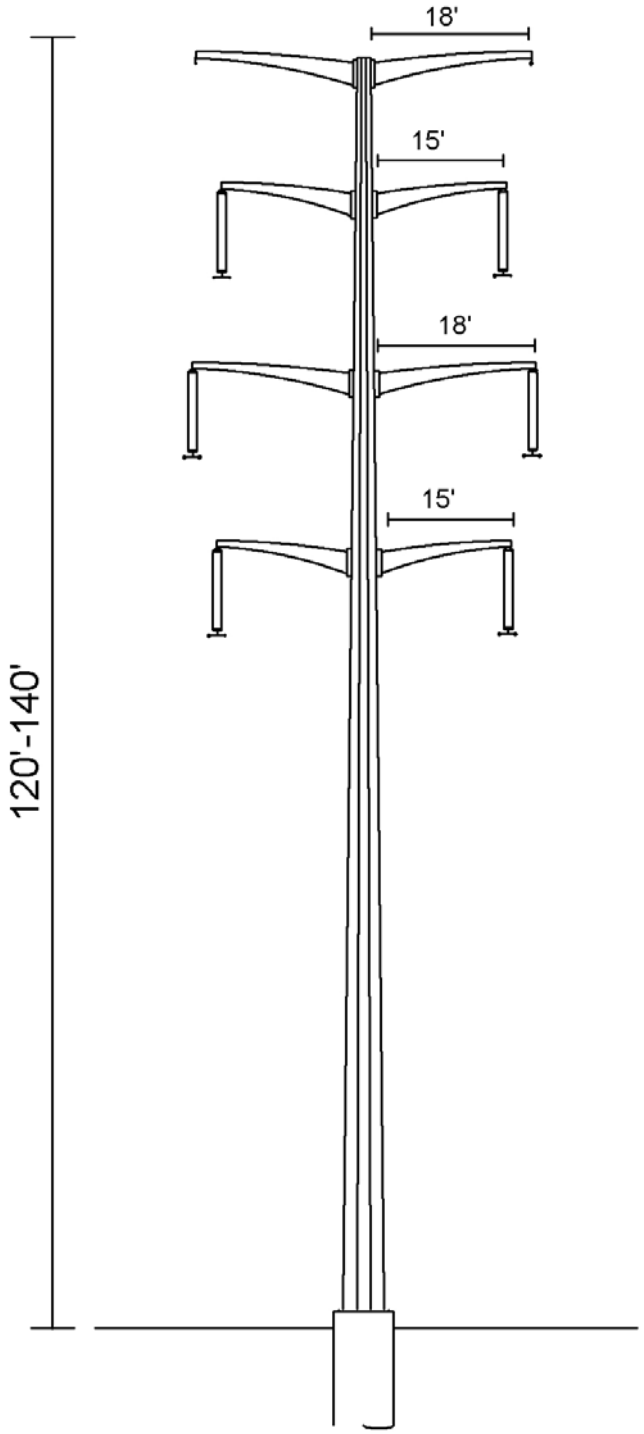


**FIGURE 9**
**DOUBLE CIRCUIT 345/345 KV STRUCTURE**



## 23.2 CONDUCTOR CONFIGURATION

Xcel Energy plans to use double bundled (two conductors) 954 thousand circular mils (kcmil) Type 13, Cardinal/Aluminum Core Steel Supported (ACSS)/trapezoidal wire (TW) for each phase of the three-phase configuration. The span between structures will be approximately 950 feet, although the actual span may vary somewhat.

## 23.3 PROPOSED TRANSMISSION SITE AND MAJOR ALTERNATIVES

The Facility and major alternatives are identified in Sections 8.0 and 9.2 and shown in relation to aerial photos in Exhibits C.1a and 1b and in relation to land use and zoning in Exhibits C.4 and C.5.

## 23.4 RELIABILITY AND SAFETY

### 23.4.1 TRANSMISSION LINE RELIABILITY

The MPUC considered reliability when it issued a CON for a system of four new transmission lines, including the 345 kV transmission line for which a site permit is sought in this Application. In granting its approval, the MPUC determined the system of lines was the most reasonable and prudent option to reliably increase outlet capacity from the Buffalo Ridge area. The Facility proposed in this Application is designed to support electric system reliability.

Xcel Energy's proposed project will enhance long-term electric system reliability to the Sioux Falls area by bringing a third independent 345 kV source to the Split Rock Substation. The addition of an independent, single-circuit 345 kV line will significantly reduce the likelihood that a common-mode failure, such as a lightning strike or flying debris, will result in the loss of all 345 kV circuits to the Split Rock Substation.

### 23.4.2 SAFETY

Proper safeguards will be implemented for construction and operation of the facility. The Facility will be designed with the local, state, NESC and Xcel Energy standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials and ROW widths. Construction crews will comply with local, state, NESC and Xcel Energy standards regarding installation of facilities and standard construction practices. Established Xcel Energy and industry safety procedures will be followed during and after installation of the transmission line. This will include clear signage during all construction activities.

The proposed transmission line will be equipped with protective devices to safeguard the public from the transmission line if an accident occurs and a structure or conductor falls to the ground. The protective devices are breakers and relays located where the line connects to the substation. The protective equipment will de-energize the line should such an event occur. In addition, the substation will be fenced and access limited to authorized personnel. The costs associated with these measures have not been tabulated separately from the overall Facility costs since these measures are standard practice for Xcel Energy.

#### 23.4.2.1 Electric Fields

Voltage on any wire (conductor) produces an electric field in the area surrounding the wire. The electric field associated with a high voltage transmission line extends from the energized conductors to other nearby objects such as the ground, towers, vegetation, buildings and vehicles. The electric field from a power line gets weaker as one moves away from the line. Nearby trees and building material also greatly reduce the strength of power line electric fields.

The intensity of electric fields is associated with the voltage of the line and is measured in kilovolts per meter (kV/M). Power line electric fields near ground are designated by the difference in voltage between two points (usually one meter).

The proposed 345 kV transmission line will have a maximum magnitude of electric field density of approximately 4.6 kV/M underneath the conductors one meter above ground level. This is significantly less than the maximum limit of eight kV/M that has been a permit condition imposed by the EQB in other transmission line applications. The EQB standard was designed to prevent serious hazard from shocks when touching large objects, such as tractors, parked under extra high voltage transmission lines of 500 kV or greater.

#### 23.4.2.2 Magnetic Fields

Current passing through any conductor, including a wire, produces a magnetic field in the area around the wire. The magnetic field associated with a high voltage transmission line surrounds the conductor and decreases rapidly with increasing distance from the conductor. The magnetic field is expressed in units of magnetic flux density, expressed as gauss (G).

The question of whether exposure to power-frequency (60 Hertz (Hz)) magnetic fields can cause biological responses or even health effects has been the subject of considerable research for the past three decades. The most recent and exhaustive reviews of the health effects from power-frequency fields conclude that the evidence of health risk is weak. The

National Institute of Environmental Health Sciences (NIEHS) issued its final report, *NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields,* on June 15, 1999, following six years of intensive research. NIEHS concluded that there is little scientific evidence correlating extra low frequency electromagnetic field (EMF) exposures with health risk.

While the general consensus is that electric fields pose no risk to humans, the question of whether exposure to magnetic fields potentially can cause biological responses or even health effects continues to be the subject of research and debate. In addressing this issue, Xcel Energy provides information on EMF to the public, interested customers and employees to assist them in making an informed decision about EMF. Xcel Energy will provide measurements for landowners, customers and employees who request them. In addition, Xcel Energy has followed the "prudent avoidance" guidance suggested by most public agencies. This includes using structure designs that minimize magnetic field levels and attempting to site facilities in locations with lower residential densities.

#### 23.4.2.3 Stray Voltage

Stray voltage is defined as a natural phenomenon that can be found at low levels between two contact points in any animal confinement area where electricity is grounded. By code, electrical systems, including farm systems and utility distribution systems, must be grounded to the earth to ensure continuous safety and reliability. Inevitably, some current flows through the earth at each point where the electrical system is grounded and a small voltage develops. This voltage is called neutral-to-earth voltage (NEV). When a portion of this NEV is measured between two objects that may be simultaneously contacted by an animal, it is frequently called stray voltage. Stray voltage is not electrocution, ground currents, EMFs or earth currents. It only affects farm animals that are confined in areas of electrical use. It does not affect humans.

Stray voltage has been raised as a concern on some dairy farms because it can impact operations and milk production. Problems are usually related to the distribution and service lines directly serving the farm or the wiring on a farm. In those instances when transmission lines have been shown to contribute to stray voltage, the electric distribution system directly serving the farm or the wiring on a farm was directly under and parallel to the transmission line. These circumstances are considered in installing transmission lines and can be readily mitigated. The proposed 345 kV transmission line is not proposed to run parallel to any existing distribution line for long distances. Therefore, no stray voltage issues are anticipated with this Facility.

## 23.5 RIGHT-OF-WAY OR CONDEMNATION REQUIREMENTS

The Facility crosses approximately 25 parcels. The schedule for contacting landowners will be developed by Xcel Energy's contractor and formal easement negotiations are expected to begin next year. The expansion of the Split Rock Substation will not require additional property. The majority of the landowners are expected to be aware of the Facility since Xcel Energy has already notified landowners potentially affected by the Facility and held two public meetings in the project area to describe the Facility and permitting process. Right of Way Agents will work with the landowners at an early stage to answer questions about the Facility and to obtain permission for route surveys and soil investigations prior to construction. As the design of the line is further developed, contacts with the owners of affected properties will continue and the negotiation and acquisition phase will begin for Xcel Energy to obtain the necessary land or easement rights for the facilities. At this time, Xcel Energy does not anticipate any condemnation will be required for the Facility.

Many structure locations will require soil investigation to assist with the design of the foundations. Xcel Energy will inform the landowners at the initial survey consultation that soil borings may occur. An independent geotechnical testing company will take and analyze these borings. Survey crews also work with local utilities to identify underground utilities along the route. This minimizes conflicts or impacts to existing utilities along the route.

Where possible, staging and lay down areas will be located within the ROW and limited to previously disturbed or developed areas. When additional property is temporarily required for construction, TLEs may be obtained from landowners for the duration of construction. TLEs will be limited to special construction access needs or additional staging or lay down areas required outside of the transmission line ROW.

## 23.6 NECESSARY CLEARING ACTIVITIES

Xcel Energy does not anticipate that the Facility will require major tree clearing. Trees will need to be cleared as Segment A crosses the Big Sioux River and isolated trees may need to be cleared to allow safe operation of the transmission line. General ROW clearing and maintenance is described in Section 22.0.

## 23.7 UNDERGROUND TRANSMISSION

No portion of the Facility will require underground transmission. Transmission lines can be placed underground but at substantial additional expense compared to overhead construction. For example, placing a 69 kV transmission line underground costs 10 times as much as building overhead. Because of the significantly greater expense associated with

underground transmission construction, the use of underground technology is limited to locations where the impacts of overhead construction are completely unacceptable or where physical circumstances allow for no other option. Xcel Energy concluded that the environmental and land use setting did not warrant underground construction on any of the four lines.

## 24.0 ADDITIONAL INFORMATION IN APPLICATION (ARSD 20:10:22:36)

Xcel Energy believes that this Application contains all the information required to meet Xcel Energy's burden of proof specified at SDCL 49-41B-22. No additional information is provided.

# 25.0 TESTIMONY AND EXHIBITS (ARSD 20:10:22:39)

## 25.1 LIST OF PREPARERS

The following people contributed to the report:

Xcel Energy:

- Andrew Beckel
- Ron Flynn
- Brad Hill
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May, Adam, Gerdes & Thompson

- David Gerdes

HDR Engineering

- Michael Madson
- Bruce Moreira
- Erika Palmer
- Joyce Pickle
- Angela Piner
- Beth Regan
- Dan Schmidt
- Suzanne Steinhauer

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# 27.0 LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ACSS | Aluminum Core Steel Supported |
| AMSL | above mean sea level |
| APP | avian protection plan |
| ARSD | South Dakota Administrative Rules |
| BMP | best management practice |
| BPA | Bonneville Power Administration |
| cfs | cubic feet per second |
| cmil | A unit of measure, most often used to define the area of a wire. The area of a circle one one-thousandth (0.001) inches in diameter. |
| Commission | South Dakota Public Utilities Commission |
| CON | Certificate of Need |
| CRGRID | Cultural Resource Geographic Research Information Display |
| d/b/a | doing business as |
| DENR | South Dakota Department of Environment and Natural Resources |
| EMF | electromagnetic field |
| EQB | Minnesota Environmental Quality Board |
| EPP | Eagle Protection Plan |
| G | Gauss |
| GFP | South Dakota Department of Game, Fish and Parks |
| Hz | Hertz |
| kcmil | thousand circular mils |
| kV | kilovolt |
| kV/M | kilovolts per meter |
| mg/L | milligrams per liter – equivalent to parts per million (ppm) |
| mil | A measurement of length or width; also of volume and angle. One mil is 0.001 inches length or width. |
| MDOT | Minnesota Department of Transportation |
| MISO | Midwest Independent System Operator |
| MOU | memorandum of understanding |
| MPUC | Minnesota Public Utilities Commission |
| MW | megawatts |
| NEA | Northwest Economic Associates |
| NESC | National Electrical Safety Code |
| NEV | neutral-to-earth voltage |
| NIEHS | National Institute of Environmental Health Sciences |
| NPDES | National Pollution Discharge Elimination System |
| NRCS | National Resources Conservation Service |

| | |
|---|---|
| NRHP | National Register of Historic Places |
| NWI | National Wetlands Inventory |
| pH | potential of Hydrogen |
| ppm | parts per million |
| psig | pounds per square inch gauge |
| PUC | Public Utilities Commission |
| ROW | Right-of-way |
| SDACR | South Dakota Archaeological Research Center |
| SDCL | South Dakota Codified Law |
| SDDOT | South Dakota Department of Transportation |
| SFD | swan flight diverter |
| SHPO | South Dakota State Historic Preservation Office |
| SWPPP | Storm Water Pollution Prevention Plan |
| TLE | temporary limited easements |
| tmdl | total maximum daily load |
| tss | total suspended solids |
| TW | trapezoidal wire |
| USDA | United States Department of Agriculture |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| Western | Western Area Power Administration |
| Xcel Energy | Northern States Power Company, a Minnesota Corporation d/b/a Xcel Energy |

# EXHIBIT A
# CERTIFICATE OF NEED

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

| | |
|---|---|
| LeRoy Koppendrayer | Chair |
| Ellen Gavin | Commissioner |
| Marshall Johnson | Commissioner |
| Phyllis A. Reha | Commissioner |
| Gregory Scott | Commissioner |

In the Matter of the Application of Northern States Power Company d/b/a Xcel Energy for Certificates of Need for Four Large High Voltage Transmission Line Projects in Southwestern Minnesota

ISSUE DATE: March 11, 2003

DOCKET NO. E-002/CN-01-1958

ORDER GRANTING CERTIFICATES OF NEED SUBJECT TO CONDITIONS

## PROCEDURAL HISTORY

### I. Initial Proceedings

On December 28, 2001, Northern States Power Company d/b/a Xcel Energy (Xcel or the Company) filed an application under Minn. Stat. § 216B.243 and Minnesota Rules, Chapter 7849 for certificates of need to construct four high voltage transmission lines in southwestern Minnesota to provide outlet capacity for wind generation expected to develop there.

On February 11, 2002, the Commission issued an Order finding the application substantially complete and referring the case to the Office of Administrative Hearings for contested case proceedings. The case was assigned to Administrative Law Judge Beverly Jones Heydinger.

### II. The Parties and their Representatives

The following persons and organizations were parties to this proceeding and were represented as set forth below.

Northern States Power Company d/b/a Xcel Energy, represented by Michael C. Krikava and Lisa Agrimonti, Briggs and Morgan, P.A., 2400 IDS Center, 80 South 8th Street, Minneapolis, Minnesota 55402.

Minnesota Department of Commerce, represented by Julia E. Anderson, Assistant Attorney General, 525 Park Street, Suite 200, St. Paul, Minnesota 55103.

The staff of the Minnesota Environmental Quality Board, represented by Dwight S. Wagenius, Assistant Attorney General, 525 Park Street, Suite 200, St. Paul, Minnesota 55101-7345.

Laura and John Reinhardt, 3552 26th Avenue South, Minneapolis, Minnesota 55406, appeared on their own behalf.

The North American Water Office, represented by George Crocker, P. O. Box 174, Lake Elmo, Minnesota 55042.

Public Intervenors Network, represented by Carol Overland, Attorney at Law, Box 559, Red Wing, Minnesota 55066.

Sierra Club of Minnesota Air Toxics Campaign, represented by Paula Goodman Maccabee, Attorney at Law, 1916 Selby Avenue, St. Paul, Minnesota 55104.

Izaak Walton League of America, represented by Peter T. Grills and Carl T. Williams, O'Neill, Grills & O'Neill, W1750 First National Bank Building, 352 Minnesota Street, St. Paul, Minnesota 55101, and by Beth Soholt, Senior Energy Associate, Izaak Walton League of America, Midwest Office, 1619 Dayton Avenue, St. Paul, Minnesota 55104.

American Wind Energy Association, represented by John R. Dunlop, Regional Manager, 448 Morgan Avenue South, Suite 300, Minneapolis, Minnesota 55405.

Rural Minnesota Energy Task Force, represented by Kevin Walli, Fryberger, Buchanan, Smith & Frederick, 386 North Wabasha Street, Suite 1190, St. Paul, Minnesota 55102, and by David Benson, Task Force Chair, Nobles County Commissioner, and Jack Keers, Pipestone County Commissioner.

Minnesotans for an Energy-Efficient Economy, represented by Michael Noble, Executive Director, Minnesota Building, Suite 600, 46 East Fourth Street, St. Paul, Minnesota 55101.

Minnesota Power, represented by Deborah A. Amberg, Attorney at Law, 30 West Superior Street, Duluth, Minnesota 55802.

## III. Proceedings Before the Administrative Law Judge

The Administrative Law Judge held evidentiary hearings in the case on May 6-9, May 13-17, 2002, May 20-25, 2002, May 29, 2002, June 25-28, 2002, and July 3, 2002. The parties filed initial briefs and reply briefs after the close of hearings.

The Administrative Law Judge held public hearings on six dates: May 7 and 7 in Worthington, May 8 in Pipestone, May 9 in Redwood Falls, and May 13 and 14 in St. Paul.

On November 8, 2002, the Administrative Law Judge filed her Findings of Fact, Conclusions of Law, and Recommendation (the ALJ's Report). In brief, that report recommended

(a) granting an immediate certificate of need for one line;

(b) granting certificates of need for the other three lines subject to further environmental review and subject to conditions designed to ensure that they would be used for their stated purpose of transmitting wind energy;

(c) requiring Xcel to continue discussions with local elected officials and wind developers to identify and address barriers to small wind development, especially as they relate to the construction and financing of substations; and

(d) requiring Xcel to file periodic compliance reports.

## IV. Proceedings Before the Commission

On or before November 25, 2002, the parties filed exceptions to the report of the Administrative Law Judge. The Commission heard oral argument from all parties on January 23, 2003 and held deliberations on January 30, 2003. Having reviewed the entire record herein, and having heard the arguments of all parties, the Commission makes the following Findings, Conclusions, and Order.

## FINDINGS AND CONCLUSIONS

## I. Introduction

This is a unique certificate of need application because the Company does not claim that the transmission lines it proposes are needed as need is usually defined in certificate of need proceedings – it does not claim that they are needed to meet increased demand for electricity. Instead, the Company claims that the lines are needed to meet a transmission deficit that is preventing the development of wind energy in Minnesota, thereby frustrating state policies requiring Minnesota utilities in general, and Xcel in particular, to rely more heavily on wind generation.

The Company proposes to remedy the transmission deficit by building four transmission lines across some 168 miles in southwestern Minnesota. These lines would carry electricity from the Buffalo Ridge region, the site of the state's richest wind resources, to areas of the state with the greatest demand for electricity.

Many of the generation facilities the lines would be built to serve have not yet been built, because it is pointless to build generation without assurance that adequate transmission will be available. Since it is also pointless to build transmission without assurance that adequate generation will be available, Buffalo Ridge's rich wind resources remain underdeveloped. The proposed lines are intended to end this stalemate, permitting further wind development on Buffalo Ridge and implementing the state's policy of reducing dependence on fossil fuels through increased use of renewable energy.

This application is also unique because it carries the risk that the proposed transmission lines will not be used for the purpose for which they are intended and for which any certificates of need would be granted. Transmission is an interstate activity regulated by the Federal Energy Regulatory Commission. Under federal law, Xcel cannot reserve the proposed lines for wind generation; in fact, it cannot even reserve them for its own use, except under carefully defined circumstances.

Access to the Company's transmission lines is determined by the terms of its federal open access transmission tariff, which must and does permit access on a non-discriminatory, first-come, first-served basis. The Company's transmission lines, and access to them, are controlled by the Midwest Independent System Operator (MISO), a neutral third party recognized as an appropriate administrator under federal law.

While the rules governing a utility's access to its own transmission lines are still in flux, at the time of evidentiary hearings and oral argument Xcel believed that it could reserve transmission capacity for new generation that it designated as a "network resource" and that it could reserve transmission capacity necessary to serve future load growth.[1]

---

[1] ALJ's Report, ¶ 79.

This uncertainty about the proposed transmission lines' ultimate availability to carry wind generation led the Administrative Law Judge and most of the parties to recommend placing conditions on any certificates of need ultimately granted to maximize the likelihood that transmission lines built under these certificates would be used for their stated purpose.

## II. The Legal Standard

The certificate of need statute directs the Commission to "adopt assessment of need criteria to be used in the determination of need for large energy facilities pursuant to this section."[2] The statute also directs the Commission to evaluate the following factors in assessing need:[3]

(a) the accuracy of the long-range energy demand forecasts on which the necessity for the facility is based;

(b) the effect of existing or possible energy conservation programs under Minn. Stat. § 216C.05 through 216C.30 or other federal or state legislation on long-term energy demand;

(c) the relationship of the proposed facility to overall state energy needs, as described in the most recent state energy policy and conservation report prepared under Minn. Stat. § 216C.18;

(d) promotional activities that may have given rise to the demand for this facility;

(e) benefits of this facility, including its uses to protect or enhance environmental quality, and to increase reliability of energy supply in Minnesota and the region;

(f) possible alternatives for satisfying the energy demand or transmission needs including but not limited to potential for increased efficiency and upgrading of existing energy generation and transmission facilities, load-management programs, and distributed generation;

(g) the policies, rules, and regulations of other state and federal agencies and local governments; and

(h) any feasible combination of energy conservation improvements, required under Minn. Stat. § 216B.241, that can (i) replace part or all of the energy to be provided by the proposed facility; and (ii) compete with it economically.

To comply with its statutory obligation to establish criteria for assessing need, the Commission has adopted the certificate of need rules, Minnesota Rules Chapter 7849. Those rules are detailed, but in brief, they require the Commission to issue a certificate of need when the applicant demonstrates four things:

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[2] Minn. Stat. § 216B.243, subd. 1.

[3] Minn. Stat. § 216B.243, subd. 3.

(a) the probable result of denial would be an adverse effect upon the future adequacy, reliability, or efficiency of energy supply to the applicant, to the applicant's customers, or to the people of Minnesota and neighboring states;

(b) a more reasonable and prudent alternative to the proposed facility has not been demonstrated by a preponderance of the evidence on the record;

(c) by a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health; and

(d) the record does not demonstrate that the design, construction, or operation of the proposed facility, or a suitable modification of the facility, will fail to comply with relevant policies, rules, and regulations of other state and federal agencies and local governments.

Minn. Rules 7849.0120.

The rules also set forth factors to consider in evaluating whether the applicant has met the requirements of criteria A, B, and C.

## III. The Company's Filing

The Company requested authority to build transmission facilities capable of moving 825 megawatts of electricity from the Buffalo Ridge area to its northern control area. Its initial filing presented detailed information about four alternatives, with the Company's initially preferred option, Option 1, comprising the following parts:

- a 24-mile, 161-kilovolt line from Lakefield to Fox Lake
- a 94-mile, 345-kilovolt line from Split Rock, South Dakota to Lakefield
- a 24-mile, 115-kilovolt line running through Chanarambie Township Fenton Township, and Nobles County
- a 14-mile, 115-kilovolt line running through Fenton Township and Nobles County

In the course of the hearings the Company developed another option, Option 1H, in response to other parties' testimony, which improved transmission access along the northern portion of the Buffalo Ridge area. Option 1H, which the Company subsequently adopted as its preferred option and which the Administrative Law Judge found to be the most reasonable and prudent alternative based on the record, comprises the following parts:

- a 24-mile, 161-kilovolt line from Lakefield to Fox Lake
- a 94-mile, 345-kilovolt line from Split Rock, South Dakota to Lakefield
- a 24-mile, 115-kilovolt line running through Chanarambie Township, Fenton Township, and Nobles County

- a 26-mile, 115-kilovolt line running from Buffalo Ridge to the Company's Yankee Substation to White, South Dakota

Option 3, which the Administrative Law Judge considered a close second to Option 1H, comprises the following parts:

- a 24-mile, 161-kilovolt line from Lakefield to Fox Lake
- a 52-mile, 161-kilovolt line connecting the Company's Chanarambie and Heron Lake substations
- a 26-mile, 115-kilovolt line running from Buffalo Ridge through the Company's Yankee Substation to White, South Dakota
- a 44-mile 115-kilovolt line connecting the Company's Lyon substation with its Franklin substation

## IV. The Administrative Law Judge's Report and Recommendations

The Administrative Law Judge found that Xcel had demonstrated need under the certificate of need statute and rules for transmission facilities with the capacity to carry 825 megawatts of wind energy from the Buffalo Ridge area. She found that record evidence established that the most reasonable and prudent alternative was Option 1H.

The Administrative Law Judge found that Xcel had demonstrated current need for the 161-kilovolt line connecting Lakefield and Fox Lake and recommended granting an immediate certificate of need for that line, contingent upon the Company receiving MISO approval to use the line to carry wind generation that it already had under contract.

The Administrative Law Judge recommended that the Commission issue certificates of need for the other three lines subject to two conditions:

> (1) that the Environmental Quality Board examine both Options 1H and 3 during the siting proceeding and determine that the three remaining lines in Option 1H will not have a significantly greater negative impact on the environment than the three remaining lines in Option 3; and
>
> (2) that Xcel demonstrate before placing the other three lines in service that MISO has approved transmission requests for a total of 825 megawatts of wind generation that will connect with the system through the two substations associated with the new lines.

The Administrative Law Judge made two additional recommendations:

> (1) requiring Xcel to work with elected officials and wind developers to establish criteria for siting new substations in response to wind development and to clarify which costs would be borne by the generator and which by Xcel; and
>
> (2) requiring Xcel to file annual reports on (a) the number of wind transmission requests pending with MISO from generators on Buffalo Ridge; (b) the number of wind transmission requests granted by MISO to generators on Buffalo Ridge; and (c) Xcel's efforts to facilitate small wind development (10 MW) or less on Buffalo Ridge.

## V. Positions of the Parties

### A. Xcel

The Company opposed deferring a final decision on which option to certify until the siting proceeding, claiming that the record demonstrated that Option 1H was the superior option. The Company also claimed that referring both options to the Environmental Quality Board for environmental review would be inconsistent with both the certificate of need and the siting statutes and that it would make the siting proceeding unnecessarily costly, burdensome, and confusing.

The Company opposed conditioning operation of three of the four lines on MISO approval of 825 megawatts of Buffalo Ridge wind generation. The Company claimed that this condition would violate federal law, impede wind development, and jeopardize the Company's ability to proceed with construction in light of the uncertainty it would create regarding rate recovery of the cost of a potentially unusable investment.

The Company urged Commission adoption of Option 1H without conditions and the adoption of the remainder of the ALJ's recommendations. The Company claimed that it is so clear that wind development will accompany the building of the proposed transmission lines that conditions to ensure their use for wind transmission are unnecessary.

### B. The Department of Commerce

The Department of Commerce (the Department) opposed stand-alone certification of the first line in Option 1H on grounds that the record did not support it. All record evidence, the Department argued, went to the issue of the need to, and the most reasonable and prudent means to, move 825 megawatts of wind energy from Buffalo Ridge. The need to, and the most reasonable and prudent means to, move smaller amounts of wind energy were not examined in the record, and in the absence of record evidence there is no way to make a competent judgement on those issues.

The Department opposed referring both Options 1H and 3 to the Environmental Quality Board for environmental review for much the same reasons as the Company.

The Department opposed the ALJ's recommendation to condition operation of the lines on MISO approval of 825 megawatts of wind transmission on grounds that that condition had not been explored on the record, making its impact unclear. The Department recommended conditioning approval of the lines' construction on Xcel itself contracting to buy a total of 825 megawatts of wind energy from the Buffalo Ridge area and taking the steps necessary to secure MISO approval for its transmission.

### C. The Staff of the Environmental Quality Board

The staff of the Environmental Quality Board (the EQB staff) filed no exceptions to the ALJ's Report, identified three alternative courses of action open to the Commission, and took no position on which course of action the Commission should take.

The three courses of action identified by the EQB staff were (1) reject the Administrative Law Judge's recommendation to refer two options to the EQB for environmental development and limit certification to one or none; (2) remand the case to the Administrative Law Judge for further development of the environmental record; or (3) refer both options to the EQB for further environmental development.

### D. Laura and John Reinhardt

Laura and John Reinhardt opposed granting any certificate of need in this proceeding, arguing that the application failed to demonstrate need as that term is used in the certificate of need statute and rules. They argued that the record was inadequately developed as to the environmental impacts and costs of the proposed lines. And they argued that the Commission violated the due process rights of potentially affected landowners by failing to require direct mailed notice apprising them that their land could be taken by eminent domain to build the proposed transmission lines.

### E. Public Intervenors Network

The Public Intervenors Network supported certifying the four lines in Option 3 and opposed Option 1H, mainly because it considered the 345-kilovolt line in Option 1H unnecessary to carry wind energy and likely to be used instead for bulk power transfers of energy generated with fossil fuels. The Network emphasized that any certificates of need issued should be conditioned upon proof of power purchase agreements for 825 megawatts of wind generation from the Buffalo Ridge area.

### F. Izaak Walton League, Minnesotans for an Energy-Efficient Economy, and American Wind Energy Association

These three parties opposed referring both Options 1H and 3 to the Environmental Quality Board for environmental review for much the same reasons as the Company.

These parties also opposed the ALJ's recommendation to condition operation of the lines on MISO approval of 825 megawatts of wind transmission on grounds that that condition could delay the development of wind generation on Buffalo Ridge or worse, could result in the lines never being built and the wind generation they are intended to promote never developing. The three parties recommended conditioning approval of the lines' construction on Xcel itself contracting to buy a total of 825 megawatts of wind energy from the Buffalo Ridge area and taking the steps necessary to secure MISO approval for its transmission.

During Commission deliberations these three parties, in conjunction with the Sierra Club Air Toxics Campaign, the North American Water Office, and the Rural Minnesota Energy Task Force, submitted a joint recommendation that, in brief, would

- certify Option 1H,
- require Xcel to buy a minimum of 60 megawatts of small, locally-owned wind generation on Buffalo Ridge for purposes of triggering installation of substations before the lines are completed,
- require Xcel to contract for 825 megawatts of wind energy from Buffalo Ridge by December 31, 2003, to seek Commission approval of those contracts within a time frame permitting approval by June 30, 2004, and to seek MISO approval of transmission access within ten days of executing letters of intent,
- require Xcel to seek MISO authorization for 825 megawatts of wind transmission from Buffalo Ridge within 15 days of receiving certificates of need,

- require Xcel to install the additional 400 megawatts of wind energy mandated by Commission Order[4] by 2006 instead of the 2012 deadline set in the Order in the Company's 1998 resource plan[5],
- require Xcel to build the Fenton and Yankee substations planned for Buffalo Ridge as soon as 30-40 megawatts of small, locally-owned wind generation per substation has been aggregated,
- require Xcel to work with elected officials, wind developers, and other stakeholders to ensure transmission access for small, locally owned wind projects; to clarify the criteria for siting substations; and to facilitate the development of locally-owned wind generation in southwestern Minnesota

### G. Sierra Club Air Toxics Campaign

The Sierra Club originally supported Option 3 but did not take exception to the Administrative Law Judge's finding that Option 1H was the most reasonable and prudent option unless evidence developed in the siting proceeding before the Environmental Quality Board demonstrated that Option 1H carried significantly higher environmental costs than Option 3.

As noted above, the Sierra Club ultimately joined with the Izaak Walton League, Minnesotans for an Energy-Efficient Economy, the American Wind Energy Association, the North American Water Office, and the Rural Minnesota Energy Task Force in a joint recommendation designed to ensure that the proposed transmission lines would in fact carry wind generation from Buffalo Ridge and that small, locally-owned wind generation projects could interconnect with the transmission system.

### H. Rural Minnesota Energy Task Force

The Rural Minnesota Energy Task Force is made up of County Commissioners from the southwestern Minnesota counties in which the proposed transmission lines and the new wind generation facilities they are intended to serve will be located – Cottonwood, Jackson, Lincoln, Lyon, Mower, Murray, Nobles, Pipestone, Redwood, Renville, and Rock. The Task Force intervened in this proceeding to try to establish cost-sharing mechanisms under which Xcel and small, local wind developers would share the costs of developing the transmission access infrastructure necessary for small, locally-owned wind generation to flourish. The Task Force took exception to the Administrative Law Judge's Report only in that they questioned whether her recommendation to direct Xcel to continue these discussions was specific enough to achieve those objectives.

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[4] *In the Matter of the Application of Northern States Power Company for Approval of its 1998 Resource Plan*, Docket No. E-002/RP-98-32, ORDER MODIFYING RESOURCE PLAN, REQUIRING ADDITIONAL WIND GENERATION, REQUIRING FURTHER FILINGS, AND SETTING STANDARDS FOR NEXT RESOURCE PLAN FILING (February 17, 1999).

[5] Id.

As noted above, later the Task Force joined with the Sierra Club Air Toxics Campaign, the Izaak Walton League, Minnesotans for an Energy-Efficient Economy, the American Wind Energy Association, and the North American Water Office in a joint recommendation designed to ensure that the proposed transmission lines would in fact carry wind generation from Buffalo Ridge and that small, locally-owned wind generation projects could interconnect with the transmission system.

### I. North American Water Office

The North American Water Office concurred with the Administrative Law Judge that the Company had demonstrated need for the new transmission lines to carry out state energy policies requiring less dependence on fossil fuels and more dependence on renewable energy. Beyond that, the Water Office, like the Rural Minnesota Energy Task Force, focused mainly on crafting conditions that would ensure that small, locally-owned wind generation could have a significant role in meeting this mandate.

As noted above, ultimately the North American Water Office joined with the Rural Minnesota Energy Task Force, the Sierra Club Air Toxics Campaign, the Izaak Walton League, Minnesotans for an Energy-Efficient Economy, and the American Wind Energy Association in a joint recommendation designed to ensure that the proposed transmission lines would in fact carry wind generation from Buffalo Ridge and that small, locally-owned wind generation projects could interconnect with the transmission system.

## VI. Summary of Commission Action

The Administrative Law Judge held 20 days of evidentiary hearings and six days of public hearings. She reviewed the testimony of 20 witnesses, 3,000 pages of transcript, and dozens of exhibits. She considered the parties' initial briefs, reply briefs, and comments on the draft environmental report.

Her report is thoughtful, comprehensive, and thorough. She made 245 findings of fact, 24 conclusions of law, and two recommendations, set forth above. Having examined the record itself and having carefully considered the report of the Administrative Law Judge, the Commission concurs in – and will accept, adopt, and incorporate herein – nearly all of her findings of fact and conclusions of law.

At a few points, however, the Commission reaches different conclusions as to the exact form the requested certificates of need should take, based on its institutional expertise and statutory responsibilities.

First, the Commission considers itself bound to examine the application as a whole and will not grant stand-alone certification to the 161-kilovolt line between Lakefield and Fox Lake, as recommended by the Administrative Law Judge. The Commission will instead certify the Lakefield-Fox Lake line as part of the proposed package of transmission facilities.

The Commission concurs with the ALJ that the Company has demonstrated a need for 825 megawatts of new transmission capacity to move wind generation from Buffalo Ridge to its northern control area. The Commission also concurs with the ALJ that the Company has

demonstrated on the record that Option 1H is the most reasonable and prudent alternative for meeting that need. The Commission does not, however, concur with the ALJ that Option 3's relatively close ranking to Option 1H on the merits justifies asking the Environmental Quality Board to develop the environmental record on both options at the upcoming siting proceeding. The Commission will instead certify Option 1H and refer that option for siting.

The Commission concurs with the ALJ that it is critical for the certificates of need granted in this case to carry conditions that ensure, to the greatest extent possible, that the lines will be used for their intended purpose of carrying wind generation from Buffalo Ridge. The Commission concludes, however, that the condition recommended by the ALJ – prohibiting operation of the lines until MISO has authorized 825 megawatts of wind transmission from Buffalo Ridge – is less likely to accomplish this goal than requiring Xcel to acquire a total of 825 megawatts of wind generation from Buffalo Ridge as a condition of building the lines.

The Commission concurs with the ALJ that state energy policy supports requiring that Xcel continue in dialog with local officials, wind developers, and other stakeholders to identify and address barriers to small wind development, especially as they relate to the construction and financing of substations. Based on its regulatory experience, however, the Commission concludes that a stronger and clearer directive is required than that recommended by the ALJ.

Finally, the Commission concurs with the ALJ on the need for periodic reports on Xcel's progress in meeting the conditions placed on its certificates of need. Instead of specifying an annual time frame, however, as recommended by the ALJ, the Commission believes that it can monitor performance more effectively by delegating timing details to its staff and the Department of Commerce. It may well be that annual reports will suffice at some points, while more frequent reports will be necessary at others.

With the exceptions noted above, the Commission accepts, adopts, and incorporates the Administrative Law Judge's Report in its entirety. Each exception will be addressed in turn.

## VII. The Commission Will Not Grant Stand-Alone Certification for the Lakefield-Fox Lake Line.

The Administrative Law Judge found that Xcel had demonstrated current need for the 161-kilovolt line connecting Lakefield and Fox Lake and recommended granting an immediate certificate of need for that line, contingent upon the Company receiving MISO approval to use the line to carry the 425 megawatts of wind generation that it already had under contract.

The Commission concurs with the Department that, while Xcel has demonstrated a need for a package of transmission facilities to move 825 megawatts of wind generation from Buffalo Ridge, it has not demonstrated stand-alone need for individual components of that package. All record evidence went to the issue of the need to, and the most reasonable and prudent means to, increase transmission capacity by 825 megawatts.

Increasing transmission capacity by 425 megawatts is a very different proposition. The alternatives for moving the smaller amount of power are different, and the need for the Lakefield-Fox Lake line cannot be adequately evaluated without evidentiary development of those alternatives.

The Commission will therefore not grant stand-alone certification to the Lakefield-Fox Lake line.

## VIII. Option 3's Relatively Close Ranking to Option 1H on the Merits Does Not Justify Referring Both Options to the Environmental Quality Board for Environmental Development.

### A. The ALJ's Recommendation

The Administrative Law Judge found that Xcel had demonstrated on the record that Option 1H was the most reasonable and prudent alternative for accomplishing the objective of moving 825 megawatts of wind generation from the Buffalo Ridge area to Xcel's northern control area:

> . . . [T]he two best options are Option 1H and Option 3. Based on the record presented, Option 1H, the option preferred by Xcel, is the more reasonable option. . . . ALJ's Report, p. 53.
>
> Xcel has demonstrated that Option 1H meets the criteria for certificates of need and that no other option offers a better alternative. ALJ's Report, p. 54.
>
> Based on the evidence presented, Option 1H is the more reasonable and prudent alternative, but Option 3 closely approximates the same benefits. ALJ's Report, Conclusion of Law 16, p. 46.

Because Option 3 was a close second to option 1H, however, and because the record did not include the final routing data and detailed environmental studies of final routes required for a definitive comparison of the environmental costs of the two options, the ALJ recommended requiring the Company to ask the Environmental Quality Board to examine both options during the siting proceeding. If the environmental costs of Option 1H turned out to significantly greater than those for Option 3, the Commission was to instead grant certificates of need for Option 3.

### B. Summary of Commission Action

The Commission respectfully declines to take this recommendation, believing it to be inconsistent with the statutes demarcating the decision-making responsibilities of the two agencies, with the legal standard for granting certificates of need, and with principles of administrative efficiency.

Further, the Commission agrees with the ALJ that the record supports a finding that Option 1H is the most reasonable and prudent alternative for meeting the need that has been established on the record. The Commission will therefore certify Option 1H without conditioning that certification on an environmental review of Option 3 in the siting proceeding.

### C. Jurisdictional Boundaries Set by Statute

Both the Public Utilities Act and the Power Plant Siting Act emphasize that the Commission and the Environmental Quality Board have separate, distinct, and non-overlapping responsibilities in regard to applications for authority to construct high-voltage transmission lines.

The Public Utilities Act makes it clear that other agencies' input on need issues is to take place during the certificate of need proceeding before the Commission, not afterward in another proceeding:

> Other state agencies authorized to issue permits for siting, construction or operation of large energy facilities, and those state agencies authorized to participate in matters before the commission involving utility rates and adequacy of utility services, shall present their position regarding need and participate in the public hearing process prior to the issuance or denial of a certificate of need. Issuance or denial of certificates of need shall be the sole and exclusive prerogative of the commission and these determinations and certificates shall be binding upon other state departments and agencies, regional, county, and local governments and special purpose government districts except as provided in sections 116C.01 to 116C.08 and 116D.04, subdivision 9.
>
> Minn. Stat. § 216B.243, subd. 7, emphasis added.

Similarly, the Power Plant Siting Act emphasizes that the Environmental Quality Board is bound by the Commission's need determination and is prohibited from examining the size, type, and timing of certified projects as part of its environmental review. In fact, the law specifically prohibits the Board from examining "alternative system configurations," the exact issue that would be raised by asking the Board to compare the environmental costs of Options 1H and 3:

> The board is hereby given the authority to provide for site and route selection for large electric power facilities. The board shall issue permits for large electric power facilities in a timely fashion. When the public utilities commission has determined the need for the project under section 216B.243 or 216B.2425, questions of need, including size, type, and timing; alternative system configurations; and voltage are not within the board's siting and routing authority and must not be included in the scope of environmental review conducted under sections 116C.51 to 116C.69.
>
> Minn. Stat. § 116C,53, emphasis added.

The Commission concludes that referring both Option 1H and Option 3 to the EQB for environmental development during the siting proceeding would violate jurisdictional boundaries set by statute.

### D. Administrative Efficiency

Not only would referring both options for environmental review violate statutory jurisdictional boundaries, but it would also result in an unnecessarily confusing, expensive, and lengthy proceeding before the EQB. As the Company points out, filing the information required for the preparation of the Environmental Impact Statements for the four lines in Option 1H alone will be costly, labor-intensive, and time-consuming. Filing exhaustive environmental information on Option 3 as well would increase the cost, complexity, and length of the proceeding immensely.

Further, performing a two-track environmental review would almost certainly require the Commission to reopen the certificate of need proceeding when the siting proceeding was completed. Examining environmental effects is not a science; the Environmental Quality Board would not be able to quantify with any precision the difference between the environmental costs of

Option 1H and Option 3. As the staff of the Environmental Quality Board noted in their initial brief, "It is difficult to select among feasible and prudent alternatives. It is usually not possible to rank alternatives in terms of environmental damage."[6]

The Commission would then have to decide whether the expanded environmental record merited a change in its original finding that the record does not demonstrate the existence of a more reasonable and prudent alternative to Option 1H. There would likely be parties on both sides of that issue, and deciding it would essentially require solving the certificate of need equation all over again, since environmental factors interact with every other factor in that analytical process, including cost and reliability considerations.

These duplicative proceedings would severely undermine the administrative efficiency the statutes were attempting to achieve in setting clear jurisdictional boundaries.

### E. Legal Standard for Certification Met

The legal standard for granting certificates of need, discussed in section II, requires careful weighing of a lengthy, complex factual record against a long list of public interest factors set forth in the certificate of need statute and rules. The ALJ's report examines the record in light of these factors and concludes that Option 1H meets the certificate of need criteria, including the rules' requirement that the record demonstrate that there is not a more reasonable or prudent alternative.[7]

Because Option 3 "is very close in virtually every respect,"[8] to Option 1H, however, she concludes that " . . . it is appropriate to develop the environmental record more fully before determining that there is no prudent or feasible alternative to Option 1H."[9] This "no prudent or feasible alternative" requirement is set forth in the Minnesota Environmental Policy Act at Minn. Stat. § 116D.04, subd. 6:

> No state action significantly affecting the quality of the environment shall be allowed, nor shall any permit for natural resources management and development be granted, where such action or permit has caused or is likely to cause pollution, impairment, or destruction of the air, water, land or other natural resources located within the state, so long as there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the state's paramount concern for the protection of its air, water, land and other natural resources from pollution, impairment, or destruction. Economic considerations alone shall not justify such conduct.

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[6] Brief of the Environmental Quality Board Staff, p. 9.

[7] ALJ's Report, Conclusion of Law 16, p. 46; p. 53, ¶ 6; p. 54, ¶ 4.

[8] ALJ's Report, p. 53, ¶ 6.

[9] ALJ's Report, p. 57, ¶ 2.

The Commission finds that the "feasible and prudent alternative" standard has been met. Both the ALJ and the Commission have carefully weighed the five alternative transmission options extensively developed in the record. Both the ALJ and the Commission have reached a considered judgment that Option 1H is the most reasonable and prudent alternative under the factors set forth in the certificate of need statute and rules.

Further, the fact that Option 1H has a close second is not surprising – there are always different transmission system configurations that achieve the same results – and it does not necessitate or justify singling out one factor for further development. There is no need to second-guess the Legislature's decision to defer exhaustive environmental review to the siting stage of transmission proceedings.

Option 1H is superior to Option 3 in nearly every category examined – cost, reliability, robustness, flexibility, speed of construction, ease of future upgrades.[10] Option 3 is superior in no category. The two options are indistinguishable in the gravity of their environmental effects. Option 1H is amply supported in the record as the most reasonable and prudent alternative to meet the need established in the record. The Commission will therefore grant the certificates of need required under that option, conditioned as set forth below.

## IX. Conditioning the Certificates of Need on MISO Approval of 825 Megawatts of Buffalo Ridge Wind Generation Carries Unacceptable Risks; the Commission Will Instead Require Xcel to Obtain the Generation.

### A. Introduction

As discussed earlier, this certificate of need application is unique in at least two respects. First, the need it seeks to meet is not a need for more electricity, but a need to remedy an infrastructure deficit blocking the implementation of state policies on renewable energy. Second, granting the application cannot in and of itself ensure that the need will be met, since Xcel cannot reserve the proposed lines for wind generation and since most of the wind generation for which the lines would be built is not yet present.

Most of the parties therefore recommended conditioning any certificates of need on requiring the Company to buy enough Buffalo Ridge wind energy to bring its total Buffalo Ridge wind portfolio to the lines' capacity and to time those purchases to coincide with the in-service date of the new lines. The Company contended that this was unnecessary because of the certainty that wind energy projects would materialize in response to the new lines.

The Company also contended that requiring it to make those purchases on a predetermined and tight time line would skew negotiations with wind vendors, result in higher purchase prices, and be inconsistent with the Commission's Order in its 1998 resource plan. That Order required additional wind purchases but required that they be made as part of an all-source bidding process.[11]

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[10] ALJ's Report, Findings of Fact 143, 146, 194, 211; ALJ's Memorandum, p. 54, ¶ 3.

[11] *In the Matter of the Application of Northern States Power Company for Approval of its 1998 Resource Plan*, Docket No. E-002/RP-98-32, ORDER MODIFYING RESOURCE PLAN, REQUIRING ADDITIONAL WIND GENERATION, REQUIRING FURTHER FILINGS, AND SETTING STANDARDS FOR NEXT RESOURCE PLAN FILING (February 17, 1999).

### B. Summary of Commission Action

The Commission concurs with the ALJ that it is critical for the certificates of need granted in this case to carry conditions to ensure that the certified lines will be used for their intended purpose.

The Commission concludes, however, that the condition recommended by the ALJ – prohibiting operation of the lines until MISO has authorized 825 megawatts of wind transmission from Buffalo Ridge – both carries unacceptable risks and is less likely to accomplish this goal than requiring Xcel to acquire 825 megawatts of wind generation from Buffalo Ridge as a condition of building the lines. The Commission will therefore require Xcel to purchase the wind generation.

These actions are explained below.

### C. Conditions are Critical to Protect the Public Interest.

The Commission concurs with the Administrative Law Judge that it is critical to place conditions on these certificates of need to maximize the likelihood that the certified lines will be used for their intended purpose.

Under federal law, these lines will be available to all eligible generators on a first-come, first-served basis. Xcel will have first claim on the lines' capacity, but only to the extent that it can document that it has "network resources" waiting to use the capacity or that it needs the capacity to meet future load growth. If neither of these conditions is present – and under Xcel's plan they would not be – and if wind generation did not develop on Buffalo Ridge within the expected and critical time frame, these lines would likely be used to transmit electricity that was both unneeded by Xcel's customers and derived from fossil fuel.

Further, the proposed transmission lines represent an estimated $163 million investment that would normally be borne by ratepayers. Building the proposed lines will probably require the taking of private land for public benefit under the power of eminent domain. Building and operating the proposed lines will inevitably cause some damage to the natural environment. These costs are significant, and they obligate the Commission to take steps to ensure that the purpose for which they are incurred is ultimately served by them.

As the ALJ found, "Xcel has demonstrated that granting the certificates of need has a high probability of promoting increased renewable energy generation."[12] Given the high costs associated with these lines, however, and given that there is no demonstrated need for these lines other than wind transmission, the Commission agrees with the ALJ that the certificates of need should carry conditions designed to maximize the likelihood that the lines will be used for their intended purpose.

### D. The Conditions Recommended by the ALJ Carry Unacceptable Risks.

The ALJ recommended that the certificates of need granted in this case prohibit Xcel from operating the newly certified lines until MISO (the Midwest Independent System Operator, the neutral third party operating Xcel's transmission lines and its transmission tariff under federal law) has authorized the transmission of 825 megawatts of wind energy from the Buffalo Ridge area.

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[12] ALJ's Report, Conclusion of Law 12.

The Commission will instead require Xcel to acquire a total of 825 megawatts of Buffalo Ridge wind power by the time the lines become operational and to take prompt action to secure MISO transmission authority as each increment of that wind energy becomes available. While it is possible that these conditions and those recommended by the ALJ would have the same effect, the Commission believes that its own conditions pose fewer risks for ratepayers.

First, the Commission shares the Department's concern that the ALJ's "no operation" scenario has not been explored on the record, making its impact unclear. It is not clear, for example, how much authority the Commission would have over the decision to energize the lines. It is possible that once the lines were in place, their energizing, like most other facets of their operation, would be subject to federal jurisdiction. The lines could then be energized to carry fossil-fuel-derived electricity before adequate wind energy had developed on Buffalo Ridge.

Neither is it clear how the "no operation" condition would interact with wind development efforts. If these efforts in fact depend upon transmission being actually available, the condition could seriously delay that development. Meanwhile, ratepayers, Xcel, or some combination of the two would be paying for costly and idle transmission infrastructure improvements, or for costly transmission infrastructure improvements being used to transmit unnecessary fossil-fuel-derived generation.

Similarly, it is not clear whether Xcel would build the lines subject to a "no operation" condition, given the cost recovery uncertainties associated with the risk that the lines would be idle or used for non-renewable generation. And finally, if the lines were placed into service to comply with federal law before wind development had occurred, Minnesota would still face the need to upgrade its transmission infrastructure to accommodate the renewable generation required under state law and policy.

For all these reasons, the Commission concludes that it must condition the certificates of need on Xcel purchasing the wind generation the lines are intended to accommodate.

### E. Xcel Must Acquire the Wind Generation.

The most straightforward way to ensure that the proposed lines will be used to carry wind generation and the way most likely to succeed is to require Xcel to purchase the 825 megawatts of wind the lines are intended to carry and to secure transmission authority from MISO before the lines are ready to go into service. Since these requirements are consistent with both the purpose of Xcel's certificate of need application and with its existing legal obligations to add significant amounts of renewable generation to its supply portfolio, it is the best solution to the stalemate resulting from the interdependence of wind development and transmission availability.

The Company is obligated by statute to have 425 megawatts of wind energy under contract by December 31, 2002.[13] It is obligated by statute and Commission Order to add another 400

[13] Minn. Stat. § 216B.2423, subd. 1.

megawatts by 2012.[14] It is obligated by statute to make a good faith effort to convert 10% of its supply portfolio to renewables by 2015, an obligation Xcel states could result in its purchase of over 1,000 additional renewable megawatts over the next 13 years.[15] And it is obligated by statute to give a preference to renewable energy in all future resource acquisitions.[16]

Given Xcel's plethora of renewable energy obligations, its request to build transmission lines for the explicit purpose of carrying renewable energy, and the significant risk that these lines might not be used for that purpose, it makes little sense not to require Xcel to acquire the 825 megawatts of wind generation that it expects those lines to carry.

### F. Xcel's 1998 Resource Plan Is Not a Barrier.

Xcel opposed the purchase requirement in part because the Commission Order issued in its 1998 resource plan proceeding, which required the Company to buy the additional 400 megawatts of wind energy left to Commission discretion by statute, required that that additional 400 megawatts be secured through all-source bidding.[17] The Commission was concerned that at that stage in the development of the wind industry, a wind-only bidding process could result in inflated prices and could also inadvertently impede the development of a competitive wind generation sector.

The purchase requirement imposed as a condition in this case does not literally conflict with that Order, however, since the megawatts at issue here are not necessarily the 400 megawatts dealt with in that Order. Energy policy has continued to evolve, and the Company's renewable obligation now far exceeds the 400 megawatts in that Order.

More fundamentally, however, it is important to remember that resource planning is an iterative process. The 1998 resource plan is about to be replaced by the 2002 resource plan, which is now out for comment from stakeholders. If the Company wishes to re-evaluate the all-source bidding requirement in the earlier Order, the current proceeding would be an appropriate vehicle. It would also be an appropriate vehicle for seeking clarification that intervening circumstances make it appropriate to secure some or all of the 400 wind megawatts required in that Order as part of 825 wind megawatts upon which these certificates of need are conditioned.

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[14] *In the Matter of the Application of Northern States Power Company for Approval of its 1998 Resource Plan*, Docket No. E-002/RP-98-32, ORDER MODIFYING RESOURCE PLAN, REQUIRING ADDITIONAL WIND GENERATION, REQUIRING FURTHER FILINGS, AND SETTING STANDARDS FOR NEXT RESOURCE PLAN FILING (February 17, 1999); Minn. Stat. § 216B.2423, subd. 2.

[15] Xcel's Post-Hearing Brief, p. 19, citing to transcript, S. Jones, Vol. 133, lines 18-20; Minn. Stat. § 216B.1691.

[16] Minn. Stat. § 216B.2422, subd. 4.

[17] *In the Matter of the Application of Northern States Power Company for Approval of its 1998 Resource Plan*, Docket No. E-002/RP-98-32, ORDER MODIFYING RESOURCE PLAN, REQUIRING ADDITIONAL WIND GENERATION, REQUIRING FURTHER FILINGS, AND SETTING STANDARDS FOR NEXT RESOURCE PLAN FILING (February 17, 1999), at 5.

The wind industry has matured substantially since the 1998 resource plan Order, and the concerns expressed there about the risk of stifling a young industry's competitiveness through subsidized success may no longer be as acute. The Administrative Law Judge's Report is certainly full of references to advances in wind technology in the past several years. The Commission still respects the Company's concern, however, that requiring major capacity purchases under publicly announced deadlines can affect negotiating positions and distort prices.

There is no alternative to the deadlines established here if the Commission is to maximize the possibility that these new transmission lines will serve their intended purpose. To reduce any negotiating disadvantage these deadlines may create for the Company, however, the Commission will require only 675 megawatts, the approximate break-even point at which Option 1H becomes the most economical,[18] by the end of this calendar year. The remainder of the 825 megawatts must be secured and authorized for transmission by the lines' in-service date.

The Commission will also require Xcel to promptly seek regulatory approval of negotiated wind contracts and to secure transmission authority from MISO for these 825 megawatts of wind generation under time frames set forth below. To ensure adequate regulatory oversight, the Commission will require prompt reports on any regulatory developments that may affect the conditions placed on these certificates of need.

The Commission will accept the Company's proposed in-service dates for the proposed lines, knowing that construction schedules could be affected by other regulatory proceedings, weather, and other factors, and that the Company will complete construction as soon as practicable.

## X. The Commission Will Impose Conditions Designed to Ensure Transmission Access by Small, Locally-Owned Wind Generation.

### A. Introduction

The Rural Minnesota Energy Task Force, made up of County Commissioners from the eleven counties that would host the proposed transmission lines, intervened in this case with two goals: (1) to clarify Xcel's policies on when it would build substations and other infrastructure to support small, local wind development; and (2) to establish mechanisms whereby local developers and Xcel would share the expense of building infrastructure, which is essential for small, locally-owed wind generation to flourish.

The Task Force emphasized that locally-owned wind generation provides significantly higher benefits to local economies than non-locally-owned wind generation and argued that it was both equitable and sound public policy for communities bearing the burdens of transmission lines to reap some of their benefits as well. They also argued that conditioning these certificates of need on ensuring opportunities for local, small wind development would reduce local opposition to constructing these lines.

Xcel, the Task Force, and other stakeholders held discussions on these issues throughout the proceeding, but no concrete agreements were reached. Neither were Xcel's policies on substation construction clarified.

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[18] Xcel Energy Exhibits 55, 56.

As noted above, during Commission deliberations the Task Force, the North American Water Office, the Izaak Walton League of America, Minnesotans for an Energy-Efficient Economy, the American Wind Energy Association, and the Sierra Club of Minnesota Air Toxics Campaign jointly submitted a list of concrete conditions they recommended attaching to the certificates of need to ensure access to the new transmission lines by small, local wind generators.

### B. The Benefits of Small, Locally-Owned Wind Development; the ALJ's Decision

The record clearly establishes the significant benefits that accrue to local economies from small, locally-owned wind development and clearly establishes that these benefits significantly exceed the benefits of larger, non-locally-owned projects –

> There is strong evidence that local ownership of new wind generation will provide substantially greater benefit to southwestern Minnesota than outside ownership. . . . ALJ's Report, Finding of Fact 220.
>
> The proposed transmission lines will do little to induce future development in Southwestern Minnesota unless wind generation or other small renewable energy projects are able to access the lines. . . . ALJ's Report, Finding of Fact 223.
>
> There is no doubt that the economic benefit for southwestern Minnesota will be greater if locally-owned, dispersed wind development takes place. . . . The 1996 study, *Economic Impact Analysis of Windpower Development in Southwest Minnesota*, concluded that the economic development from wind may be ten times greater if the new generation is locally owned and financed. . . . ALJ's Report, p. 60, footnote omitted.

The record also establishes that Xcel's failure to set and disclose clear policies and procedures for siting substations and other facilities that give small wind generators access to transmission has hampered and continues to hamper the development of small, locally-owned wind generation in southwestern Minnesota –

> At this time, Xcel does not have a written policy that clarifies when and under what conditions it will construct substations or 35 kV lines to "collect" the electricity that is generated by wind turbines dispersed throughout Buffalo Ridge. . . . ALJ's Report, Finding of Fact 107.
>
> Financing for a collector system is necessary to spur local ownership. . . . ALJ's Report, Finding of Fact 193.
>
> The lack of criteria and information hampers the efforts of local wind developers to construct a proposal and obtain financing. If, for example, Xcel agreed that it would build substation facilities whenever 20 or more megawatts of small, locally-owned wind generation were constructed, it would provide a level of certainty that is currently lacking. . . . ALJ's Report, p. 62.

Despite these findings, the Administrative Law Judge declined to recommend specific conditions to permit transmission access by small, locally-owned wind generators, finding that state policy contained no preference for local ownership, that the parties supporting access by small, locally-

owned generators had not made a clear statement of what they wanted the Commission to order, and that the Notice and Order for Hearing in this case did not specifically identify generation ownership issues as among those to be addressed.[19]

She therefore recommended only conditioning the certificates of need on requiring Xcel to continue its dialog on these issues with the stakeholders.

### C. Summary of Commission Action

The Commission will condition these certificates of need on (a) Xcel purchasing at tariff rates all available megawatts of small, locally-owned wind generation in the Buffalo Ridge area, up to a total of 60 megawatts; (b) Xcel building substations in the Buffalo Ridge area when the aggregated output of small, locally-owned generators reaches 30-40 megawatts; and (c) Xcel cooperating with elected representatives, wind developers, other owners of transmission infrastructure, and other interested stakeholders to identify and remove barriers to small wind development, especially as they relate to the construction and financing of substations.

These conditions are necessary to give proper weight to the socioeconomic effects of the proposed transmission lines, as required by rule, and to further state policies promoting the development of small wind generation projects. The Commission concludes that the notice concerns expressed by the Administrative Law Judge are neither fatal nor so grave as to outweigh the need to effectuate these state policies, especially since the notice did specify the Commission's intention to examine the economic and employment effect of the proposed lines.

### D. The Certificate of Need Rules

The certificate of need rules make the socioeconomic effects of proposed projects, including their effects on economic development, important factors in the need equation. The rules set four criteria for judging applications for certificates of need; the third criterion is whether the Commission has determined that

> (1) by a preponderance of the evidence on the record, the proposed facility, or a suitable modification of the facility, will provide benefits to society in a manner compatible with protecting the natural and socioeconomic environments, including human health, considering:
>
> (2) the effects of the proposed facility, or a suitable modification thereof, upon the natural and socioeconomic environments compared to the effects of not building the facility;
>
> (3) the effects of the proposed facility, or a suitable modification thereof, in inducing future development . . .
>
> Minn. Rules 7840.0120 C.

The rules' second criterion, too, requires consideration of the facility's effects on the "natural and socioeconomic environments." Minn. Rules 7849.0120, B (3).

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[19] ALJ's Report, pages 60-62.

Taking socioeconomic effects into account in this case compels the conclusion that these certificates of need should carry conditions designed to ensure that small, locally-owned wind projects have access to these transmission lines.

It is clear that the socioeconomic and economic development effects of the proposed transmission lines will vary dramatically depending upon whether those lines are accessible to locally-owned small wind generators. If they are accessible, they will benefit the local economy substantially; if they are not accessible, their effect on the local economy will be much less significant. Furthermore, it is clear that the proposed lines will impose significant environmental, social, and aesthetic burdens on the host communities.

While it is impossible to offset the burdens the lines will impose with precision, the economic benefits that would flow from more locally-owned small wind generation would significantly move the burden/benefit ratio toward the benefit side of the ledger, making the socioeconomic and economic development impact of the lines much more positive. These facts justify and require conditioning the certificates of need on ensuring access to the proposed facilities by locally-owned small wind developers.

### E. Other State Policies

Furthermore, not only do these conditions meet the requirements in the certificate of need rules to weigh the socioeconomic and economic development consequences of proposed projects, but they further other important state policies promoting the development of small and locally-owned wind projects. For example,

(a) 216C.41, subd. 1 (c), which makes local ownership a condition of certain wind production incentives;

(b) 216B.1611, subd. 2, requiring utilities to develop procedures to encourage the interconnection of small distributed generation projects using renewable or other clean fuels;

(c) 216B.2423, subd. 3, requiring streamlined procedures for negotiating contracts with wind generators under two megawatts; and

(d) Xcel's stipulation with the Department of Commerce in its merger docket, in which it agreed to help facilitate the development of small, distributed wind generation by developing a tariff for purchases from wind generators below two megawatts.[20]

In short, requiring Xcel to take steps to ensure that residents of the communities affected by these transmission lines share in some of their economic benefit is reasonable, equitable, consistent with the certificate of need rules, and consistent with overarching state policies favoring the development of small wind projects. For all these reasons, the Commission will condition these certificates of need on measures to facilitate transmission access by small, locally-owned small wind projects.

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[20] *In the Matter of the Application of Northern States Power Company for Approval to Merge with New Century Energies, Inc.*, Docket No. E,G-002/PA-99-1031; *In the Matter of Northern States Power Company's Petition for Approval of a Small Wind Energy Tariff*, Docket No. E-002/M-00-1747.

## XI. The Commission Will Delegate the Timing of Compliance Reports to its Staff and the Department of Commerce.

Finally, it is clear that the Commission's regulatory responsibilities require that it receive periodic updates on Xcel's progress in complying with the conditions set forth in this Order. The ALJ recommended annual reporting.

While annual reports may certainly suffice at some points, more frequent reports may be necessary at others. To preserve flexibility and ensure adequate monitoring, the Commission will delegate the timing details to its staff and the Department of Commerce, who will be monitoring Xcel's performance and will therefore be in the best position to judge how often reporting would be helpful.

## XII. Conclusion

For all these reasons, the Commission grants the Company's certificate of need of application, certifying Option 1H with the conditions set forth in this Order, which are designed to ensure that the certified transmission lines serve their stated, intended, and needed purpose.

The Commission accepts the recommendations of the Administrative Law Judge as modified in this Order. The Commission accepts, adopts, and incorporates herein the Administrative Law Judge's Findings of Fact, Conclusions of Law, and Recommendation, as modified above, with the exception of Finding of Fact 56 and Conclusion of Law 16.

## ORDER

1. The Commission accepts, adopts, and incorporates herein the Findings of Fact, Conclusions of Law, and Recommendation of the Administrative Law Judge, except as set forth above.

2. The Commission hereby grants Northern States Power Company d/b/a Xcel Energy (Xcel or the Company) four certificates of need as set forth in the record as option 1H, which includes the following lines:

   - a new 161-kV line in Jackson and Martin counties connecting the Lakefield Junction Substation and the Fox Lake Substation;
   - a new 345-kV line connecting the Lakefield Junction Substation and the Split Rock Substation in South Dakota, the Minnesota portion of which would be in Jackson, Nobles, and Rock counties;
   - a new 115-kV line in Nobles and Murray counties connecting a new Nobles County Substation, located on the new 345-kV line, with a new Fenton Substation and the existing Chanarambie Substation on Buffalo Ridge; and
   - a new 115-kV line from the Buffalo Ridge Substation to the White Substation in South Dakota, the Minnesota portion of which would be in Lincoln County.

3. The Commission hereby adopts the in-service dates proposed by Xcel for the project, with the understanding that construction should be completed as soon as practicable after those dates if the regulatory processes or construction takes longer than originally expected.

4. The Commission hereby imposes the following conditions on the certificates of need granted herein, not as pre-construction requirements, but as requirements to be met during the period required for completion of the regulatory processes and construction:

   a. Xcel must sign power purchase agreements with wind developers no later than the end of 2003 for a minimum of 675 MW of wind-generated electricity on the Buffalo Ridge and must seek Commission approval of those contracts within a time frame permitting approval by June 30, 2004;

   b. Xcel must install a total of 825 MW of wind generation at Buffalo Ridge by the time the four transmission lines become operational;

   c. Xcel must, within 15 days of obtaining the certificates of need, make transmission service requests for network (firm) service to the Midwest Independent System Operator for at least 825 MW of wind-generated power and must cooperate in all aspects of the generators' requests for transmission service;

   d. Xcel must designate the new wind generation resources as network resources pursuant to MISO's Open-Access Transmission Tariff within ten days of executing letters of intent for wind generation or as soon as allowed by MISO;

   e. Xcel must report to the Commission on any regulatory developments at the regional or federal level that could affect the conditions placed on the certificates of need.

5. Xcel must purchase at tariff rates all available small, locally-owned wind generation on Buffalo Ridge up to a total of 60 megawatts for purposes of triggering the timing of substation facilities prior to completion of the certified lines.

6. Xcel must build the Fenton and Yankee Substations on Buffalo Ridge as soon as 30–40 megawatts or more of viable, small, locally-owned wind generators are aggregated per substation, using the Rural Minnesota Energy Task Force's definition of "small locally owned projects."

7. Xcel shall work with elected representatives, wind developers in southwestern Minnesota, other owners of transmission infrastructure in southwestern Minnesota, and other interested stakeholders, to ensure that access to transmission for small, locally owned wind projects is provided; to clarify the criteria for siting new substations in response to wind development; and to facilitate the development of locally-owned wind in southwestern Minnesota.

8. Xcel shall report periodically on its efforts to implement the requirements set forth above, in a manner and at intervals determined by the Department of Commerce and Commission Staff.

9. This Order shall become effective immediately.

BY ORDER OF THE COMMISSION

Burl W. Haar
Executive Secretary

(S E A L)

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# EXHIBIT B
# EQB ROUTE PERMIT

# ROUTE PERMIT

# FOR CONSTRUCTION OF

# TWO HIGH VOLTAGE TRANSMISSION LINES

# AND A SUBSTATION

# IN

# SOUTHWESTERN MINNESOTA

# ISSUED TO

# NORTHERN STATES POWER CO. d/b/a XCEL ENERGY

# EQB DOCKET No. 03-73-TR-XCEL

In accordance with the requirements of Minnesota Statutes Section 116C.57 and Minnesota Rules Chapter 4400, this Route Permit is hereby issued to:

## NORTHERN STATES POWER CO. d/b/a XCEL ENERGY

Northern States Power Co., d/b/a Xcel Energy (hereinafter referred to as Xcel Energy), is authorized by this route permit to construct a new 345 kilovolt high voltage transmission line and associated facilities approximately 86 miles long between the Lakefield Junction Substation, located in Jackson County, Minnesota, and the Split Rock Substation in Minnehaha County, South Dakota, and a new 115 kV high voltage transmission line and associated facilities approximately 40 miles long between the Chanarambie Substation in Murray County, Minnesota, and a new substation in Nobles County, Minnesota. The Minnesota portion of the project shall be built along the route identified in this Permit and in compliance with the conditions specified in this Permit.

Approved and adopted this 16th day of June, 2005.

STATE OF MINNESOTA
ENVIRONMENTAL QUALITY BOARD

_____
Robert A. Schroeder, Chair

## I. ROUTE PERMIT

The Minnesota Environmental Quality Board hereby issues this Route Permit to Xcel Energy pursuant to Minnesota Statutes section 116C.57 and Minnesota Rules Chapter 4400. This permit authorizes Xcel Energy to construct a 345 kilovolt high voltage transmission line in Rock, Nobles, and Jackson Counties, Minnesota and a 115 kilovolt high voltage transmission line in Nobles and Murray Counties, Minnesota and a new substation in Nobles County, Minnesota.

## II. PROJECT DESCRIPTION

This Permit authorizes Xcel Energy to construct two new high voltage transmission lines and a new substation.

One new transmission line is an 86 mile long, 345,000-volt (345 kilovolt or kV) line that will connect the Lakefield Junction Substation in Jackson County Minnesota, and the Split Rock Substation in Minnehaha County, South Dakota. The second high voltage transmission line is a 115 kV line between the Chanarambie Substation in Murray County, Minnesota, and a new 345/115 kV Substation in Nobles County, Minnesota. The Nobles County Substation is a new substation authorized to be constructed under this Permit.

Unless different structures are requested by Xcel Energy and authorized by the Plan and Profile procedures in this permit as specified below in Section IV, Xcel Energy is authorized to use single pole, galvanized steel, davit arm structures for the 345 kV transmission line. The structures will have an average height of 120 to 140 feet and an average span of 950 feet. The conductor is proposed to be double bundled (two conductors) 954 kcmil type 13, Cardinal/ACSS/TW trapezoidal wire for each phase.

Unless different structures are requested by Xcel Energy and authorized by the Plan and Profile procedures in this permit as specified below in Section IV, for the single and double circuit 115 kV lines, Xcel Energy will use single pole galvanized steel davit arm structures. The structures will have an average height of 70 to 80 feet and an average span of 400 feet. The conductor is proposed to be double bundled (two conductors) 795 kcmil 26/7 Drake ACSS for each phase.

Xcel Energy may during final design modify the approved structures to accommodate existing single and future 34.5 kV wind feeder and other distribution lines as an underbuild on the 115 kV structures to consolidate lines.

## III. DESIGNATED ROUTE AND SUBSTATION SITES

### A. The 345 kV High Voltage Transmission Line.

The route designated by the EQB is described below and shown on the maps in Attachment A to this Permit. The approved route extends from the Lakefield Junction Substation and proceeds west to the South Dakota border:

The Interstate Route is 86 miles long and generally follows Interstate 90 (I-90) from the Lakefield Junction Substation in Jackson County, Minnesota to the Split Rock Substation in Minnehaha County, South Dakota. Approximately 9.7 miles of the route is in South Dakota. The one significant deviation from I-90 is around the City of Worthington where the route jogs north and follows an existing Alliant Energy 161 kV transmission line for approximately 12 miles and then heads south back to I-90 to avoid interfering with the Worthington Municipal Airport.

As defined in the maps in Appendices B.1, B.2, and B.3 of the Route Permit Application and the Environmental Impact Statement for EQB Docket No. 03-73-TR-Xcel, the approved route, consists of the following route segments in Minnesota: **I4, I5, I6,T9, T10, C5, I8, I9, C7, T14, T15, I15.** The final approved route is also shown in Figures A.1, A.2, A.3 and A.4 in Attachment A of this permit. Except as modified in the Special Conditions, Section IV of this Permit, the route has an allowed corridor width of 660 feet on either side of the route centerline to allow Xcel Energy final right-of-way design flexibility.

**B. The 115 kV High Voltage Transmission Line.**

The route designated by the EQB is described below and shown in Figure A6 in Attachment A to this Permit.

As defined in the maps in Appendix D of the Route Permit Application and the Environmental Impact Statement for EQB Docket No. 03-73-TR-Xcel, the approved route consists of the following route segments**:EW1, W2, W3, E3a, E3b, E3c, E3d, the southernmost one-mile of E4, M2, W5 (except the southernmost one-mile), W6**. Except as modified in the Special Conditions, Section IV of this Permit, the route has an allowed corridor width of 660 feet on either side of the route centerline to allow Xcel Energy final right-of-way design flexibility. A copy of the route map is also provided as Figure A.6 in Attachment A to this permit.

**C. Nobles County Substation, modifications at Chanarambie and Lakefield Junction Substations, and associated transmission line modifications.**

Xcel Energy is authorized to construct a new Nobles County Substation on Site A or Site B as defined in Xcel Energy's permit application and in the Environmental Impact Statement. The facilities shall be located in an area not exceeding 40 acres in size. Xcel Energy is also authorized to modify both the Lakefield Junction Substation and the Chanarambie Substation as described in Xcel Energy's permit application and in the Environmental Impact Statement.

The Lakefield Junction Substation must be modified to relocate existing transmission lines in the most efficient manner possible, to utilize double circuit structures where appropriate, and to relocate the existing 161 kV Alliant Energy line to exit from the north side of the substation.

## IV. GENERAL CONDITIONS

The Permittee shall comply with the following conditions during construction of the transmission line and associated facilities and the life of this Permit.

**A. Plan and Profile.** At least 14 days before right-of-way preparation for construction begins, the Permittee shall provide the EQB with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, cleanup, and restoration for the transmission line and the substation site. The Permittee may not commence construction until the 14 day period has expired or until the EQB has advised the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this permit. If in the plan and profile Xcel Energy requests a wider right-of-way than specified in Section V, Special Conditions, it shall advise the EQB of the reasons for the change. Likewise if Xcel Energy decides to construct the line on the opposite side of Interstate I-90 or other roadways from that identified the Xcel Permit Application or as otherwise specified in Section V below, Special Conditions, Xcel Energy shall advise the EQB of the reasons for the change. Then, if the Chair advises Xcel Energy within ten days of receipt of the submission that the chair intends to bring the matter to the Board for consideration of amending the permit, Xcel Energy shall not complete right-of-way acquisition or begin construction on the affected portion of the line or substation until the Board has determined whether plan and profile is acceptable. If the Permittee intends to make any other significant changes in its plan and profile including the specifications and drawings after submission to the EQB, the Permittee shall notify the EQB at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this permit.

**B. Construction Practices**.

1. **Application.** The Permittee shall follow those specific construction practices and material specifications described in the Xcel Energy Application to the Minnesota Environmental Quality Board for a Route Permit for the Split Rock substation to Nobles County substation to Lakefield Junction substation 345 kV Transmission Line and the Nobles County substation to Chanarambie substation 115 kV Transmission Line and the Nobles County substation dated April 30, 2004, MEQB Docket No. 03-73-TR-XCEL, unless this Permit establishes a different requirement in which case this Permit shall prevail.

2. **Field Representative.** At least ten days prior to commencing construction, the Permittee shall advise the EQB in writing of the person or persons designated to be the field representative for the Permittee with the responsibility to oversee compliance with the conditions of this Permit during construction. This person's address, phone number, and emergency phone number shall be provided to the EQB, which may make the information available to local residents and public officials and other interested persons. The Permittee may change its field representative at any time upon written notice to the EQB.

3. **Cleanup.** All waste and scrap that is the product of construction shall be removed from the area and properly disposed of upon completion of each task. Personal litter, including bottles, cans, and paper, from construction activities shall be removed on a daily basis.

4. **Vegetation Removal.** The Permittee shall minimize the number of trees to be removed as part of the construction of the line, taking into account Permit Condition IV.H.1,

which recognizes that the Permittee has obligations to comply with clearance requirements.

5. **Erosion Control.** The Permittee shall implement reasonable measures to minimize runoff during construction and shall plant or seed non-agricultural areas that were disturbed where structures are installed. Upon request, the Permittee shall submit to the EQB a copy of any Soil Erosion and Sediment Control Plan prepared for the Minnesota Pollution Control Agency as part of a storm-water runoff permit application.

6. **Temporary Work Space.** The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way.

7. **Restoration.** The Permittee shall restore all temporary work spaces, access roads, and other private lands affected by construction of the transmission line. Restoration must be compatible with the safe operation, maintenance, and inspection of the transmission line. Within sixty days after completion of all restoration activities, the Permittee shall advise the EQB in writing of the completion of such activities.

8. **Notice of Permit.** The Permittee shall inform all employees, contractors, and other persons involved in the construction of the transmission line of the terms and conditions of this Permit.

**C. Periodic Status Reports.** Upon request, the Permittee shall report to the EQB on progress regarding finalization of the route, design of structures, and construction of the transmission line. The Permittee need not report more frequently than quarterly.

**D. Complaint Procedure.** Prior to the start of construction, the Permittee shall submit to the EQB the company's procedures to be used to receive and respond to complaints. The procedures shall be in accordance with the requirements set forth in Attachment B to this Permit.

**E. Notification to Landowners.** The Permittee shall provide all affected landowners with a copy of this Permit at the time of the first contact with the landowners after issuance of this Permit.

**F. Drain Tile Restoration Plan.** Prior to the start of construction, the Permittee shall submit to the EQB its procedures for minimizing drain tile damage during construction and operation and restoration policies. Permittee must submit the Drain Tile Restoration Plan to the EQB for review prior to beginning construction as described in Permit General Conditions, Section IV.A, above.

**G. Completion of Construction.**

1. **Notification to EQB.** At least three days before the line is to be placed into service, the Permittee shall notify the EQB of the date on which the line will be placed into service and the date on which construction was complete.

2. **As-Builts.** Within 180 days of completion of the project, the Permittee shall submit copies of all the final as-built plans and specifications developed during the project.

3. **GPS Data.** Within sixty days after completion of construction, the Permittee shall submit to the EQB, in the format requested by the EQB, geo-spatial information (GIS compatible maps, GPS coordinates, etc.) for all above ground structures associated with the transmission lines and each substation connected.

**H. Electrical Performance Standards**.

1. **Grounding.** The Permittee shall design, construct, and operate the transmission line in such a manner that the maximum steady-state short-circuit current shall be limited to five milliamperes rms alternating current between the ground and any non-stationary object within the right-of-way including but not limited to, large motor vehicles and agricultural equipment. All fixed metallic objects on or off the right-of-way, except electric fences that parallel or cross the right-of-way, shall be grounded to the extent necessary to limit the short circuit current between ground and the object so as not to exceed one milliampere rms under steady state conditions of the transmission line and to comply with the ground fault conditions specified in the National Electric Safety Code.

2. **Electric Field.** The transmission line shall be designed, constructed, and operated in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms.

3. **Interference with Communication Devices.** If interference with radio or television, satellite or other communication devices is caused by the presence or operation of the transmission line, the Permittee shall take whatever action is prudently feasible to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the line.

**I. Other Requirements.**

**Applicable Codes.** The Permittee shall comply with applicable North American Electric Reliability Council (NERC) planning standards and requirements of the National Electric Safety Code (NESC) including clearances to ground, clearance to crossing utilities, clearance to buildings, right-of way widths, erecting power poles, and stringing of transmission line conductors.

**Other Permits.** The Permittee shall comply with all applicable state rules and statutes. The Permittee shall obtain all required permits for the project and comply with the conditions of these permits. A list of the required permits is included in the permit

application and the environmental impact statement. The Permittee shall submit a copy of such permits to the EQB upon request.

**Pre-emption.** Pursuant to Minnesota Statutes section 116C.61, subdivision 1, this Site Permit shall be the sole route and substation site approval required to be obtained by the Permittee for construction of the facilities and this Permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose government.

**J. Delay in Construction.** If the Permittee has not commenced construction or improvement of the route within four years after the date of issuance of this Permit, the EQB shall consider suspension of the Permit in accordance with Minn. Rules part 4400.3750.

## V. SPECIAL CONDITIONS

**Permanent Right-of-Way Acquisition.**

1. The Permittee may obtain up to 80 feet of right-of-way when the 115 kV transmission line does not parallel or utilize existing highway right-of-way, including those portions of the route where the line is to be double circuited with an existing line. Where the transmission line parallels local or county roadways, Xcel Energy may acquire up to 45 feet of right-of-way for the 115 kV HVTL outside the roadway right-of-way.

2. The Permittee may obtain up to 150 feet of right-of-way when the 345 kV transmission line does not parallel or utilize existing highway right-of-way, including those portions of the route where the line is to be double circuited with an existing line. Where the transmission line parallels the Interstate or other highway, Xcel Energy may acquire up to 80 feet of non-roadway right-of-way for the 345 kV HVTL.

3. Xcel Energy shall be restricted to the south side of the Interstate along Segment I5 of the Modified Interstate Route for the 345 kV line, near Luverne,.

4. To allow detailed design flexibility in the expanding area near Luverne, Xcel Energy has a one-mile wide route corridor for the 345 kV line near Luverne -- beginning at the center of I-90 and heading south -- for the portion of the route beginning two miles east of Highway 75 and ending two miles west of Highway 75. Xcel Energy shall provide the final alignment in this area for staff review as described in Permit General Conditions, Section IV.A.

5. To allow Xcel Energy flexibility during detailed design to consolidate and reduce congestion due to other existing and future wind-energy related transmission lines near the Chanarambie Substation, a route corridor up to 6,600 feet wide is authorized for the 115 kV line along Route segment W6 near the Chanarambie Substation in sections 6, 7, and 18 of Chanarambie Township as shown in Figure A6 in Attachment A.

6. The 115 kV line is to be located on the south side of Segment E3c and the east side of segment E3b to avoid the homes on the north side of the road on these route segments.

7. The 115 kV line in Section 21 of Chanarambie Township is to be consolidated on the same poles with existing 69 kV and 34.5 kV lines and located on the north side of the road in area near the Grant Post residence.

8. Unless Xcel Energy requests different structures in the Plan and Profile procedures in Permit Section IV.A, for those sections of the designated route where the 345-kV HVTL is to be constructed on the same route segment as an existing 161-kV HVTL, the new 345-kV HVTL and existing 161-kV HVTL are to be constructed as a 161-kV/345-kV "double-circuit" HVTL on single-pole structures. These 161/345 kV double-circuit structures are to be constructed to be capable of future expansion to a 345kV/345kV double-circuit HVTL.

9. Unless Xcel Energy requests different structures in the Plan and Profile procedures in Permit Section IV.A, for those sections of the designated route where the 115-kV HVTL is to be constructed on the same route as an existing 69-kV HVTL, the new 115-kV HVTL and existing 69-kV HVTL are to be constructed as a 69-kV/115-kV "double-circuit" HVTL on single-pole structures. Xcel Energy is authorized but not required to construct these 69-kV/115-kV double-circuit structures to be capable of future expansion to a 115-kV/115-kV double-circuit HVTL.

10. Xcel Energy is authorized to have flexibility to consider designing any of the lines within a mile of the Nobles County Substation, the Chanarambie Substation and the anticipated Fenton Substation as multiple circuit structures to accommodate additional transmission lines.

11. Xcel Energy is required to work with the townships and counties along the routes to accommodate their concerns regarding drain tiles, pole depth and placement in relationship to roads.

12. Xcel Energy is required to designate an environmental inspector for this Project to ensure compliance with the permit conditions.

13. Along Route segment I9 of the approved route for the 345-kV HVTL, Xcel Energy shall work with affected landowners on both sides of I-90, including the Posts, to minimize impacts to the extent possible—including giving additional consideration of the I-90 crossing option or a variation. Prior to completing right-of-way acquisition or beginning construction, Xcel Energy must submit the preliminary layout in this area to the EQB for review as described in Permit General Conditions, Section IV.A.

## VI. PERMIT AMENDMENT

This permit may be amended at any time by the EQB or authorized successor agency of the State of Minnesota. Any person may request an amendment of this permit by submitting a request to the Chair in writing describing the amendment sought and the reasons for the amendment. The Chair will mail notice of receipt of the request to the Permittee. The EQB may amend the permit after affording the Permittee and interested persons such process as is required.

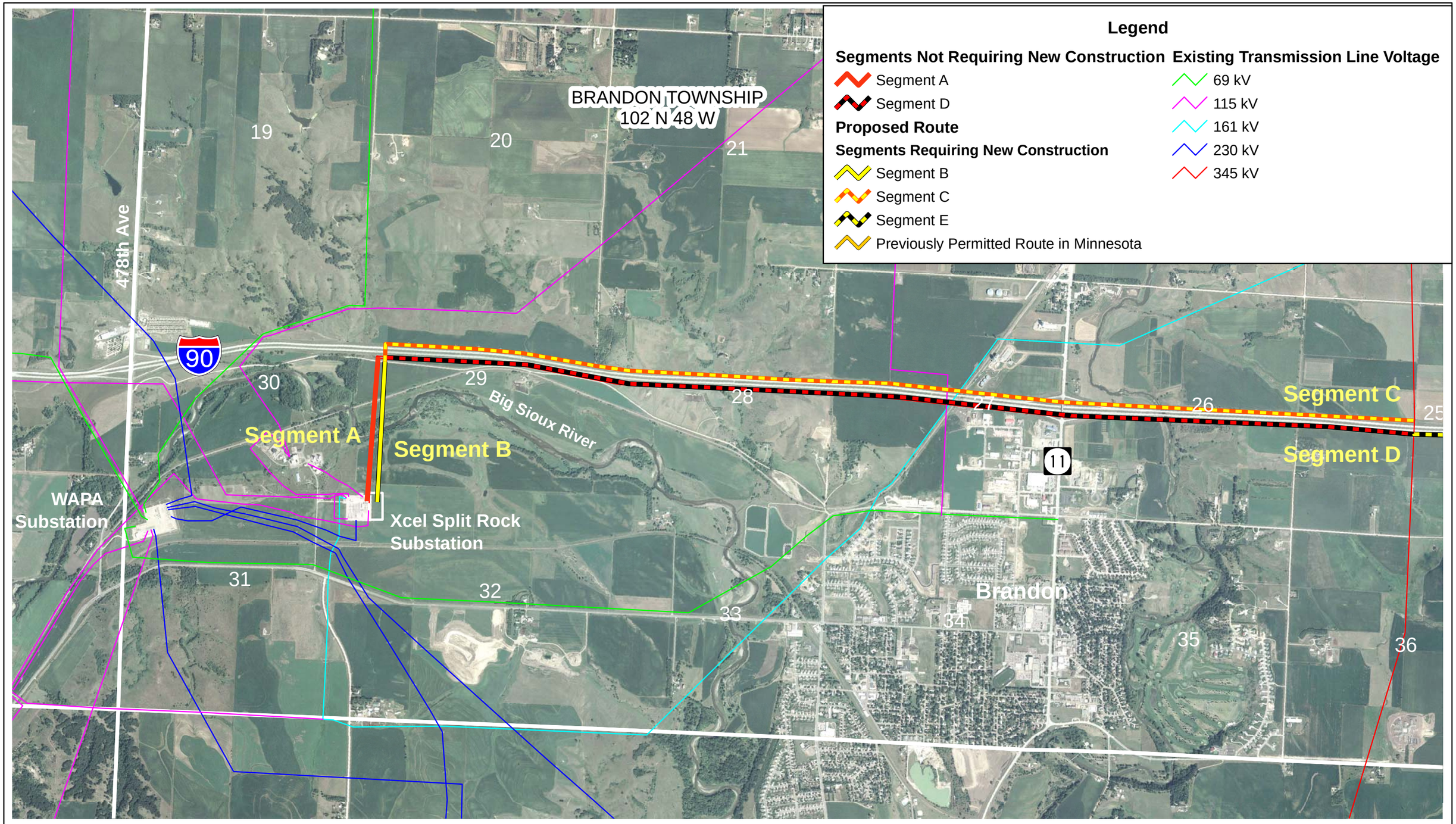
## VII. PERMIT TRANSFER

The Permittee may request at any time that the EQB transfer this permit to another person or entity. The Permittee shall provide the name and description of the person or entity to whom the permit is requested to be transferred, the reasons for the transfer, a description of the facilities affected, and the proposed effective date of the transfer. The person to whom the permit is to be transferred shall provide the EQB with such information as the EQB shall require to determine whether the new permittee can comply with the conditions of the permit. The EQB may authorize transfer of the permit after affording the Permittee, the new permittee, and interested persons such process as is required.

## VIII. REVOCATION OR SUSPENSION OF THE PERMIT

The EQB may initiate action to revoke or suspend this permit at any time. The EQB shall act in accordance with the requirements of Minnesota Rules part 4400.3950 to revoke or suspend the permit.

# EXHIBIT C
# FACILITY MAPS




0 4,000 Feet

N W E S

Exhibit C.1a - Project Route Segments
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota

Xcel Energy
NORTHERN STATES POWER

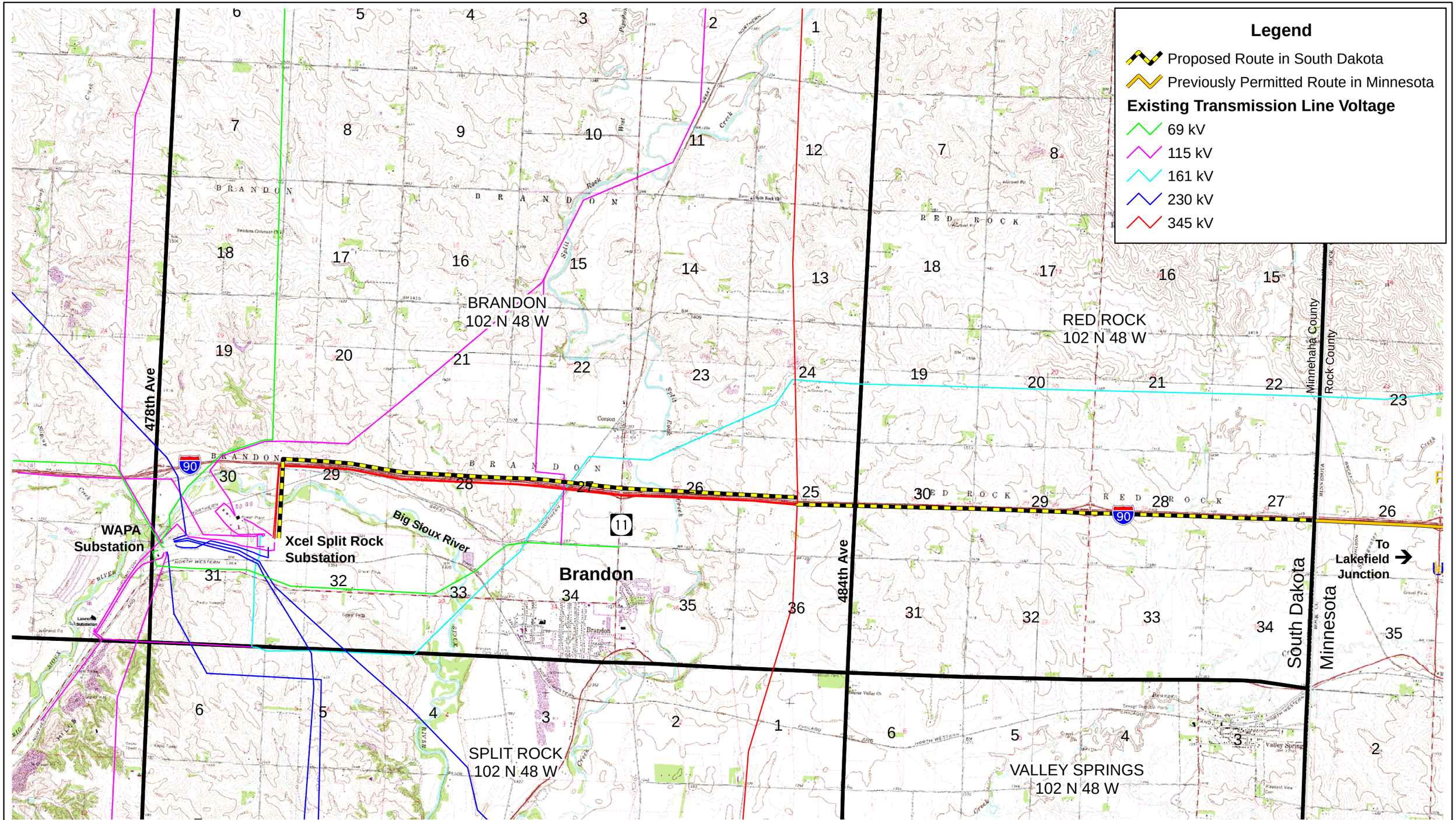
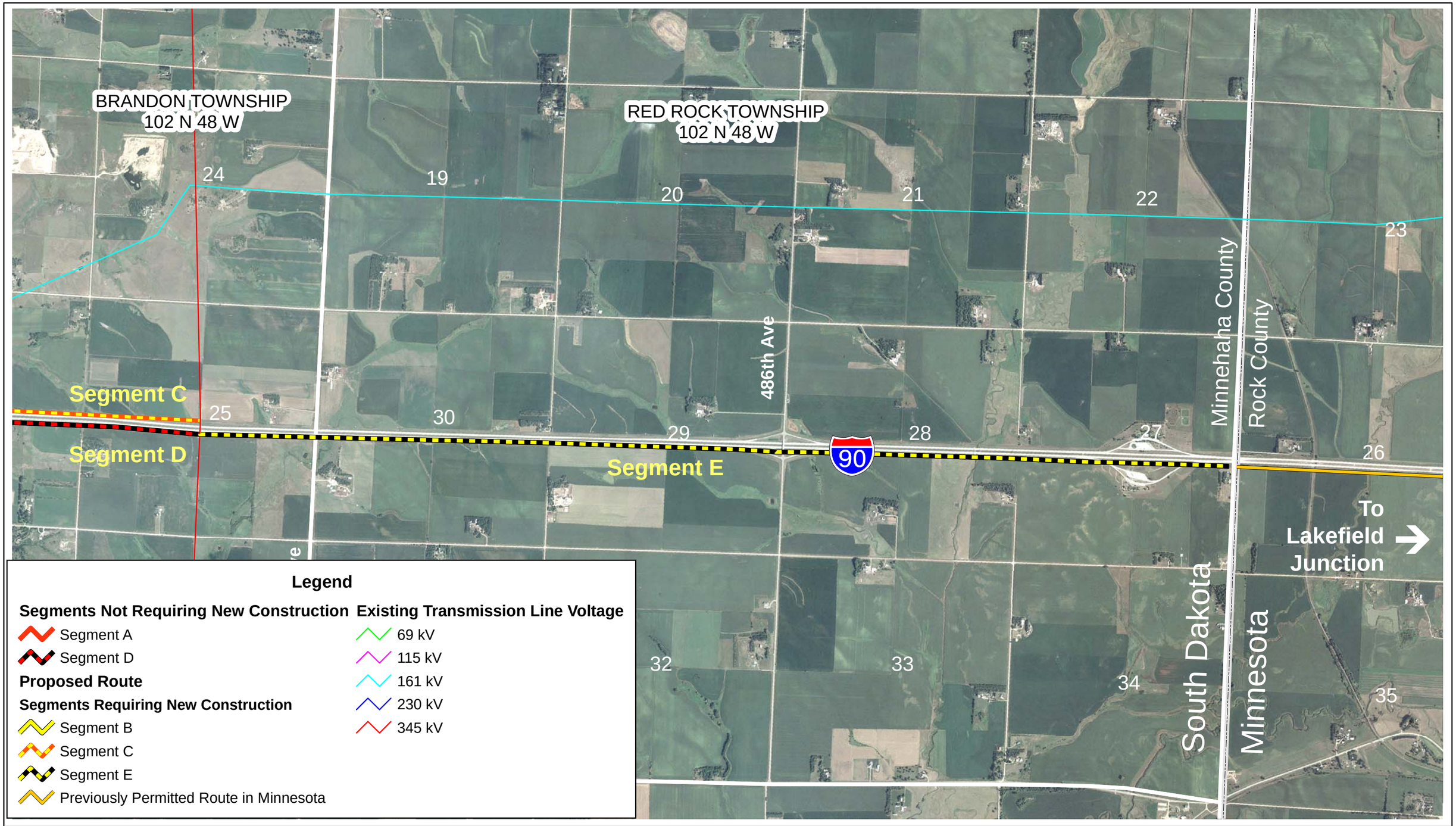



Exhibit C.2 - Topographic Map of Facility Area
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota

Xcel Energy
NORTHERN STATES POWER




**Legend**

| Segments Not Requiring New Construction | Existing Transmission Line Voltage |
|---|---|
| Segment A | 69 kV |
| Segment D | 115 kV |
| **Proposed Route** | 161 kV |
| **Segments Requiring New Construction** | 230 kV |
| Segment B | 345 kV |
| Segment C | |
| Segment E | |
| Previously Permitted Route in Minnesota | |

0 4,000 Feet

N W E S

Exhibit C.1b - Project Route Segments
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota

Xcel Energy
NORTHERN STATES POWER

**Legend**

- Approximate Direction of Existing Drainage
- Proposed Route in South Dakota
- Previously Permitted Route in Minnesota
- NWI Wetlands - SD
- 100-year Floodplain

**Existing Transmission Line Voltage**

- 69 kV
- 115 kV
- 161 kV
- 230 kV
- 345 kV

BRANDON
102 N 48 W

RED ROCK
102 N 48 W

SPLIT ROCK
102 N 48 W

VALLEY SPRINGS
102 N 48 W

Xcel Split Rock Substation

Brandon

Corson

484th Ave

Minnehaha County

Rock County

South Dakota

Minnesota

Big Sioux River

Split Rock Creek

Drainage Way to Split Rock Creek

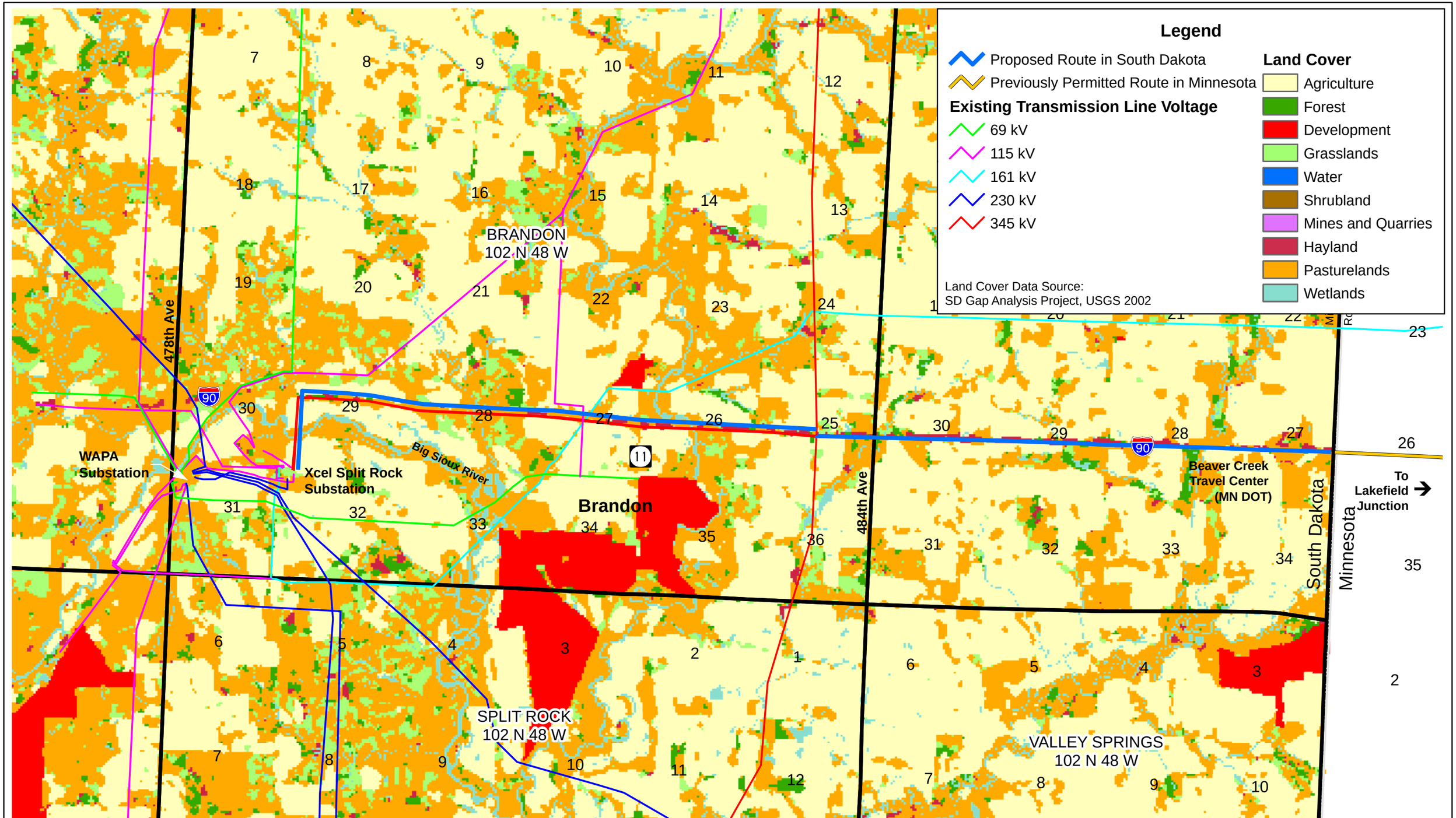
Beaver Creek

0 3,000 6,000 Feet

N W E S

Figure C.3 - Hydrologic Map
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota

Xcel Energy
NORTHERN STATES POWER

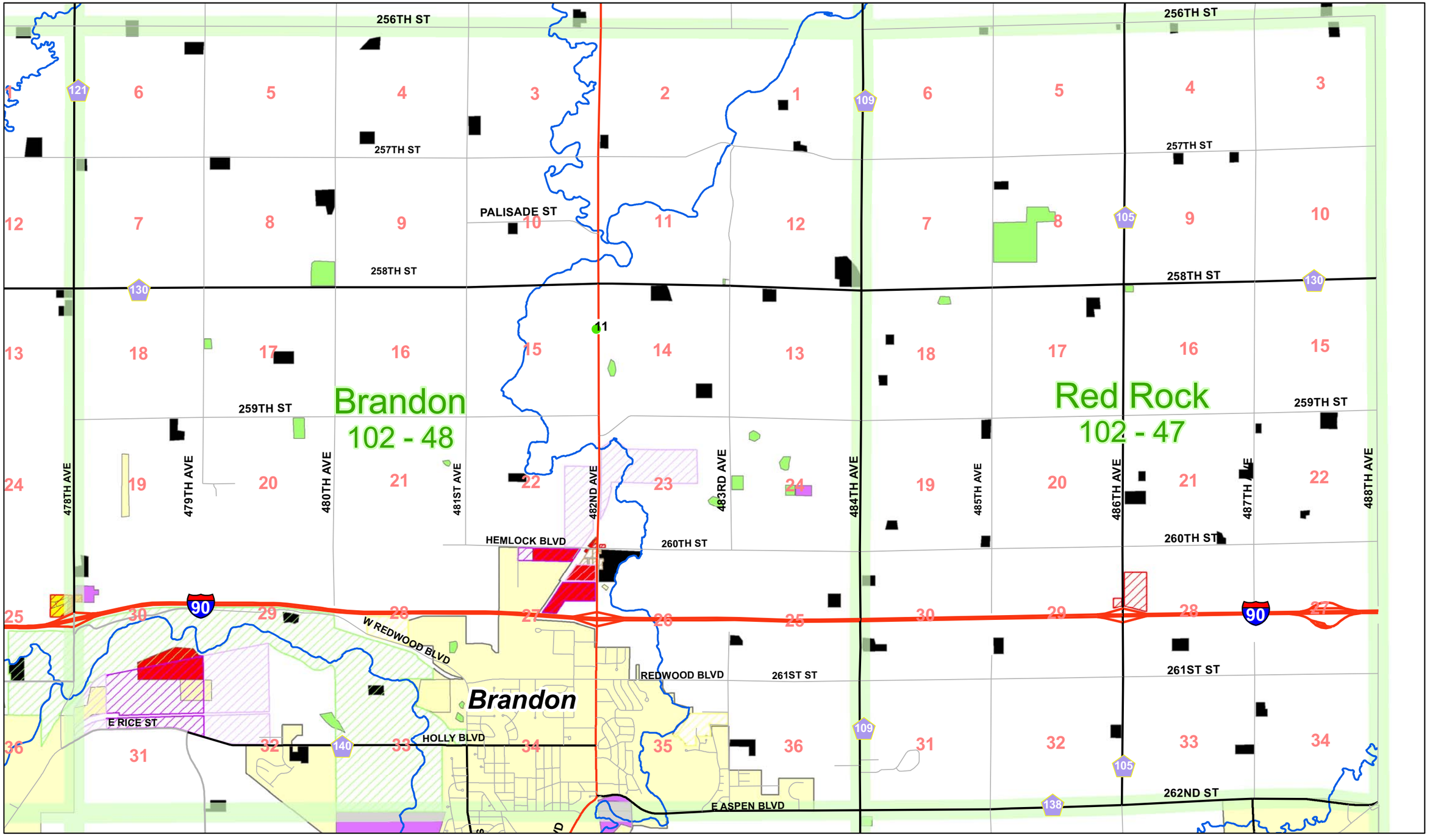



0 4,000 8,000 Feet

N W E S

Exhibit C.4 - Land Cover Map
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota

Xcel Energy
NORTHERN STATES POWER




**Zoning**

- Commercial (C)
- Light Industrial (I-1)
- General Industrial (I-2)
- Planned Development
- Recreation and Conservation
- Rural Residential (RR1)
- Rural Residential (RR5)
- Rural Residential (RR)
- Residential District (RS-1)
- Residential District (RS-2)
- Residential District (R-1)
- Residential District (RA-1)

**Land Use**

- Farmstead
- Light Manufacturing
- Heavy Manufacturing
- Tranportation, Communication & Utilities
- General Commercial
- Intensive Retail Commercial
- Office, Institutions & Services
- Cultural, Entertainment & Recreation
- Agricultural, Resource & Other

Exhibit C.5
Minnehaha County
Zoning Map

N W E S

0 0.5 1 2 Miles

Minnehaha County GIS Planning & Zoning

**Map Date: 06/30/05**

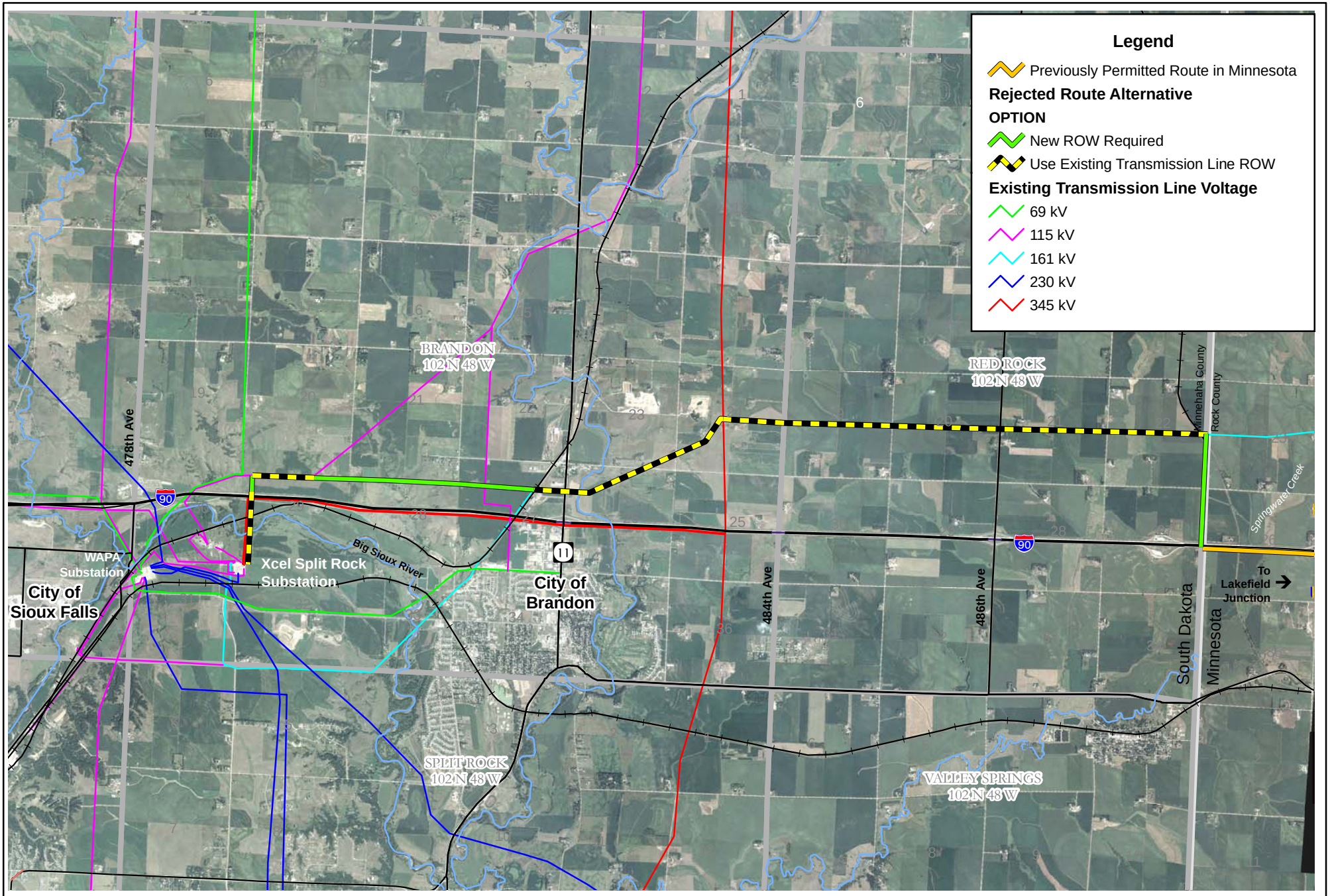
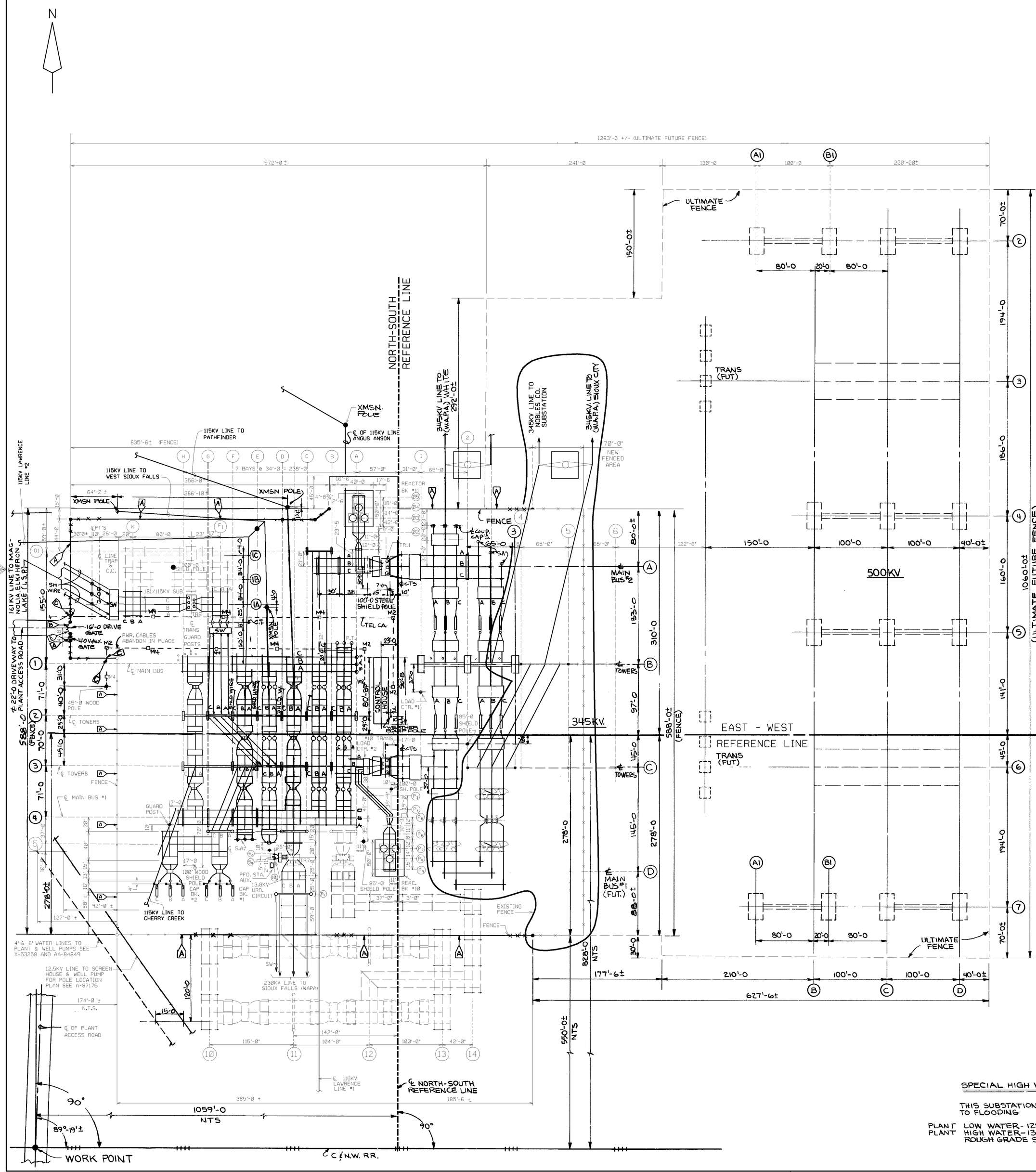
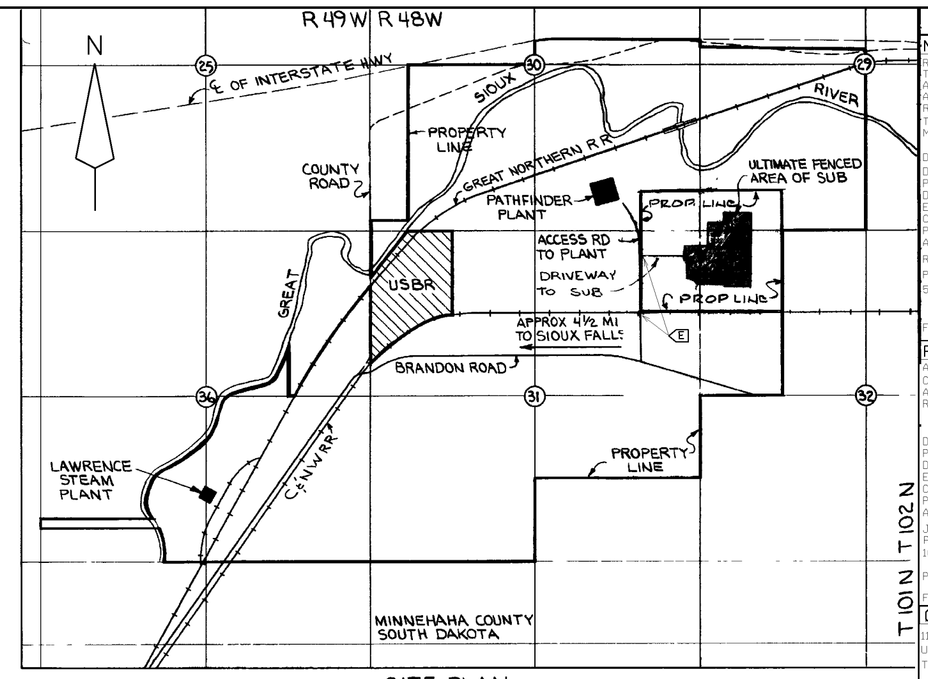



Exhibit C.6 - Rejected Route Alternative Aerial Photo
Split Rock to Lakefield Junction 345kV Line
Xcel Energy
Minnehaha County, South Dakota

Xcel Energy
NORTHERN STATES POWER




SITE PLAN
NO SCALE

**SUBSTATION ADDRESS:**
3200 EAST RICE STREET
SIOUX FALLS, SD 57110
PHONE: (605) 339-8237

GENERAL NOTES

1. LOCATION OF BENCH MARK FOR GRADE ELEVATION IS TOP OF OPERATING FLOOR IN POWER PLANT. ASSUME ELEVATION OF BENCH MARK IS 1327.00'
2. SUBSTATION ROUGH GRADE ELEVATION IS 1355.67'
3. SUBSTATION AREA ENCLOSED BY FENCE AND EXTENDING 2'-0" OUTSIDE, SURFACED WITH 4" CLEAN ¾" CRUSHED ROCK.
4. FENCE - 7'-0" HIGH STEEL CHAIN LINK FABRIC AND 1'-0" HIGH VERTICAL ARM BARBED WIRE ON TOP. IN ACCORDANCE WITH NSP ENG. & DES. STDS. ED 4.09.03.
5. SEE STRUCTURAL STEEL DRAWINGS FOR LOAD REQUIREMENTS OF EXTERNAL AND INTERNAL STRAINS.
6. U.G. POWER DUCTS PASS UNDER FENCE MIDWAY BETWEEN FENCE POSTS AND, WHERE POSSIBLE, NOT LESS THAN 2'-6" BELOW GRADE.

LEGEND

1. (A) → ON ALL MINNESOTA AND WISCONSIN COMPANY SUBSTATION FENCES INSTALL NO TRESPASSING SIGNS WORDED "WARNING/HAZARDOUS VOLTAGES INSIDE/KEEP OUT/CAN SHOCK BURN OR CAUSE DEATH". THIS SIGN IS NSP STOCK NO. 16-0092. (NSP STD. DWG. - ND-160280). THESE SIGNS ARE TO BE MOUNTED ON THE OUTSIDE OF THE FENCE FABRIC APPROXIMATELY 4'-6" FROM FINISHED GRADE TO THE CENTER OF SIGN AND EVERY 50'-0" AROUND THE FENCE PERIMETER.
2. (B) → ON ALL MINNESOTA AND WISCONSIN COMPANY SUBSTATION FENCES INSTALL ENTRY WARNING SIGNS WORDED "WARNING/LIMITED OVERHEAD ELECTRICAL CLEARANCES WITHIN/ENTRY BY AUTHORIZED PERSONNEL ONLY". THIS SIGN IS NSP STOCK NO. 16-0094. (NSP STD. DWG. - ND-160279). MOUNT TWO SIGNS APPROXIMATELY 4'-6" FROM GRADE TO CENTER OF SIGNS, BACK TO BACK, ON THE INSIDE AND OUTSIDE OF EACH WALK GATE AND DRIVE GATE FABRIC. THE DRIVE GATE SIGNS SHOULD BE MOUNTED ON THE DRIVERS SIDE PANEL OF THESE DOUBLE GATES.
3. (C) → INDICATES "CAUTION-BURIED CABLE" SIGNS, (NSP STOCK NO. 16-0088), ORDERED BY FIELD AND MOUNTED EACH SIDE OF FENCE FABRIC, BACK TO BACK, APPROXIMATELY 3'-6" FROM GRADE TO TOP OF SIGNS.
4. (D) → INDICATES "CAUTION-BURIED CABLE" SIGNS, (NSP STOCK NO. 16-0088), POST MOUNTED, ORDERED AND INSTALLED BY FIELD.
5. (E) → INDICATES SUBSTATION ADDRESS SIGN, ORDERED BY ENGINEERING AND FIELD MOUNTED BY CONSTRUCTION. MOUNT ADDRESS SIGN AT APPROXIMATELY 4'-6 FROM GRADE TO CENTER OF SIGN ON SUBSTATION GATE. FIELD TO ORDER POST AND MOUNT ADDRESS SIGNS AT THE ENTRANCE OF THE PLANT ACCESS ROAD AND THE SUBSTATION DRIVEWAY.
6. (M-1) → INDICATES CONCRETE MARKERS FOR DIRECT BURIED CABLE RUNS. E & D STD. EE 1.0501, ORDERED BY FIELD.
7. ◆ → INDICATES A 7'-0" STEEL CHANNEL POST, PAINTED ORANGE, NSP STOCK NO. 16-0095 ORDERED AND INSTALLED BY FIELD WHERE SHOWN.

DRAWING REFERENCE

| | |
|---|---|
| PROPERTY PLAT | NF-20690 |
| PROPERTY MAP | NF-17172 |
| CONTOUR & GRADING LAYOUT | NH-85508 |
| 115KV ELECT LAYOUT SH 1 | NH-85843 |
| CIRCUIT DIAGRAM SH 1 | NF-85945 |
| GROUNDING LAYOUT | NF-85922 |
| SOIL BORINGS | NH-85835 |
| FOUNDATION LAYOUT | NH-85867 |
| WEATHER MONITORING INST. | ND-83010 |

SPECIAL HIGH WATER NOTE

THIS SUBSTATION IS NOT NORMALLY SUBJECT TO FLOODING

PLANT LOW WATER - 1287.00' (DESIGN)
PLANT HIGH WATER - 1318.00' (DESIGN)
ROUGH GRADE SUBSTATION - 1355.67'

**REVISIONS**

N INSTALL TR6 AND REMOVE 6X AND 6Y TRANSFORMERS AND ASSOCIATED BUS AS OUTLINED. REPLACE 161KV LINE TRAP AND TR6 METERING CT'S.
DWN: LJG
DESIGNER: R.N.
PHONE NO. 571-2500
DATE: 1-6-98
E-97AE01
CHK'D BY: JH
PHONE NO. 571-2500
APPD & CERT:
ROBERT NUNDAHL
P.E. #20813
6-19-98
FILMED: 6-4-98

P ADD 115KV BKRS 5XB1 AND 5X83, TR7, CT'S CCVT'S AND 230KV SW. AS OUTLINED. RELOCATE FENCE 30' WEST
DESIGNER: BAW
PHONE NO. 571-2500
DATE: 12-8-97
E-96BT01
CHK'D BY: MM
PHONE NO. 571-2500
APPD & CERT:
JONATHON P. HAUSER
PE 5965
10-15-98
PHONE NO. 571-2500
FILMED: 11-13-98

Q ADD REACTOR BKS 10 & 11 AND ASSOC. EQUIP. UPGRADE CAP BKS 1 & 2 TO 120 MVARS
DWN: M.M.
DESIGNER: M.M.
PHONE NO. 612-571-2500
DATE: 5-20-98
E-97DK03
CHK'D BY: JH
PHONE NO. 612-571-2500
APPD & CERT:
ROBERT D. NUNDAHL
PE #6258
11-23-98
PHONE NO. 612-571-2500
FILMED: 12-28-98

R ADD ARRESTERS & PT'S TO CAP BANKS 1 & 2.
DESIGNER: M. MANTHEI
PHONE NO. 612-571-2500
DATE: 6-28-99
E-97DK03
CHK'D BY: R.D. NUNDAHL
PHONE NO. 612-571-2500
APPD & CERT:
JONATHON HAUSER
P.E. #5965
8-11-99
PHONE NO. 612-571-2500
FILMED: 8-23-99

S ADD NEW PREFERRED STATION AUX. TRANSFORMER TO TR7 TERTIARY. ADD SUBSTATION ADDRESS SIGNS AS OUTLINED.
DESIGNER: GLS
PHONE NO. (763) 571-2500
DATE: 01-11-01
E-00GB01
CHK'D BY: RN
PHONE NO. (763) 571-2500
APPD & CERT:
PHONE NO. (763) 571-2500
FILMED:



ENGINEERING DEPARTMENT MINNEAPOLIS, MN

SIOUX FALLS
SPLIT ROCK SUBSTATION — SPK
LOCATION PLAN

Xcel Energy

| SCALE | DRAWING NUMBER | REV |
|---|---|---|
| 1"=50'-0" | NF-SK85515 | NONE |

SIGN/PLANT NUMBER: 6225

# TABLE OF CONTENTS
# ORDINANCE MC16-90
# 1990 REVISED ZONING ORDINANCE
# FOR MINNEHAHA COUNTY

# ARTICLE 1.00
# TITLE AND PURPOSE

1.01 TITLE. These regulations may be referred to as the 1990 Revised Zoning Ordinance for Minnehaha County.

*(amended by MC16-55-01)*
1.02 PURPOSE. These regulations have been based upon the Minnehaha County Comprehensive Development Plan adopted on December 15, 1998 by the Board of County Commissioners, and are in conformance with Chapter 11-2 of the South Dakota Compiled Laws. These regulations are designed to carry out the goals and objectives of the plan, but especially to lessen congestion in the streets; to secure safety from fire, panic and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration or scattering of population; and to encourage a distribution of population or mode of land utilization that will facilitate the economical and adequate provision of transportation, water, drainage, sewerage, schools, parks, or other public requirements.

These regulations have been made with reasonable consideration to the character and intensity of the various land uses and the need for public facilities and services that would develop from those uses. These regulations are necessary for the best physical development of the county. The regulations are intended to preserve and protect existing property uses and values against adverse or unharmonious adjacent uses by zoning all unincorporated land except those areas where joint zoning jurisdiction has been granted to a municipality.

# ARTICLE 2.00
# DISTRICTS AND BOUNDARIES

2.01 APPLICATION OF REGULATIONS AND BOUNDARIES. The regulations and zoning district boundaries set forth in this ordinance shall apply to all unincorporated land within Minnehaha County except those areas which have been approved for municipal joint zoning jurisdiction. *(amended by MC16-65-03)*

2.02 DISTRICTS DESIGNATED. In order to regulate and restrict the height, number of stories, and size of buildings and other structures; the percentage of a lot that may be occupied; the size of the yards, courts, and other open spaces; the density of population; and the location and use of buildings, structures, and land for trade, industry, residence, or other purposes; the county is hereby divided into the following districts:

| | | | |
|---|---|---|---|
| A-1 | Agricultural | I-1 | Industrial |
| RR | Rural Residential | I-2 | Industrial |
| R-1 | Residential | RC | Recreation/Conservation |
| C | Commercial | PD | Planned Development |

The following districts shall be designated as zoning overlay districts, imposing special regulations on the properties that fall within these overlay districts without abrogating the requirements imposed by the underlying land use district regulations:

WS Water Source Protection

2.03 INCORPORATED BY REFERENCE. The following are hereby adopted and incorporated by reference:

(A). The official zoning map(s) of the 1990 Revised Zoning Ordinance, together with all the explanatory matter thereon and attached thereto, is hereby adopted by reference and is declared to be a part of these regulations. The maps shall be filed with the Register of Deeds.

(B). The Flood Insurance Rate Map is hereby adopted by reference and declared to be a part of these regulations. Areas shown as Zone A, AO or A1- A30 on the F.I.R.M. but which are zoned A-1 Agricultural on the zoning map shall be governed by the provisions of the RC Recreation/Conservation District.

(C). The approved plans submitted in conjunction with any Planned Development are hereby adopted by reference and declared to be a part of these regulations.

2.04 BOUNDARIES OF DISTRICTS; MAPS. The boundaries of the districts are shown upon the maps which have been made a part hereof by reference. The various districts and their boundaries which have been designated on these maps shall have the same force and effect as if they were all fully set forth herein.

2.05 RULES WHERE UNCERTAINTY AS TO BOUNDARIES ARISES. Where uncertainty exists with respect to the boundaries of the various districts shown on the maps accompanying and made a part of these regulations by reference, the following rules apply:

(A). The district boundaries are roads unless otherwise shown, and where the districts are bounded approximately by roads, the road shall be construed to be the boundary of the district.

(B). Where the property has been or may hereafter be divided into blocks and platted lots, the district boundary shall be construed to coincide with the nearest platted lot lines; and where the districts are bounded approximately by platted lot lines, the platted lot lines shall be construed to be the boundary of the district, unless the boundaries are otherwise indicated on the maps.

(C). In unplatted property, the district boundary lines shall be determined by use of the scale appearing on the map or the legal description as indicated.

2.06 VACATION OF STREETS AND ROADS. Whenever any street, road or other public way is vacated, the zoning district adjoining each side of such street, road, or other public way is extended to the center of such vacation; and all area included in the vacation shall then and henceforth be subject to the appropriate regulations of the extended districts.

# ARTICLE 3.00
# A-1 AGRICULTURAL DISTRICT

SECTIONS:


3.01 INTENT. It shall be the intent of this district to provide for a vigorous agricultural industry by preserving for agricultural production those agricultural lands beyond areas of planned urban development. It is recognized that because of the nature of both agricultural activities and residential subdivisions, that these two uses are generally poor neighbors and therefore a concentration of housing in the A-1 Agricultural District shall be discouraged.

3.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the A-1 Agricultural District:

(A). Agriculture.
(B). A single-family dwelling if the following provisions for building eligibility are met: *(amended by MC16-69-04)*
  1). Each quarter-quarter section shall have one building eligibility when all the following conditions are met:
    a). There are no other dwellings on the quarter-quarter section.
    b). The building site shall be a minimum of one acre.
    c). Approval has been granted by the appropriate governing entity for access onto a public road.
    d). The remaining portion of the quarter-quarter section is retained as agricultural land or in its present use.
(C). Elementary or high school.
(D). Historical sites.
(E) Church.
(F). Neighborhood utilities.
(G). Antenna support structure. *(amended by MC16-65-03)*

3.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the A-1 Agricultural District in conformance with the requirements prescribed herein. A building or premises intended to be used for the following purposes, where the prescribed requirements will not be met, shall obtain a conditional use in conformance with the requirements of Article 19.00: *(amended by MC16-40-98)*

*(amended by MC16-69-04)*
(A). A building eligibility may be used within a farmstead provided:
  1) The building eligibility exists on property contiguous to and under the same ownership as the farmstead.
  2) There will be no more than two dwellings within the farmstead.

The residential structure may be a single-family dwelling, manufactured home or mobile home.

(B). Cemetery provided there is an area of 20 acres or more.

(C). Pet cemetery provided there is a minimum area of two acres.

(D). Wind energy conversion system in conformance with Article 12.02.

(E). Off-premise signs in conformance with Article 17.00.

(F). [Reserved.] *(amended by MC16-53-00)*

(G). Greenhouses and nurseries provided there is no retail sale of products conducted on the premises.

(H). A single-family dwelling located on a lot of record in accordance with the following: *(amended by MC16-69-04)*

1) A lot of record consisting of less than 80 acres and containing no other dwellings shall have one building eligibility.
2). A lot of record consisting of 80 acres or more shall qualify for building eligibility as follows:
   a). The acreage of the lot of record shall be divided by 40 acres. The resulting whole number minus the number of existing dwellings shall represent building eligibility.
   b). If there is more than one building eligibility, each additional building site shall be required to obtain a conditional use.
3). Approval has been granted by the appropriate governing entity for access onto a public road.
4). Any parcel conveyed from a lot of record must be a minimum of one acre. The remaining portion of the lot shall be retained as agricultural land or in its present use.

(I). Concentrated Animal Feeding Operation (Class D) provided*:* *(amended by MC16-18-94 and MC16-40-9)*

1) The operation shall either be located in a farmstead, or shall be separated from a dwelling, church, school or business by a minimum distance of 660 feet**,** a public park by a minimum distance of 1320 feet and a municipality by a minimum distance of 2640 feet.
2). The operation shall meet the requirements of Table 1 in Section 12.10 (F) and Section 12.10 (G).
3). The operation shall not be in the Water Source Protection Overlay District or a flood plain.

(J.) Concentrated animal feeding operation (existing) shall be allowed to expand by provided: *(amended by MC16-40-98 and MC16-75-05)*

1). The operation is located in a farmstead or property contiguous to, and smaller than, the aforementioned farmstead.

2). The operation shall not be located in the Water Source Protection Overlay District or a flood plain.
3). The operation shall not exceed 1000 animal units.
4). There is conformance with South Dakota Department of Environment and Natural Resources design standards for any newly constructed waste containment facility. A registered professional engineer shall certify the plan specifications and the construction of the facility.
5). Results of a geotechnical test boring are provided to the Planning Department which were performed in conformance with Section 12.10 (C)(3). If a shallow aquifer is present, measures shall be employed to protect the groundwater from contamination. The County may call upon the expertise of the South Dakota Geological Survey in making a determination on whether a shallow aquifer exists on the site as based on the soil boring data.
6). Approval by the Planning Director of a nutrient management plan which has been prepared in conformance with the South Dakota Department of Environment and Natural Resources standards.
7). The operation shall meet the requirements of Table 1 in Section 12.10 (F) and Section 12.10 (G).
8). All liquid waste generated by the additional animal units shall be injected. In the event of an extraordinary circumstance, surface application may be allowed in accordance with the provisions of Section 12.10 (E)(3). The Planning Director may approve the surface application of livestock production surplus water in accordance with Section 12.10 (E)(3).
9). The operation is not located within 2640 feet of a municipality.
10). The expansion shall not exceed 500 animal units.

(K). Telecommunication and broadcast tower in conformance with Article 12.12.
*(amended by MC16-53-00, MC16-55-01, MC16-65-03)*

3.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the A-1 Agricultural District if a conditional use has been obtained in conformance with the requirements of Article 19.00:

(A). Rock, sand, or gravel extraction in conformance with Article 12.08.
(B). Mineral exploration in conformance with Article 12.04.
(C). Airport/heliport.
(D). A single-family dwelling on a parcel which is not a lot of record provided:
1). The deed to the land or the agreement to convey the parcel was recorded with the Register of Deeds prior to September 27, 1988.
2). There are no other dwellings located on the parcel, except a parcel of 80 acres or more shall have building eligibility determined as follows:
a). The acreage of the parcel shall be divided by 40 acres. The resulting whole number minus the number of existing dwellings on the parcel shall represent the building eligibility.
b). Each building site shall consist of a minimum of one acre.
3). The building site shall not conflict with other existing or potential land use activities or the prevailing pattern of development.
4). The soil conditions are acceptable for a building site.

5). Approval has been granted by the appropriate governing entity for access onto a public road.

(E). Group day care.
(F). Private campground.
(G). Garden center.
(H). Kennel.
(I). Stable.
(J). Roadside stand.
(K). Fireworks sales provided the length of sales does not exceed nine (9) days.
(L). Golf course, golf driving range.
(M). Private outdoor recreation facility.
(N). Trap shoot, rifle range, pistol range.
(O). Public facility owned and operated by a governmental entity.
(P). [Reserved.] *(amended by MC16-65-03)*
(Q). Bed and breakfast establishment.
(R). Sanitary landfill, solid waste transfer station, rubble dump, commercial compost site. *(amended by MC16-19-94)*
(S). Sewage disposal pond.
(T). Livestock sales barn.
(U). Concentrated Animal Feeding Operation - New (Class A, B, or C). *(amended by MC16-40-98)*
(V). Electrical substation.
(W). Public utility facility.
(X). Agriculturally related operations involving the handling, storage and shipping of farm products.
(Y). *(amended by MC16-69-04)*

The transfer of a building eligibility from one parcel to another parcel when all the following conditions are met:

1). The transfer of building eligibility shall occur only between contiguous parcels under the same ownership.
2). Suitability as a building site based on the following factors:
   a). Agricultural productivity of the soil.
   b). Soil limitations.
   c). Orientation of the building site(s) with respect to road circulation and access to public rights-of-way.
3). The minimum lot size shall be one acre but a larger area may be required when soil conditions warrant.
4). The parcel from which the eligibility is transferred shall continue as agricultural land or remain in its present use.
5). Approval has been granted by the appropriate governing entity for access onto a public road.

(Z). Manufactured home in conformance with Article 12.06(C) if there is building eligibility on the parcel.
(AA). Major home occupation in conformance with Sections 12.0302 and 12.0303. *(amended by MC 16-53-00)*
(BB). Facilities for the storage and distribution of anhydrous ammonia. *(amended by MC16-53- 00)*

3.05 ACCESSORY USES. Accessory uses and buildings permitted in the A-1 Agricultural District are buildings and uses customarily incident to any permitted use in the district.

3.06 PARKING REGULATIONS. All parking within the A-1 Agricultural District shall be regulated in conformance with the provisions of Article 15.00.

3.07 SIGN REGULATIONS. Signs within the A-1 Agricultural District shall be regulated in conformance with the provisions of Article 16.00.

3.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the A-1 Agricultural District shall be as follows:

(A). General Requirements:

| | |
|---|---|
| Lot area..... | 1 acre * |
| Lot width ..... | 125' |
| Front yard ..... | 30' ** |
| Side yard ..... | 7' |
| Rear yard ..... | 30' |
| Maximum height ..... | 35' *** |

* Unless a larger lot size is required by the granting of a conditional use.
** The front yard on a major arterial street or section line road shall be 50 feet.
*** There shall be no height limit for farm structures or wind energy conversion systems.

(B). There shall be a required front yard on each street of a double frontage lot.

(C). If a lot of record has less area or width than herein required and its boundary lines along the entire length abutted lands under other ownership on November 20, 1973, and have not since been changed, such parcel of land may be used for any use permitted in this district.

(D). Buildings with side yard setbacks less than required herein may have additions erected in line with the existing building and provided further that said additions will be erected no closer to the lot line than the existing building.

(E). Buildings may be located within the required front yard but no closer to the public right-of-way than a legal nonconforming building provided the building is no greater than 150 feet from the nonconforming building.

along the entire length abutted lands under other ownership on November 20, 1973, and have not since been changed, such parcel of land may be used for any use permitted in this district.

(D). Buildings with side yard setbacks less than required herein may have additions erected in line with the existing building and provided further that said additions will be erected no closer to the lot line than the existing building.

(E). Buildings may be located within the required front yard but no closer to the public right-of-way than a legal nonconforming building provided the building is no greater than 150 feet from the nonconforming building.

# ARTICLE 4.00
# RR RURAL RESIDENTIAL DISTRICT

4.01 INTENT. This district is intended to protect a vigorous agricultural industry by limiting the areas in which the RR Rural Residential District can be used. The RR Rural Residential District, where permitted, shall generally be located where provisions can be made to adequately handle sewage disposal, where the value of the land for agricultural use is marginal, and where the water supply, roads and emergency services are easily and economically available.

4.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the RR Rural Residential District:

(A). Single family dwelling.
(B). Public park, playground or swimming pool.
(C). Neighborhood utilities

4.03. PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the RR Rural Residential District in conformance with the conditions prescribed therein or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). Church subject to:
  (1). Said building being adjacent to an arterial street or section line road.

(B). Elementary and high school subject to:
  (1). One of the principle frontages of the premises shall abut upon an arterial or collector street.
  (2). The main building shall be set back 25 feet from the side lot line.

(C). Reserved. *(amended by MC16-55-01)*

(D). Reserved. *(amended by MC16-53-00)*

4.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the RR Rural Residential District if a Conditional Use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). Mobile home/manufactured home park in conformance with Article 12.06.
(B). Mobile home/manufactured home subdivision in conformance with Article 12.06.

(C). Day care center.
(D). Group day care.
(E). Group home.
(F). Bed and breakfast establishment.
(G). Nursing home.
(H). Cemetery.
(I). Kennel.
(J). Stabling of horses, provided they are owned by the resident of the property and not used as a commercial operation on the property.
(K). Golf course, except miniature course and driving range.
(L). Wind Energy Conversion System in conformance with the requirements of Article 12.02.
(M). Electrical substation.
(N). Public utility facility.
(O). Public facility owned and operated by a governmental entity.

4.05 ACCESSORY USES. Accessory uses and buildings permitted in the RR Rural Residential District are buildings and uses customarily incident to any of the permitted uses in the district.

4.06 PARKING REGULATIONS. All parking within the RR Rural Residential District shall be regulated in conformance with the provisions of Article 15.00.

4.07 SIGN REGULATIONS. Signs within the RR Rural Residential District shall be regulated in conformance with the provisions of Article 16.00.

4.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the RR Rural Residential District shall be as follows:

(A). General requirements:

| | All Uses |
|---|---|
| Density ..... | 1 acre * |
| Lot area ..... | 1 acre * |
| Lot width ..... | 125' |
| Front yard ..... | 30' ** |
| Side yard ..... | 7' |
| Rear yard ..... | 30' |
| Maximum height ..... | 35' |

* Where a central sanitary sewer is available, the required lot area may be reduced to 20,000 square feet.

** The front yard on all major arterial streets or section line roads shall be 50 feet.

(B). There shall be a required front yard on each street of a double frontage lot.

(C). Buildings with side yard setbacks less than required herein, may have additions erected in line with the existing building and provided further that said additions will be erected no closer to the lot line than the existing build ing.

# ARTICLE 5.00
# R-1 RESIDENTIAL DISTRICT

5.01 INTENT. This district is intended to provide for areas of residential use with a gross density of generally five dwelling units per acre or less. The district permits single family dwellings and such supportive community facilities as parks, playgrounds, schools, libraries and churches. It is intended that this district provide protection for those areas existing as, or planned for, single family neighborhoods. A central sanitary sewer system should be available to serve these developments.

5.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the R-1 Residential District:

(A). Single family dwelling.
(B). Public park, playground or swimming pool.
(C). Neighborhood utilities.

5.03. PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the R-1 Residential District in conformance with the conditions prescribed herein or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). Churches:
  (1). One of the principle frontages of the premises shall abut upon an arterial or collector street.
  (2). The main building shall be set back twenty-five feet from the side lot line.

(B). Elementary and high schools:
  (1). One of the principle frontages of the premises shall abut upon an arterial or collector street.
  (2). The main building shall be set back twenty-five feet from the side lot line.

(C). Reserved. *(amended by MC16-55-01)*

(D). Reserved. *(amended by MC16-53-00)*

5.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the R-1 Residential District if a conditional use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). Multiple dwellings.
(B). Group day care.
(C). Day care center.
(D). Bed and breakfast establishment.
(E). Private lake.
(F). Group home.
(G). Nursing home.
(H). Convent and monastery.
(I). Electrical substation.
(J). Public utility facility.

5.05 ACCESSORY USES. Accessory uses and buildings permitted in the R-1 Residential District are buildings and uses customarily incident to any of the permitted uses in the district.

5.06 PARKING REGULATIONS. Parking within the R-1 Residential District shall be regulated in conformance with the provisions of Article 15.00.

5.07 SIGN REGULATIONS. Signs within the R-1 Residential District shall be regulated in conformance with the provisions of Article 16.00.

5.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the R-1 Residential District shall be as follows:

(A). General requirements:

| | All Uses | Corner Lots |
|---|---|---|
| Density ..... | 7500 sq. ft. ..... | 8500 sq. ft. |
| Lot area ..... | 7500 sq. ft. ..... | 8500 sq. ft. |
| Lot width ..... | 60' ..... | 85' |
| Front Yard ..... | 30' ..... | 30' * |
| Side yard ..... | 7' ** ..... | 7' ** |
| Rear yard ..... | 30' ..... | 15' |
| Maximum height ... | 35' ..... | 35' |

* The front yard along the side street side of a corner lot may be reduced to 25 feet.
** The side yard will be required to be increased to 10 feet when the building is three stories in height or more.

(B). The requirements for multiple dwellings shall be determined by the conditional use.
(C). There shall be a required front yard on each street of a double frontage lot.

(D). Buildings with side yard setbacks less than required herein, may have additions erected in line with the existing building and provided further that said additions will be erected no closer to the lot line than the existing building.

# ARTICLE 6.00
# C COMMERCIAL DISTRICT

6.01 INTENT. This district is intended to provide for a wide variety of commercial uses generally located at major intersections and along major roads. This district will include general commercial uses requiring large land areas, extensive retail operations, and outdoor display.

6.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the C Commercial District:

(A). Office.
(B). Bank or financial institution.
(C). Group day care, day care center, group home.
(D). Mortuary.
(E). Indoor recreational facility.
(F). Nursery or greenhouse.
(G). Church.
(H). Antenna support structure. *(amended by MC16-65-03)*

6.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the C Commercial District in conformance with the conditions prescribed herein or by obtaining a Conditional Use for such uses in conformance with the requirements of Article 19.00:

(A). Retail sales and trade, personal services, communication facilities, and warehousing provided:

(1). There is no outside storage.
(2). There is no storage of a regulated substance.
(3). The building contains 10,000 square feet of area or less.

(D). Veterinarian clinic provided there is no outside kenneling of dogs.

(E). Frozen food locker provided there is no slaughtering of animals on the premises.

(F). Off-premise signs in conformance with Article 17.00.

(G). Telecommunication and broadcast tower in conformance with Article 12.12. *(amended by MC16-65-03)*

6.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the C Commercial District if a conditional use for such use has been obtained in conformance with the requirements in Article 19.00:

(A). Wholesale trade.
(B). Bar or lounge.
(C). Equipment sales, display and repair.
(D). Motor vehicle sales, display, service and rental.
(E). Auto body shop.
(F). Transportation, including gasoline service station, truck stop, and terminal.
(G). Recycling facility.
(H). Fireworks sales provided sales are conducted from a permanent building when business operations exceed nine (9) days.
(I). Uses which store or handle a regulated substance.
(J). Lumberyard.
(K). Contractor's shop and storage yard.
(L). Car wash.
(M). Airport/heliport.
(N). Hotel or motel.
(O). Hospital.
(P). Motor vehicle repair shop.
(Q). Public utility facility.
(R). Campground.
(S). Commercial recreation facility.
(T). Wind energy conversion system.
(U). Reserved. *(amended by MC16-65-03)*
(V). Electrical substation.
(W). Adult use in conformance with Section 12.09. *(amended by MC16-29-95)*

6.05 ACCESSORY USES. Accessory uses permitted in the C Commercial District are accessory buildings and uses customarily incident to any permitted uses in this district.

6.06 PARKING REGULATIONS. Parking within the C Commercial District shall be regulated in conformance with the provisions of Article 15.00.

6.07 SIGN REGULATIONS. Signs within the C Commercial District shall be regulated in conformance with the provisions of Article 16.00.

6.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. A maximum height and minimum lot requirements within the C Commercial District shall be as follows:

(A). General Requirements:

| | All Uses |
|---|---|
| Density | ---- |
| Lot Area | ---- |
| Lot Width | ---- |
| Front Yard | 30' |
| Side Yard | 10' |
| Rear Yard | 20' |
| Maximum Height | 35' |

(B). There shall be a required front yard on each street side of double frontage lots.

(C). There shall be a required front yard on each street side of a corner lot.

(D). Any accessory uses shall be required to comply with the height, front, rear and side yard requirements of the main building.

# ARTICLE 7.00
# I-1 LIGHT INDUSTRIAL DISTRICT

SECTIONS:


7.01 INTENT. This district is intended to provide for a number of light manufacturing, wholesale, warehousing, and service uses in an attractive industrial park like setting. These uses do not depend on frequent personal visits from customers or clients and do not include residences, apartments, or commercial uses which are primarily retail in nature. It is the intention of this district to provide high amenity industrial development along the major roads and adjacent to residential areas, while allowing for slightly heavier development in the interior of the industrial areas.

7.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the I-1 Light Industrial District:

(A). Public utility facility, electrical substation.
(B). Antenna support structure. *(amended by MC16-65-03)*
(C). Office.
(D). Bank or financial institution. *(amended by MC16-69-04)*
(E). Indoor recreation facility. *(amended by MC16-69-04)*
(F). Mortuary. *(amended by MC16-69-04)*
(G). Nursery or greenhouse. *(amended by MC16-69-04)*

7.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the I-1 Light Industrial District in conformance with the conditions prescribed herein or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). Communication facilities, warehousing and repair services provided:
  (1). There is no outside storage on the premises.
  (2). There is no storage of a regulated substance on the premises.
  (3). The building contains 20,000 square feet of area or less.

(B). Veterinarian clinic provided there is no outside kenneling of animals.

(C). Frozen food locker provided there is no slaughtering of animals on the premises.

(D). Off-premise signs in conformance with Article 17.00.

(E). Telecommunication and broadcast tower in conformance with Article 12.12. *(amended by MC16-65-03)*

*(amended by MC16-69-04)*

(F). Retail sales and trade, personal services, communication facilities, and warehousing provided:

(1). There is no outside storage.

(2). There is no storage of a regulated substance.

7.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the I-1 Light Industrial District if a Conditional Use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). Light manufacturing.
(B). Extraction of rock, sand and gravel in conformance with Article 12.08.
(C). Airport/heliport.
(D). Group day care, day care center, group home. *(amended by MC16-69-04)*
(E). Any conditional use listed in the C Commercial District.

7.05 ACCESSORY USES. Accessory uses and buildings permitted in the I-1 Light Industrial District are accessory buildings and uses customarily incident to any permitted uses in this district.

7.06 PARKING REGULATIONS. Parking within the I-1 Light Industrial District shall be regulated in conformance with the provisions of Article 15.00.

7.07 SIGN REGULATIONS. Signs within the I-1 Light Industrial District shall be regulated in conformance with the provisions of Article 16.00.

7.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the I-1 Light Industrial District shall be as follows:

(A). General requirements:

| | All Uses |
|---|---|
| Density | ---- |
| Lot Area | ---- |
| Lot Width | ---- |
| Front Yard | 30' |

# ARTICLE 8.00
# I-2 GENERAL INDUSTRIAL DISTRICT

8.01 INTENT. This district is intended to provide for heavy industrial uses which may create some nuisance and which are not properly associated with, nor compatible with residential, office, institutional or planned or neighborhood commercial establishments. All uses in this district shall comply with any state regulations regarding noise, emissions, dust, odor, glare, vibration or heat when applicable.

8.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the I-2 General Industrial District:

(A). Public utility facility, electrical substation.
(B). Antenna support structure. *(amended by MC16-65-03)*
(C). Wind energy conversion system.

8.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the I-2 General Industrial District in conformance with the conditions prescribed herein, or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). Communication facilities, warehousing and wholesale trade provided:

(1). There is no outside storage on the premises.
(2). There is no storage of a regulated substance on the premises.
(3). The building contains 25,000 square feet of area or less.

(B). Off-premise signs in conformance with Article 17.00.

(C). Telecommunication and broadcast tower in conformance with Article 12.12. *(amended by MC16-65-03)*

8.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the I-2 General Industrial District if a Conditional Use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). General manufacturing.
(B). Stockyards/slaughtering of animals.
(C). Rendering.
(D). Distillation of products.
(E). Refining.

(F). Sanitary landfill, solid waste receiving station.
(G). Paper manufacturing.
(K). Tank farm; petroleum products terminal.
(N). Salvage or junkyard.
(O). Airport/heliport.
(P). Extraction of rock, sand and gravel in conformance with Article 12.08.
(Q). Mineral exploration and development in accordance with Article 12.04.
(R). Any similar use not heretofore specified.

8.05 ACCESSORY USES. Accessory uses and buildings permitted in the I-2 General Industrial District are accessory buildings and uses customarily incident to any permitted uses in this district.

8.06 PARKING REGULATIONS. Parking within the I-2 General Industrial District shall be regulated in conformance with the provisions of Article 15.00.

8.07 SIGN REGULATIONS. Signs within the I-2 General Industrial District shall be regulated in conformance with the provisions of Article 16.00.

8.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the I-2 General Industrial District shall be as follows:

(A). General requirements:

| | All Uses |
|---|---|
| Density | ---- |
| Lot Area | ---- |
| Lot Width | ---- |
| Front Yard | 30' |
| Side Yard | 10' |
| Rear Yard | 20' |
| Maximum Height | 55' |

# ARTICLE 9.00
# RC RECREATION/CONSERVATION DISTRICT

SECTIONS:


9.01 INTENT. This district is intended to protect natural drainage courses in their capacity to carry run-off water, to limit permanent structures and uses of land in areas subject to flooding, to prevent the pollution of underground water supplies (aquifers), to provide open space and natural areas for recreation, and add to the aesthetic quality of the area.

9.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the RC Recreation/Conservation District:

(A). Agriculture.
(B). Public park; forest preserve.
(C). Public golf course.
(D). Historic sites.
(E). A single-family dwelling if the following provisions for building eligibility are met: *(amended by MC16-69-04)*
  (1). Each quarter-quarter section shall have one building eligibility when all the following conditions are met:
    a). There are no other dwellings on the quarter-quarter section.
    b). The building site is not in the 100-year flood plain as identified on the Flood Insurance Rate Map.
    c). The building site shall be a minimum of one acre.
    d). Approval has been granted by the appropriate governing entity for access onto a public road.
    e). The remaining portion of the quarter-quarter section is retained as agricultural land or in its present use.
(F). Antenna support structure. *(amended by MC16-65-03)*

9.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the RC Recreation/Conservation District in conformance with the conditions prescribed herein, or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). A single-family dwelling located on a lot of record in accordance with the following: *(amended by MC16-69-04)*

(1). A lot of record consisting of less than 80 acres and containing no other dwellings shall have one eligible building site.

(2). The building site is not in the 100-year flood plain as identified on the Flood Insurance Rate Map.

(3). A lot of record consisting of 80 acres or more shall qualify for building eligibility as follows:

(a). The acreage of the lot of record shall be divided by 40 acres. The resulting whole number minus the number of existing dwellings shall represent building eligibility.

(b). If there is more than one building eligibility, each additional building site shall be required to obtain a conditional use.

(c). Each building site shall consist of a minimum of one acre.

(4). Approval has been granted by the appropriate governing entity for access onto a public road.

(5). Any parcel conveyed from a lot of record must be a minimum of one acre. The remaining portion of the lot shall be retained as agricultural land or in its present use.

*(amended by MC16-69-04)*

(B). A building eligibility may be used within a farmstead provided:

(1). The building eligibility exists on property contiguous to and under the same ownership as the farmstead.

(2). There will be no more than two dwellings within the farmstead.

(3). The residential structure may be a single-family dwelling, manufactured home or mobile home.

(4). The residential structure shall not be located in the 100-year flood plain as identified on the Flood Insurance Rate Map.

(C). Plant nursery provided there are no buildings located in the 100 year flood plain as identified on the Flood Insurance Rate Map.

(D). Off-premise signs in conformance with Article 17.00.

(E). Telecommunication and broadcast tower in conformance with Article 12.12. *(amended by MC16-53-00, MC16-65-03))*

9.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the RC Recreation/Conservation District if a Conditional Use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). A single-family dwelling on a parcel which is not a lot of record provided:

(1). The deed to the land or the agreement to convey the parcel was recorded with the Register of Deeds prior to September 27, 1988.
(2). The building site is not in the 100 year floodplain as identified on the Flood Insurance Rate Map.
(3). There are no other dwellings located on the parcel, except a parcel of 80 acres or more shall have building eligibility determined as follows:
(a). The acreage of the parcel shall be divided by 40 acres. The resulting whole number minus the number of existing dwellings on the parcel shall represent the building eligibility.
(b). Each building site shall consist of a minimum of one acre.
(4). The building site shall not conflict with other existing or potential land use activities or the prevailing pattern of development.
(5). The soil conditions are acceptable for a building site.
(6). Approval has been granted by the appropriate governing entity for access onto a public road.

(B). Manufactured home in conformance with Article 12.06(C) if there is building eligibility on the parcel.
(C). Group day care.
(D). Private outdoor recreation facility.
(E). Day or summer camp.
(F). Rifle and pistol range; trap shoot.
(G). Stable.
(H). Kennel.
(I). Roadside stand.
(J). Fireworks sales provided the length of sales does not exceed nine (9) days.
(K). Cemetery.
(L). Fairgrounds.
(M). Rock, sand and gravel extraction in conformance with Article 12.08.
(O). Electrical substation.
(P). Public utility facility.
(Q). [Reserved.] *(amended by MC16-65-03)*
(R). Major home occupation in conformance with Sections 12.0302 and 12.0303. *(amended by MC16-53-00)*
*(amended by MC16-69-04)*
(S). The transfer of a building eligibility from one parcel to another parcel when all the following conditions are met:
(1). The transfer of building eligibility shall occur only between contiguous parcels under the same ownership.
(2). Suitability as a building site based on the following factors:
a). Agricultural productivity of the soil.
b). Soil limitations.
c). Orientation of the building site(s) with respect to road circulation and access to public rights-of-way.
(3). The minimum lot size shall be one acre but a larger area may be required

when soil conditions warrant.

(4). The building site is not in the 100-year flood plain as identified on the Flood Insurance Rate Map.

(5). The parcel from which the building eligibility is transferred shall continue as agricultural land or remain in its present use.

(6). Approval has been granted by the appropriate governing entity for access onto a public road.

9.05 ACCESSORY USES. Accessory uses permitted in the RC Recreation/Conservation District are accessory buildings and uses customarily incident to any permitted uses in this district.

9.06 PARKING REGULATIONS. Parking within the RC Recreation/Conservation District shall be regulated in conformance with the provisions of Article 15.00.

9.07 SIGN REGULATIONS. Signs within the RC Recreation/Conservation District shall be regulated in conformance with the provisions of Article 16.00.

9.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the RC Recreation/Conservation District shall be as follows:

(A). General requirements:

| | |
|---|---|
| Lot Area | 1 acre* |
| Lot Width | 125' |
| Front Yard | 30'** |
| Side Yard | 7' |
| Rear Yard | 30' |
| Maximum Height | 35'*** |

* Unless a larger lot size is required by the granting of a conditional use.

** The front yard on a major arterial street or section line road shall be 50 feet.

*** There shall be no height limit for accessory farm structures or wind energy conversion systems except in the airport approach zone.

# EXHIBIT D
# ZONING INFORMATION

# TABLE OF CONTENTS
# ORDINANCE MC16-90
# 1990 REVISED ZONING ORDINANCE
# FOR MINNEHAHA COUNTY

# ARTICLE 1.00
# TITLE AND PURPOSE

1.01 TITLE. These regulations may be referred to as the 1990 Revised Zoning Ordinance for Minnehaha County.

*(amended by MC16-55-01)*
1.02 PURPOSE. These regulations have been based upon the Minnehaha County Comprehensive Development Plan adopted on December 15, 1998 by the Board of County Commissioners, and are in conformance with Chapter 11-2 of the South Dakota Compiled Laws. These regulations are designed to carry out the goals and objectives of the plan, but especially to lessen congestion in the streets; to secure safety from fire, panic and other dangers; to promote health and the general welfare; to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration or scattering of population; and to encourage a distribution of population or mode of land utilization that will facilitate the economical and adequate provision of transportation, water, drainage, sewerage, schools, parks, or other public requirements.

These regulations have been made with reasonable consideration to the character and intensity of the various land uses and the need for public facilities and services that would develop from those uses. These regulations are necessary for the best physical development of the county. The regulations are intended to preserve and protect existing property uses and values against adverse or unharmonious adjacent uses by zoning all unincorporated land except those areas where joint zoning jurisdiction has been granted to a municipality.

# ARTICLE 2.00
# DISTRICTS AND BOUNDARIES

2.01 APPLICATION OF REGULATIONS AND BOUNDARIES. The regulations and zoning district boundaries set forth in this ordinance shall apply to all unincorporated land within Minnehaha County except those areas which have been approved for municipal joint zoning jurisdiction. *(amended by MC16-65-03)*

2.02 DISTRICTS DESIGNATED. In order to regulate and restrict the height, number of stories, and size of buildings and other structures; the percentage of a lot that may be occupied; the size of the yards, courts, and other open spaces; the density of population; and the location and use of buildings, structures, and land for trade, industry, residence, or other purposes; the county is hereby divided into the following districts:

| | | | |
|---|---|---|---|
| A-1 | Agricultural | I-1 | Industrial |
| RR | Rural Residential | I-2 | Industrial |
| R-1 | Residential | RC | Recreation/Conservation |
| C | Commercial | PD | Planned Development |

The following districts shall be designated as zoning overlay districts, imposing special regulations on the properties that fall within these overlay districts without abrogating the requirements imposed by the underlying land use district regulations:

WS Water Source Protection

2.03 INCORPORATED BY REFERENCE. The following are hereby adopted and incorporated by reference:

(A). The official zoning map(s) of the 1990 Revised Zoning Ordinance, together with all the explanatory matter thereon and attached thereto, is hereby adopted by reference and is declared to be a part of these regulations. The maps shall be filed with the Register of Deeds.

(B). The Flood Insurance Rate Map is hereby adopted by reference and declared to be a part of these regulations. Areas shown as Zone A, AO or A1- A30 on the F.I.R.M. but which are zoned A-1 Agricultural on the zoning map shall be governed by the provisions of the RC Recreation/Conservation District.

(C). The approved plans submitted in conjunction with any Planned Development are hereby adopted by reference and declared to be a part of these regulations.

2.04 BOUNDARIES OF DISTRICTS; MAPS. The boundaries of the districts are shown upon the maps which have been made a part hereof by reference. The various districts and their boundaries which have been designated on these maps shall have the same force and effect as if they were all fully set forth herein.

2.05 RULES WHERE UNCERTAINTY AS TO BOUNDARIES ARISES. Where uncertainty exists with respect to the boundaries of the various districts shown on the maps accompanying and made a part of these regulations by reference, the following rules apply:

(A). The district boundaries are roads unless otherwise shown, and where the districts are bounded approximately by roads, the road shall be construed to be the boundary of the district.

(B). Where the property has been or may hereafter be divided into blocks and platted lots, the district boundary shall be construed to coincide with the nearest platted lot lines; and where the districts are bounded approximately by platted lot lines, the platted lot lines shall be construed to be the boundary of the district, unless the boundaries are otherwise indicated on the maps.

(C). In unplatted property, the district boundary lines shall be determined by use of the scale appearing on the map or the legal description as indicated.

2.06 VACATION OF STREETS AND ROADS. Whenever any street, road or other public way is vacated, the zoning district adjoining each side of such street, road, or other public way is extended to the center of such vacation; and all area included in the vacation shall then and henceforth be subject to the appropriate regulations of the extended districts.

# ARTICLE 3.00
# A-1 AGRICULTURAL DISTRICT

SECTIONS:


3.01 INTENT. It shall be the intent of this district to provide for a vigorous agricultural industry by preserving for agricultural production those agricultural lands beyond areas of planned urban development. It is recognized that because of the nature of both agricultural activities and residential subdivisions, that these two uses are generally poor neighbors and therefore a concentration of housing in the A-1 Agricultural District shall be discouraged.

3.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the A-1 Agricultural District:

(A). Agriculture.
(B). A single-family dwelling if the following provisions for building eligibility are met: *(amended by MC16-69-04)*
  1). Each quarter-quarter section shall have one building eligibility when all the following conditions are met:
    a). There are no other dwellings on the quarter-quarter section.
    b). The building site shall be a minimum of one acre.
    c). Approval has been granted by the appropriate governing entity for access onto a public road.
    d). The remaining portion of the quarter-quarter section is retained as agricultural land or in its present use.
(C). Elementary or high school.
(D). Historical sites.
(E) Church.
(F). Neighborhood utilities.
(G). Antenna support structure. *(amended by MC16-65-03)*

3.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the A-1 Agricultural District in conformance with the requirements prescribed herein. A building or premises intended to be used for the following purposes, where the prescribed requirements will not be met, shall obtain a conditional use in conformance with the requirements of Article 19.00: *(amended by MC16-40-98)*

*(amended by MC16-69-04)*
(A). A building eligibility may be used within a farmstead provided:
  1) The building eligibility exists on property contiguous to and under the same ownership as the farmstead.
  2) There will be no more than two dwellings within the farmstead.

The residential structure may be a single-family dwelling, manufactured home or mobile home.

(B). Cemetery provided there is an area of 20 acres or more.

(C). Pet cemetery provided there is a minimum area of two acres.

(D). Wind energy conversion system in conformance with Article 12.02.

(E). Off-premise signs in conformance with Article 17.00.

(F). [Reserved.] *(amended by MC16-53-00)*

(G). Greenhouses and nurseries provided there is no retail sale of products conducted on the premises.

(H). A single-family dwelling located on a lot of record in accordance with the following: *(amended by MC16-69-04)*

1) A lot of record consisting of less than 80 acres and containing no other dwellings shall have one building eligibility.
2). A lot of record consisting of 80 acres or more shall qualify for building eligibility as follows:
   a). The acreage of the lot of record shall be divided by 40 acres. The resulting whole number minus the number of existing dwellings shall represent building eligibility.
   b). If there is more than one building eligibility, each additional building site shall be required to obtain a conditional use.
3). Approval has been granted by the appropriate governing entity for access onto a public road.
4). Any parcel conveyed from a lot of record must be a minimum of one acre. The remaining portion of the lot shall be retained as agricultural land or in its present use.

(I). Concentrated Animal Feeding Operation (Class D) provided*:* *(amended by MC16-18-94 and MC16-40-9)*

1) The operation shall either be located in a farmstead, or shall be separated from a dwelling, church, school or business by a minimum distance of 660 feet**,** a public park by a minimum distance of 1320 feet and a municipality by a minimum distance of 2640 feet.
2). The operation shall meet the requirements of Table 1 in Section 12.10 (F) and Section 12.10 (G).
3). The operation shall not be in the Water Source Protection Overlay District or a flood plain.

(J.) Concentrated animal feeding operation (existing) shall be allowed to expand by provided: *(amended by MC16-40-98 and MC16-75-05)*

1). The operation is located in a farmstead or property contiguous to, and smaller than, the aforementioned farmstead.

2). The operation shall not be located in the Water Source Protection Overlay District or a flood plain.
3). The operation shall not exceed 1000 animal units.
4). There is conformance with South Dakota Department of Environment and Natural Resources design standards for any newly constructed waste containment facility. A registered professional engineer shall certify the plan specifications and the construction of the facility.
5). Results of a geotechnical test boring are provided to the Planning Department which were performed in conformance with Section 12.10 (C)(3). If a shallow aquifer is present, measures shall be employed to protect the groundwater from contamination. The County may call upon the expertise of the South Dakota Geological Survey in making a determination on whether a shallow aquifer exists on the site as based on the soil boring data.
6). Approval by the Planning Director of a nutrient management plan which has been prepared in conformance with the South Dakota Department of Environment and Natural Resources standards.
7). The operation shall meet the requirements of Table 1 in Section 12.10 (F) and Section 12.10 (G).
8). All liquid waste generated by the additional animal units shall be injected. In the event of an extraordinary circumstance, surface application may be allowed in accordance with the provisions of Section 12.10 (E)(3). The Planning Director may approve the surface application of livestock production surplus water in accordance with Section 12.10 (E)(3).
9). The operation is not located within 2640 feet of a municipality.
10). The expansion shall not exceed 500 animal units.

(K). Telecommunication and broadcast tower in conformance with Article 12.12.
*(amended by MC16-53-00, MC16-55-01, MC16-65-03)*

3.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the A-1 Agricultural District if a conditional use has been obtained in conformance with the requirements of Article 19.00:

(A). Rock, sand, or gravel extraction in conformance with Article 12.08.
(B). Mineral exploration in conformance with Article 12.04.
(C). Airport/heliport.
(D). A single-family dwelling on a parcel which is not a lot of record provided:
1). The deed to the land or the agreement to convey the parcel was recorded with the Register of Deeds prior to September 27, 1988.
2). There are no other dwellings located on the parcel, except a parcel of 80 acres or more shall have building eligibility determined as follows:
a). The acreage of the parcel shall be divided by 40 acres. The resulting whole number minus the number of existing dwellings on the parcel shall represent the building eligibility.
b). Each building site shall consist of a minimum of one acre.
3). The building site shall not conflict with other existing or potential land use activities or the prevailing pattern of development.
4). The soil conditions are acceptable for a building site.

5). Approval has been granted by the appropriate governing entity for access onto a public road.

(E). Group day care.
(F). Private campground.
(G). Garden center.
(H). Kennel.
(I). Stable.
(J). Roadside stand.
(K). Fireworks sales provided the length of sales does not exceed nine (9) days.
(L). Golf course, golf driving range.
(M). Private outdoor recreation facility.
(N). Trap shoot, rifle range, pistol range.
(O). Public facility owned and operated by a governmental entity.
(P). [Reserved.] *(amended by MC16-65-03)*
(Q). Bed and breakfast establishment.
(R). Sanitary landfill, solid waste transfer station, rubble dump, commercial compost site. *(amended by MC16-19-94)*
(S). Sewage disposal pond.
(T). Livestock sales barn.
(U). Concentrated Animal Feeding Operation - New (Class A, B, or C). *(amended by MC16-40-98)*
(V). Electrical substation.
(W). Public utility facility.
(X). Agriculturally related operations involving the handling, storage and shipping of farm products.
(Y). *(amended by MC16-69-04)*

The transfer of a building eligibility from one parcel to another parcel when all the following conditions are met:

1). The transfer of building eligibility shall occur only between contiguous parcels under the same ownership.
2). Suitability as a building site based on the following factors:
   a). Agricultural productivity of the soil.
   b). Soil limitations.
   c). Orientation of the building site(s) with respect to road circulation and access to public rights-of-way.
3). The minimum lot size shall be one acre but a larger area may be required when soil conditions warrant.
4). The parcel from which the eligibility is transferred shall continue as agricultural land or remain in its present use.
5). Approval has been granted by the appropriate governing entity for access onto a public road.

(Z). Manufactured home in conformance with Article 12.06(C) if there is building eligibility on the parcel.
(AA). Major home occupation in conformance with Sections 12.0302 and 12.0303. *(amended by MC 16-53-00)*
(BB). Facilities for the storage and distribution of anhydrous ammonia. *(amended by MC16-53- 00)*

3.05 ACCESSORY USES. Accessory uses and buildings permitted in the A-1 Agricultural District are buildings and uses customarily incident to any permitted use in the district.

3.06 PARKING REGULATIONS. All parking within the A-1 Agricultural District shall be regulated in conformance with the provisions of Article 15.00.

3.07 SIGN REGULATIONS. Signs within the A-1 Agricultural District shall be regulated in conformance with the provisions of Article 16.00.

3.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the A-1 Agricultural District shall be as follows:

(A). General Requirements:

| | |
|---|---|
| Lot area..... | 1 acre * |
| Lot width ..... | 125' |
| Front yard ..... | 30' ** |
| Side yard ..... | 7' |
| Rear yard ..... | 30' |
| Maximum height ..... | 35' *** |

* Unless a larger lot size is required by the granting of a conditional use.
** The front yard on a major arterial street or section line road shall be 50 feet.
*** There shall be no height limit for farm structures or wind energy conversion systems.

(B). There shall be a required front yard on each street of a double frontage lot.

(C). If a lot of record has less area or width than herein required and its boundary lines along the entire length abutted lands under other ownership on November 20, 1973, and have not since been changed, such parcel of land may be used for any use permitted in this district.

(D). Buildings with side yard setbacks less than required herein may have additions erected in line with the existing building and provided further that said additions will be erected no closer to the lot line than the existing building.

(E). Buildings may be located within the required front yard but no closer to the public right-of-way than a legal nonconforming building provided the building is no greater than 150 feet from the nonconforming building.

along the entire length abutted lands under other ownership on November 20, 1973, and have not since been changed, such parcel of land may be used for any use permitted in this district.

(D). Buildings with side yard setbacks less than required herein may have additions erected in line with the existing building and provided further that said additions will be erected no closer to the lot line than the existing building.

(E). Buildings may be located within the required front yard but no closer to the public right-of-way than a legal nonconforming building provided the building is no greater than 150 feet from the nonconforming building.

# ARTICLE 4.00
# RR RURAL RESIDENTIAL DISTRICT

4.01 INTENT. This district is intended to protect a vigorous agricultural industry by limiting the areas in which the RR Rural Residential District can be used. The RR Rural Residential District, where permitted, shall generally be located where provisions can be made to adequately handle sewage disposal, where the value of the land for agricultural use is marginal, and where the water supply, roads and emergency services are easily and economically available.

4.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the RR Rural Residential District:

(A). Single family dwelling.
(B). Public park, playground or swimming pool.
(C). Neighborhood utilities

4.03. PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the RR Rural Residential District in conformance with the conditions prescribed therein or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). Church subject to:
  (1). Said building being adjacent to an arterial street or section line road.

(B). Elementary and high school subject to:
  (1). One of the principle frontages of the premises shall abut upon an arterial or collector street.
  (2). The main building shall be set back 25 feet from the side lot line.

(C). Reserved. *(amended by MC16-55-01)*

(D). Reserved. *(amended by MC16-53-00)*

4.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the RR Rural Residential District if a Conditional Use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). Mobile home/manufactured home park in conformance with Article 12.06.
(B). Mobile home/manufactured home subdivision in conformance with Article 12.06.

(C). Day care center.
(D). Group day care.
(E). Group home.
(F). Bed and breakfast establishment.
(G). Nursing home.
(H). Cemetery.
(I). Kennel.
(J). Stabling of horses, provided they are owned by the resident of the property and not used as a commercial operation on the property.
(K). Golf course, except miniature course and driving range.
(L). Wind Energy Conversion System in conformance with the requirements of Article 12.02.
(M). Electrical substation.
(N). Public utility facility.
(O). Public facility owned and operated by a governmental entity.

4.05 ACCESSORY USES. Accessory uses and buildings permitted in the RR Rural Residential District are buildings and uses customarily incident to any of the permitted uses in the district.

4.06 PARKING REGULATIONS. All parking within the RR Rural Residential District shall be regulated in conformance with the provisions of Article 15.00.

4.07 SIGN REGULATIONS. Signs within the RR Rural Residential District shall be regulated in conformance with the provisions of Article 16.00.

4.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the RR Rural Residential District shall be as follows:

(A). General requirements:

| | All Uses |
|---|---|
| Density ..... | 1 acre * |
| Lot area ..... | 1 acre * |
| Lot width ..... | 125' |
| Front yard ..... | 30' ** |
| Side yard ..... | 7' |
| Rear yard ..... | 30' |
| Maximum height ..... | 35' |

* Where a central sanitary sewer is available, the required lot area may be reduced to 20,000 square feet.

** The front yard on all major arterial streets or section line roads shall be 50 feet.

(B). There shall be a required front yard on each street of a double frontage lot.

(C). Buildings with side yard setbacks less than required herein, may have additions erected in line with the existing building and provided further that said additions will be erected no closer to the lot line than the existing build ing.

# ARTICLE 5.00
# R-1 RESIDENTIAL DISTRICT

5.01 INTENT. This district is intended to provide for areas of residential use with a gross density of generally five dwelling units per acre or less. The district permits single family dwellings and such supportive community facilities as parks, playgrounds, schools, libraries and churches. It is intended that this district provide protection for those areas existing as, or planned for, single family neighborhoods. A central sanitary sewer system should be available to serve these developments.

5.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the R-1 Residential District:

(A). Single family dwelling.
(B). Public park, playground or swimming pool.
(C). Neighborhood utilities.

5.03. PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the R-1 Residential District in conformance with the conditions prescribed herein or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). Churches:
  (1). One of the principle frontages of the premises shall abut upon an arterial or collector street.
  (2). The main building shall be set back twenty-five feet from the side lot line.

(B). Elementary and high schools:
  (1). One of the principle frontages of the premises shall abut upon an arterial or collector street.
  (2). The main building shall be set back twenty-five feet from the side lot line.

(C). Reserved. *(amended by MC16-55-01)*

(D). Reserved. *(amended by MC16-53-00)*

5.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the R-1 Residential District if a conditional use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). Multiple dwellings.
(B). Group day care.
(C). Day care center.
(D). Bed and breakfast establishment.
(E). Private lake.
(F). Group home.
(G). Nursing home.
(H). Convent and monastery.
(I). Electrical substation.
(J). Public utility facility.

5.05 ACCESSORY USES. Accessory uses and buildings permitted in the R-1 Residential District are buildings and uses customarily incident to any of the permitted uses in the district.

5.06 PARKING REGULATIONS. Parking within the R-1 Residential District shall be regulated in conformance with the provisions of Article 15.00.

5.07 SIGN REGULATIONS. Signs within the R-1 Residential District shall be regulated in conformance with the provisions of Article 16.00.

5.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the R-1 Residential District shall be as follows:

(A). General requirements:

| | All Uses | Corner Lots |
|---|---|---|
| Density ..... | 7500 sq. ft. ..... | 8500 sq. ft. |
| Lot area ..... | 7500 sq. ft. ..... | 8500 sq. ft. |
| Lot width ..... | 60' ..... | 85' |
| Front Yard ..... | 30' ..... | 30' * |
| Side yard ..... | 7' ** ..... | 7' ** |
| Rear yard ..... | 30' ..... | 15' |
| Maximum height ... | 35' ..... | 35' |

* The front yard along the side street side of a corner lot may be reduced to 25 feet.
** The side yard will be required to be increased to 10 feet when the building is three stories in height or more.

(B). The requirements for multiple dwellings shall be determined by the conditional use.
(C). There shall be a required front yard on each street of a double frontage lot.

(D). Buildings with side yard setbacks less than required herein, may have additions erected in line with the existing building and provided further that said additions will be erected no closer to the lot line than the existing building.

# ARTICLE 6.00
# C COMMERCIAL DISTRICT

6.01 INTENT. This district is intended to provide for a wide variety of commercial uses generally located at major intersections and along major roads. This district will include general commercial uses requiring large land areas, extensive retail operations, and outdoor display.

6.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the C Commercial District:

(A). Office.
(B). Bank or financial institution.
(C). Group day care, day care center, group home.
(D). Mortuary.
(E). Indoor recreational facility.
(F). Nursery or greenhouse.
(G). Church.
(H). Antenna support structure. *(amended by MC16-65-03)*

6.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the C Commercial District in conformance with the conditions prescribed herein or by obtaining a Conditional Use for such uses in conformance with the requirements of Article 19.00:

(A). Retail sales and trade, personal services, communication facilities, and warehousing provided:

(1). There is no outside storage.
(2). There is no storage of a regulated substance.
(3). The building contains 10,000 square feet of area or less.

(D). Veterinarian clinic provided there is no outside kenneling of dogs.

(E). Frozen food locker provided there is no slaughtering of animals on the premises.

(F). Off-premise signs in conformance with Article 17.00.

(G). Telecommunication and broadcast tower in conformance with Article 12.12. *(amended by MC16-65-03)*

6.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the C Commercial District if a conditional use for such use has been obtained in conformance with the requirements in Article 19.00:

(A). Wholesale trade.
(B). Bar or lounge.
(C). Equipment sales, display and repair.
(D). Motor vehicle sales, display, service and rental.
(E). Auto body shop.
(F). Transportation, including gasoline service station, truck stop, and terminal.
(G). Recycling facility.
(H). Fireworks sales provided sales are conducted from a permanent building when business operations exceed nine (9) days.
(I). Uses which store or handle a regulated substance.
(J). Lumberyard.
(K). Contractor's shop and storage yard.
(L). Car wash.
(M). Airport/heliport.
(N). Hotel or motel.
(O). Hospital.
(P). Motor vehicle repair shop.
(Q). Public utility facility.
(R). Campground.
(S). Commercial recreation facility.
(T). Wind energy conversion system.
(U). Reserved. *(amended by MC16-65-03)*
(V). Electrical substation.
(W). Adult use in conformance with Section 12.09. *(amended by MC16-29-95)*

6.05 ACCESSORY USES. Accessory uses permitted in the C Commercial District are accessory buildings and uses customarily incident to any permitted uses in this district.

6.06 PARKING REGULATIONS. Parking within the C Commercial District shall be regulated in conformance with the provisions of Article 15.00.

6.07 SIGN REGULATIONS. Signs within the C Commercial District shall be regulated in conformance with the provisions of Article 16.00.

6.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. A maximum height and minimum lot requirements within the C Commercial District shall be as follows:

(A). General Requirements:

| | All Uses |
|---|---|
| Density | ---- |
| Lot Area | ---- |
| Lot Width | ---- |
| Front Yard | 30' |
| Side Yard | 10' |
| Rear Yard | 20' |
| Maximum Height | 35' |

(B). There shall be a required front yard on each street side of double frontage lots.

(C). There shall be a required front yard on each street side of a corner lot.

(D). Any accessory uses shall be required to comply with the height, front, rear and side yard requirements of the main building.

# ARTICLE 7.00
# I-1 LIGHT INDUSTRIAL DISTRICT

SECTIONS:


7.01 INTENT. This district is intended to provide for a number of light manufacturing, wholesale, warehousing, and service uses in an attractive industrial park like setting. These uses do not depend on frequent personal visits from customers or clients and do not include residences, apartments, or commercial uses which are primarily retail in nature. It is the intention of this district to provide high amenity industrial development along the major roads and adjacent to residential areas, while allowing for slightly heavier development in the interior of the industrial areas.

7.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the I-1 Light Industrial District:

(A). Public utility facility, electrical substation.
(B). Antenna support structure. *(amended by MC16-65-03)*
(C). Office.
(D). Bank or financial institution. *(amended by MC16-69-04)*
(E). Indoor recreation facility. *(amended by MC16-69-04)*
(F). Mortuary. *(amended by MC16-69-04)*
(G). Nursery or greenhouse. *(amended by MC16-69-04)*

7.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the I-1 Light Industrial District in conformance with the conditions prescribed herein or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). Communication facilities, warehousing and repair services provided:
  (1). There is no outside storage on the premises.
  (2). There is no storage of a regulated substance on the premises.
  (3). The building contains 20,000 square feet of area or less.

(B). Veterinarian clinic provided there is no outside kenneling of animals.

(C). Frozen food locker provided there is no slaughtering of animals on the premises.

(D). Off-premise signs in conformance with Article 17.00.

(E). Telecommunication and broadcast tower in conformance with Article 12.12. *(amended by MC16-65-03)*

*(amended by MC16-69-04)*

(F). Retail sales and trade, personal services, communication facilities, and warehousing provided:

(1). There is no outside storage.

(2). There is no storage of a regulated substance.

7.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the I-1 Light Industrial District if a Conditional Use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). Light manufacturing.
(B). Extraction of rock, sand and gravel in conformance with Article 12.08.
(C). Airport/heliport.
(D). Group day care, day care center, group home. *(amended by MC16-69-04)*
(E). Any conditional use listed in the C Commercial District.

7.05 ACCESSORY USES. Accessory uses and buildings permitted in the I-1 Light Industrial District are accessory buildings and uses customarily incident to any permitted uses in this district.

7.06 PARKING REGULATIONS. Parking within the I-1 Light Industrial District shall be regulated in conformance with the provisions of Article 15.00.

7.07 SIGN REGULATIONS. Signs within the I-1 Light Industrial District shall be regulated in conformance with the provisions of Article 16.00.

7.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the I-1 Light Industrial District shall be as follows:

(A). General requirements:

| | All Uses |
|---|---|
| Density | ---- |
| Lot Area | ---- |
| Lot Width | ---- |
| Front Yard | 30' |

# ARTICLE 8.00
# I-2 GENERAL INDUSTRIAL DISTRICT

8.01 INTENT. This district is intended to provide for heavy industrial uses which may create some nuisance and which are not properly associated with, nor compatible with residential, office, institutional or planned or neighborhood commercial establishments. All uses in this district shall comply with any state regulations regarding noise, emissions, dust, odor, glare, vibration or heat when applicable.

8.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the I-2 General Industrial District:

(A). Public utility facility, electrical substation.
(B). Antenna support structure. *(amended by MC16-65-03)*
(C). Wind energy conversion system.

8.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the I-2 General Industrial District in conformance with the conditions prescribed herein, or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). Communication facilities, warehousing and wholesale trade provided:

(1). There is no outside storage on the premises.
(2). There is no storage of a regulated substance on the premises.
(3). The building contains 25,000 square feet of area or less.

(B). Off-premise signs in conformance with Article 17.00.

(C). Telecommunication and broadcast tower in conformance with Article 12.12. *(amended by MC16-65-03)*

8.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the I-2 General Industrial District if a Conditional Use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). General manufacturing.
(B). Stockyards/slaughtering of animals.
(C). Rendering.
(D). Distillation of products.
(E). Refining.

(F). Sanitary landfill, solid waste receiving station.
(G). Paper manufacturing.
(K). Tank farm; petroleum products terminal.
(N). Salvage or junkyard.
(O). Airport/heliport.
(P). Extraction of rock, sand and gravel in conformance with Article 12.08.
(Q). Mineral exploration and development in accordance with Article 12.04.
(R). Any similar use not heretofore specified.

8.05 ACCESSORY USES. Accessory uses and buildings permitted in the I-2 General Industrial District are accessory buildings and uses customarily incident to any permitted uses in this district.

8.06 PARKING REGULATIONS. Parking within the I-2 General Industrial District shall be regulated in conformance with the provisions of Article 15.00.

8.07 SIGN REGULATIONS. Signs within the I-2 General Industrial District shall be regulated in conformance with the provisions of Article 16.00.

8.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the I-2 General Industrial District shall be as follows:

(A). General requirements:

| | All Uses |
|---|---|
| Density | ---- |
| Lot Area | ---- |
| Lot Width | ---- |
| Front Yard | 30' |
| Side Yard | 10' |
| Rear Yard | 20' |
| Maximum Height | 55' |

# ARTICLE 9.00
# RC RECREATION/CONSERVATION DISTRICT

SECTIONS:


9.01 INTENT. This district is intended to protect natural drainage courses in their capacity to carry run-off water, to limit permanent structures and uses of land in areas subject to flooding, to prevent the pollution of underground water supplies (aquifers), to provide open space and natural areas for recreation, and add to the aesthetic quality of the area.

9.02 PERMISSIVE USES. A building or premises shall be permitted to be used for the following purposes in the RC Recreation/Conservation District:

(A). Agriculture.
(B). Public park; forest preserve.
(C). Public golf course.
(D). Historic sites.
(E). A single-family dwelling if the following provisions for building eligibility are met: *(amended by MC16-69-04)*
  (1). Each quarter-quarter section shall have one building eligibility when all the following conditions are met:
    a). There are no other dwellings on the quarter-quarter section.
    b). The building site is not in the 100-year flood plain as identified on the Flood Insurance Rate Map.
    c). The building site shall be a minimum of one acre.
    d). Approval has been granted by the appropriate governing entity for access onto a public road.
    e). The remaining portion of the quarter-quarter section is retained as agricultural land or in its present use.
(F). Antenna support structure. *(amended by MC16-65-03)*

9.03 PERMITTED SPECIAL USES. A building or premises may be used for the following purposes in the RC Recreation/Conservation District in conformance with the conditions prescribed herein, or by obtaining a Conditional Use for such use in conformance with the requirements of Article 19.00:

(A). A single-family dwelling located on a lot of record in accordance with the following: *(amended by MC16-69-04)*

(1). A lot of record consisting of less than 80 acres and containing no other dwellings shall have one eligible building site.

(2). The building site is not in the 100-year flood plain as identified on the Flood Insurance Rate Map.

(3). A lot of record consisting of 80 acres or more shall qualify for building eligibility as follows:

(a). The acreage of the lot of record shall be divided by 40 acres. The resulting whole number minus the number of existing dwellings shall represent building eligibility.

(b). If there is more than one building eligibility, each additional building site shall be required to obtain a conditional use.

(c). Each building site shall consist of a minimum of one acre.

(4). Approval has been granted by the appropriate governing entity for access onto a public road.

(5). Any parcel conveyed from a lot of record must be a minimum of one acre. The remaining portion of the lot shall be retained as agricultural land or in its present use.

*(amended by MC16-69-04)*

(B). A building eligibility may be used within a farmstead provided:

(1). The building eligibility exists on property contiguous to and under the same ownership as the farmstead.

(2). There will be no more than two dwellings within the farmstead.

(3). The residential structure may be a single-family dwelling, manufactured home or mobile home.

(4). The residential structure shall not be located in the 100-year flood plain as identified on the Flood Insurance Rate Map.

(C). Plant nursery provided there are no buildings located in the 100 year flood plain as identified on the Flood Insurance Rate Map.

(D). Off-premise signs in conformance with Article 17.00.

(E). Telecommunication and broadcast tower in conformance with Article 12.12. *(amended by MC16-53-00, MC16-65-03))*

9.04 CONDITIONAL USES. A building or premises may be used for the following purposes in the RC Recreation/Conservation District if a Conditional Use for such use has been obtained in conformance with the requirements of Article 19.00:

(A). A single-family dwelling on a parcel which is not a lot of record provided:

(1). The deed to the land or the agreement to convey the parcel was recorded with the Register of Deeds prior to September 27, 1988.
(2). The building site is not in the 100 year floodplain as identified on the Flood Insurance Rate Map.
(3). There are no other dwellings located on the parcel, except a parcel of 80 acres or more shall have building eligibility determined as follows:
(a). The acreage of the parcel shall be divided by 40 acres. The resulting whole number minus the number of existing dwellings on the parcel shall represent the building eligibility.
(b). Each building site shall consist of a minimum of one acre.
(4). The building site shall not conflict with other existing or potential land use activities or the prevailing pattern of development.
(5). The soil conditions are acceptable for a building site.
(6). Approval has been granted by the appropriate governing entity for access onto a public road.

(B). Manufactured home in conformance with Article 12.06(C) if there is building eligibility on the parcel.
(C). Group day care.
(D). Private outdoor recreation facility.
(E). Day or summer camp.
(F). Rifle and pistol range; trap shoot.
(G). Stable.
(H). Kennel.
(I). Roadside stand.
(J). Fireworks sales provided the length of sales does not exceed nine (9) days.
(K). Cemetery.
(L). Fairgrounds.
(M). Rock, sand and gravel extraction in conformance with Article 12.08.
(O). Electrical substation.
(P). Public utility facility.
(Q). [Reserved.] *(amended by MC16-65-03)*
(R). Major home occupation in conformance with Sections 12.0302 and 12.0303. *(amended by MC16-53-00)*
*(amended by MC16-69-04)*
(S). The transfer of a building eligibility from one parcel to another parcel when all the following conditions are met:
(1). The transfer of building eligibility shall occur only between contiguous parcels under the same ownership.
(2). Suitability as a building site based on the following factors:
a). Agricultural productivity of the soil.
b). Soil limitations.
c). Orientation of the building site(s) with respect to road circulation and access to public rights-of-way.
(3). The minimum lot size shall be one acre but a larger area may be required

when soil conditions warrant.

(4). The building site is not in the 100-year flood plain as identified on the Flood Insurance Rate Map.

(5). The parcel from which the building eligibility is transferred shall continue as agricultural land or remain in its present use.

(6). Approval has been granted by the appropriate governing entity for access onto a public road.

9.05 ACCESSORY USES. Accessory uses permitted in the RC Recreation/Conservation District are accessory buildings and uses customarily incident to any permitted uses in this district.

9.06 PARKING REGULATIONS. Parking within the RC Recreation/Conservation District shall be regulated in conformance with the provisions of Article 15.00.

9.07 SIGN REGULATIONS. Signs within the RC Recreation/Conservation District shall be regulated in conformance with the provisions of Article 16.00.

9.08 DENSITY, AREA, YARD AND HEIGHT REGULATIONS. The maximum height and minimum lot requirements within the RC Recreation/Conservation District shall be as follows:

(A). General requirements:

| | |
|---|---|
| Lot Area | 1 acre* |
| Lot Width | 125' |
| Front Yard | 30'** |
| Side Yard | 7' |
| Rear Yard | 30' |
| Maximum Height | 35'*** |

* Unless a larger lot size is required by the granting of a conditional use.

** The front yard on a major arterial street or section line road shall be 50 feet.

*** There shall be no height limit for accessory farm structures or wind energy conversion systems except in the airport approach zone.

# EXHIBIT E
# BIOLOGICAL SURVEY
# AND
# NOISE MEMO

# Xcel Energy 345kV South Dakota Corridor Sensitive Species Survey Report

Prepared for: HDR Engineering, Inc.

**Minnehaha County, South Dakota**

**July 28, 2005**

GES Project No. 2005.071

# Xcel Energy 345kV South Dakota Corridor Sensitive Species Survey Report

Prepared for: HDR Engineering, Inc.

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## Summary

Xcel Energy proposes to construct a 345 kV transmission line from the Xcel Energy's Split Rock substation located west of Brandon, South Dakota northward to the Interstate 90 corridor, then eastward parallel to the interstate until it reaches Lakefield Junction in Minnesota. Graham Environmental Services, Inc. (GES) was retained by HDR Engineering, Inc. (HDR) to conduct a review of potential prairie habitats along the South Dakota portion of the route that could harbor the federally listed western prairie fringed orchid (*Platanthera praeclara*, Sheviak & Bowles) and to identify other natural communities or species that might occur along the proposed project corridor (**Figure 1**).

The survey was conducted on June 30 – July 1, 2005 during the beginning of the flowering period for the western prairie fringed orchid (July 1 – 29, Smith, 1993) to ensure the detection of this species if it occurs along the proposed corridor. The survey also coincided with the peak flight period (mid-June to mid-July) of the Dakota skipper, a candidate species for federal listing that occurs in similar remnant prairie habitats as the orchid. This report provides the results of the June 30 – July 1, 2005 survey. A total of 126 vascular plants and ten (10) different land use types were catalogued during the 2005 survey period (**Appendix A**). No sensitive species were discovered along the proposed project corridor during the survey.

## Background

Xcel Energy owns, operates, and maintains electric generation and transmission facilities in several states, including Minnesota and South Dakota, where this project is located. HDR is preparing environmental documents for Xcel Energy to comply with South Dakota Public Utilities Commission (PUC) requirements when constructing a transmission facility as described under South Dakota Codified Law 49-41B-11.

HDR submitted requests to the United States Fish and Wildlife Service (USFWS), South Dakota Department of Game, Fish and Parks (SDDGFP) to search their respective data bases to determine if any known occurrences of listed species occurred within the vicinity of the proposed project. The USFWS and SDDGFP search revealed an active bald eagle nest on the north bank of the Big Sioux River within the proposed project corridor. Other species mentioned as having potential to occur in the project corridor where all associated with segments of the Split Rock Creek and were records outside the proposed project area. Species mentioned by USFWS and SDDGFP correspondence include; Federally Endangered Topeka shiner (*Notropis topeka*), State Threatened trout perch (*Percopsis omiscomaycus*), and the following species with no Federal or State status: ringneck snake (*Diadophis punctatus*), fox snake (*Elaphe vulpina*), spiny softshell (*Apalone spinifera*), and blackside darter (*Percina maculate*).

## Methodologies

GES evaluated general plant community types within 0.25 mile of the proposed corridor centerline and documented biota on those parcels with public access. Meander searches were conducted at publicly accessible sites that warranted further review (i.e. remnant prairies, road ditches, or wooded floodplains) with particular emphasis on areas exhibiting suitable habitat for sensitive species such as; bald eagle (*Haliaeetus luecocephalus*), western prairie-fringed orchid (*Platanthera praeclara*) and Dakota skipper (*Hesperia dacotae*). None of these species were observed along the proposed corridor during the June 30 – July 1, 2005 survey. Approximate plant community type boundaries are shown on a 2003 aerial photograph **in Figure 2**.

Accessible sites were assessed for sensitive plants using a modified meander search method. Goff et al. (1982) utilized a time meander search to catalogue plants in a variety of plant communities and statistically illustrated through species area curves that this method adequately samples a given vegetative community for rare plants. A qualitative assessment of the effectiveness of using the transect versus meander-search method conducted by Penskar (1991) in the Ottawa National Forest, Michigan, indicated that the meander-search method is in all probability the best technique to adequately sample for rare taxa in both small and large sample areas.

The purpose of the meander search method is to catalogue all the vascular plants in a given plant community type by systematically visiting all potential microhabitat sites that comprise the larger community type. Upon entering the plant community type all vascular plants visible at that

point are catalogued. This process continues at additional points within the community type that supports plants not yet recorded until all the plants occurring in the community type are catalogued or, based on the surveyor's experience with the community type, it is determined that the areas have been adequately sampled for rare taxa. Sampling rigor increases in specific microhabitats or plant community types that support habitat considered potentially optimal for specific rare taxa. Microhabitats are typically defined by topographic relief and /or soil moisture gradients.

GES modified the meander search method by identifying potentially suitable habitats and screening out obviously unsuitable habitats. This modification allowed us to conduct even more intensive surveys in the areas most likely to harbor target species and eliminate the timed survey intervals described by Goff (1982). Quantitative analysis of the vegetation was not the principal goal of the survey. The meander search method, without the use of timed intervals, was deemed appropriate for qualitatively assessing the presence/absence of rare taxa.

Visual and auditory cues were used to identify avian species within land use types along the proposed project corridor. Surveys for avian species were conducted both days of the survey between 7 a.m. and continued until 10 a.m. GES also documented avian and butterfly species while conducting the meander searches for plants after 10 a.m. on June 30 and July 1, 2005.

GES reviewed aerial photographs of potential remnant prairie sites. Areas deemed most likely to provide suitable habitat for targeted species were identified and then evaluated in the field where accessible. A GES biologist drove along the proposed corridor alignments stopping at areas that were:

- characteristic of remnant native prairie plant communities (i.e. an abundance and diversity of native forbs and grasses) ;
- located in landscape positions that are difficult to plow;
- pastured, fallow, or set-aside lands.

After stopping at publicly-availability access points, GES scanned sites to identify prairie indicator species and to locate possible rare species that occurred on the site and noted the ecological condition of the site by assessing historic land use evidence and plant community characteristics.

An experienced professional wildlife biologist/botanist familiar with the midwestern natural community types, corridor sightings, and the target species conducted the survey. Curriculum Vitae for GES staff involved with the survey and report preparation are included in **Appendix 1**.

## Survey Area

The survey area lies within the Inner Coteau des Prairies sub-subsection (II.2.1) regional landscape ecosystem (Albert 1995). Albert (1995) broadly characterizes this sub-subsection as tallgrass prairie prior to European settlement. The tallgrass prairie ecosystem has ceased to exist except in small isolated sites (i.e. on steep slopes, in ditches along road or railroad corridors, and on lands that have escaped plowing) throughout the Midwest. The tallgrass prairie has been converted to agriculturally related land uses and few areas that are dominated by remnant prairie vegetation remain along the proposed route. Many of the small lakes, streams, and wetlands in the region have been drained or utilized for agricultural purposes.

A majority of the vegetation surrounding the Facility corridor is crops planted on agricultural land and field margins populated primarily by invasive or pioneering species such as smooth brome (*Bromus inermis*), ragweeds (*Ambrosia artemissiifolia*, *A. trifida*). The proposed route follows existing highway and transmission line corridors for the entire route. The proposed project traverses numerous natural and altered vegetation community types (Figure 2). The principal natural community types encountered, in accordance with Minnesota's Native Vegetation: A Key to Natural Communities Version 1.5, include; Mesic Prairies, Dry Prairies, Mixed Emergent Marsh, and Floodplain Forest. These classifications are based on the dominant plant community assemblages present at a particular location.

<u>Mesic Prairie</u>
Mesic Prairies are dry to wet-mesic plant communities dominated by grasses and sedges that are located on level to rolling glacial till. Mesic Prairie communities are fire-dependent and where fire is absent woody species invade. Big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and prairie dropseed (*Sporobolus heterolepis*) are typically the dominant species with numerous other species of grasses occurring at different levels of dominance based upon moisture availability or disturbance. Invasive species such as Kentucky bluegrass (*Poa pratensis*) and Canada bluegrass (*P. compressa*) occur in varying abundance on these sites depending upon the level of disturbance at a particular site. Forbs on remnant Mesic Prairie sites are abundant and have a high level of diversity. Forb communities also vary in diversity and makeup with available soil moisture levels and levels of disturbance. Soils are generally classified as Molisolls. A list of species observed on

remnant Mesic and Dry Prairies along the proposed corridor is attached in **Appendix 2**.

Dry Prairie

Dry Prairies are dry to dry-mesic plant communities that are dominated by grasses and sedges. Dry Prairies are maintained by fire but require less frequent fires than Mesic Prairies due to the droughty conditions where they occur. These dry and poor soil conditions slow the advance of woody species. Generally, Dry Prairies have a greater component of Great Plains species than remnant Mesic Prairies (Aaseng et. al. 1993). Mid-height and short grasses and sedges are usually dominant in remnant Dry Prairie communities. Porcupine grass (*Stipa spartea*), prairie junegrass (*Koeleria macrantha*) and sun-loving sedge (*Carex heliophila*) were the most readily identified species observed on remnant dry prairie during our review of the corridor. Invasive species such as musk thistle (*Carduus nutans*) and yellow sweet clover (*Melilotus officinalis*) vary based upon frequency and duration of grazing on these sites. Low shrubs such as leadplant (*Amorpha canescens*), prairie rose (*Rosa arkansana*), and wolfberry (*Symphoricarpos occidentalis*) were also present in varying amounts. A list of species observed on remnant Mesic and Dry Prairies along the proposed corridor is attached in Appendix 2.

Floodplain Forest

These forests are seasonally flooded lands within the floodplains of major rivers and tributaries. Floodplain Forests are dominated by tree species that tolerate inundation early in the growing season. The canopy dominants vary according to the length and duration of flooding. The canopy species of Floodplain Forest within the proposed 345kV transmission line are silver maple (*Acer saccharinum*), eastern cottonwood (*Populus deltoides*), box elder (*Acer negundo*), black willow (*Salix nigra*), and green ash (*Fraxinus pennsylvanica*). Areas beneath openings in the canopy are dominated by wood nettle (*Laportea canadensis*), riverbank grape (*Vitis riparia*), Virginia creeper (*Parthenocissus quinquefolia*), or are dominated by sapling willows and box elders. A list of species observed in Floodplain Forest and Mixed Emergent Marsh along the proposed corridor is attached in Appendix 2.

Mixed Emergent Marsh

Wetlands documented along the proposed 345kV transmission line corridor were primarily seasonally flooded systems, old oxbows, or isolated depressions dominated by persistent emergent species including; cattails (*Typha latifolia*), squirrel tail (*Hordeum jubatum*), hairy-leaved sedge (*Carex atherodes*), marsh spike rush (*Eleocharis smallii*),lady's thumb (*Polygonum persicaria*), and water smartweed (*Polygonum amphibium*). These wetlands all had an abundance of reed canary grass

(*Phalaris arundinacea*) that indicates an accumulation of nutrients due to agricultural disturbance. A list of species observed in Floodplain Forest and Mixed Emergent Marsh along the proposed corridor is attached in Appendix 2.

## Results

A total of ten (10) different land types were identified within 0.25 mile of proposed corridor route. The land types included four different natural communities including; Mesic Prairie, Dry Prairie, Floodplain Forest, and Mixed Emergent Marsh. The majorities of remaining natural communities occur within three (3) miles of the Split Rock substation and have been significantly altered by agricultural practices or the construction of roads, buildings, or maintained landscaping. None of the target species was observed in any of the natural community types during the survey. In the few areas that exhibited suitable habitat conditions for targeted species there was no access to the properties so these areas were not intensively surveyed. Each community type varied in the amount and location of native species present. Weather conditions were generally good with little or no precipitation and light winds. Table 1 is a list of avian and butterfly species observed throughout the proposed corridor route. A list of plant species is included in Appendix 2.

Table1.

| Common Name | Scientific Name | Associated Community Type | Number seen |
|---|---|---|---|
| Great blue heron | *Ardea herodias* | Floodplain, Mixed emergent marsh | 2 |
| Wood duck | *Aix sponsa* | Floodplain, Mixed emergent marsh | 12 |
| Mallard | *Anas platyrhynchos* | Floodplain, Mixed emergent marsh | 9 |
| Blue-winged teal | *Anas discors* | Floodplain, Mixed emergent marsh | 6 |
| Turkey vulture | *Cathartes aura* | Agricultural lands | 5 |
| Red-tailed hawk | *Buteo jamaicensis* | Agricultural lands, Floodplain, Dry prairie | 3 |
| American kestrel | *Falco sparverius* | Agricultural road ditch | 1 |
| Pheasant | *Phasianus colchicus* | Agricultural field | 3 |
| Killdeer | *Charadrius vociferus* | Floodplain, Mixed emergent marsh, Roads, Buildings | 15 |
| Mourning dove | *Zenaida macroura* | Roads, buildings, lawns | 12 |
| Rock dove | *Columba livia* | Buildings | 19 |
| Northern flicker | *Colaptes auratus* | Road | 1 |
| Eastern kingbird | *Tyrannus tyrannus* | Agricultural road ditches | 7 |
| Western kingbird | *Tyrannus verticalis* | Agricultural road ditch | 1 |
| Warbling vireo | *Vireo gilvus* | Floodplain | 1 |
| Blue jay | *Cyanocitta cristata* | Floodplain | 5 |
| American crow | *Corvus brachyrhynchos* | Floodplain | 2 |
| Horned lark | *Eremophila alpestris* | Agricultural field | 5 |
| Northern rough-winged swallow | *Stelgidopteryx serripennis* | Floodplain | 10 |
| Tree swallow | *Tachycineta bicolor* | Agricultural road ditch | 8 |

| Common Name | Scientific Name | Associated Community Type | Number seen |
|---|---|---|---|
| Cliff swallow | *Petrochelidon pyrrhonota* | Floodplain | 5 |
| Barn swallow | *Hirundo rustica* | Agricultural lands, Dry prairie, road ditch | 21 |
| Sedge wren | *Cistothorus platensis* | Dry prairie | 4 |
| Eastern bluebird | *Sialia sialis* | Agricultural road ditch | 12 |
| American robin | *Turdus migratorius* | Towns | 15 |
| Gray catbird | *Dimetella carolinensis* | Agricultural road ditch | 2 |
| Brown thrasher | *Toxostoma rufum* | Agricultural road ditch | 3 |
| European starling | *Sturnus vulgaris* | Towns | 45 |
| American redstart | *Setophaga ruticilla* | Floodplain | 2 |
| Common yellowthroat | *Geothlypis trichas* | Mixed emergent marsh | 5 |
| Blue grosbeak | *Guiraca caerulea* | Floodplain | 1 |
| Indigo bunting | *Passerina cyanea* | Agricultural road ditch | 7 |
| Dickcissel | *Spiza americana* | Agricultural road ditches | 22 |
| Field sparrow | *Spizella pusilla* | Agricultural road ditch | 1 |
| Chipping sparrow | *Spizella passerina* | Agricultural road ditch | 1 |
| Vesper sparrow | *Pooecetes gramineus* | Agricultural road ditch | 2 |
| Song sparrow | *Melospiza melodia* | Agricultural road ditch | 2 |
| Western meadowlark | *Sturnella neglecta* | Agricultural road ditch | 6 |
| Brown-headed cowbird | *Molothrus ater* | Pasture, Floodplain | 12 |
| Red-winged blackbird | *Agelaius phoeniceus* | Mixed emergent marsh | 25 |
| Common grackle | *Quiscalus quiscula* | Agricultural road ditch | 2 |
| Baltimore oriole | *Icterus galbula* | Agricultural road ditch | 1 |
| House finch | *Carpodacus mexicanus* | Towns | 11 |
| American goldfinch | *Carduelis tristis* | Agricultural road ditch | 15 |
| House sparrow | *Passer domesticus* | Towns | 32 |
| ***Butterflies*** | | | |
| Monarch | *Danaus plexippus* | Dry prairie | 2 |
| Viceroy | *Limenitis archippus* | Road ditch | 1 |
| Cabbage butterfly | *Pieris rapae* | Road ditch | 6 |
| Alfalfa butterfly | *Colias eurytheme* | Road ditch | 2 |
| Black swallowtail | *Papilio polyxenes* | Mesic prairie | 1 |
| Common wood nymph | *Cercyonis pegala* | Dry prairie | 5 |
| Northern broken-dash | *Wallengrenia otho* | Dry prairie | 1 |
| Silver-spotted skipper | *Epargyreus clarus* | Dry prairie | 1 |
| Painted lady | *Vanessa virginiensis* | Dry prairie | 1 |

The information contained herein represents my findings during sensitive plant survey activities conducted on June 30 – July 1, 2005 at the referenced site.

Graham Environmental Services, Inc.

Scott Krych Date
Biologist/Professional Wetland Scientist No. 000303

## References

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Goff, F.G., G.A. Dawson, and J.J. Rochow. 1982. Site Examination for Threatened and Endangered Plant Species. Environmental Management 6(4):307-316.

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Penskar, M. R. 1991. Survey of the Ottawa National Forest for endangered, threatened, and special concern species in Land Type association 7 and associated Ecological Land Type Phases. Michigan Natural Features Inventory, Lansing, MI. 21 pp. + appendices.

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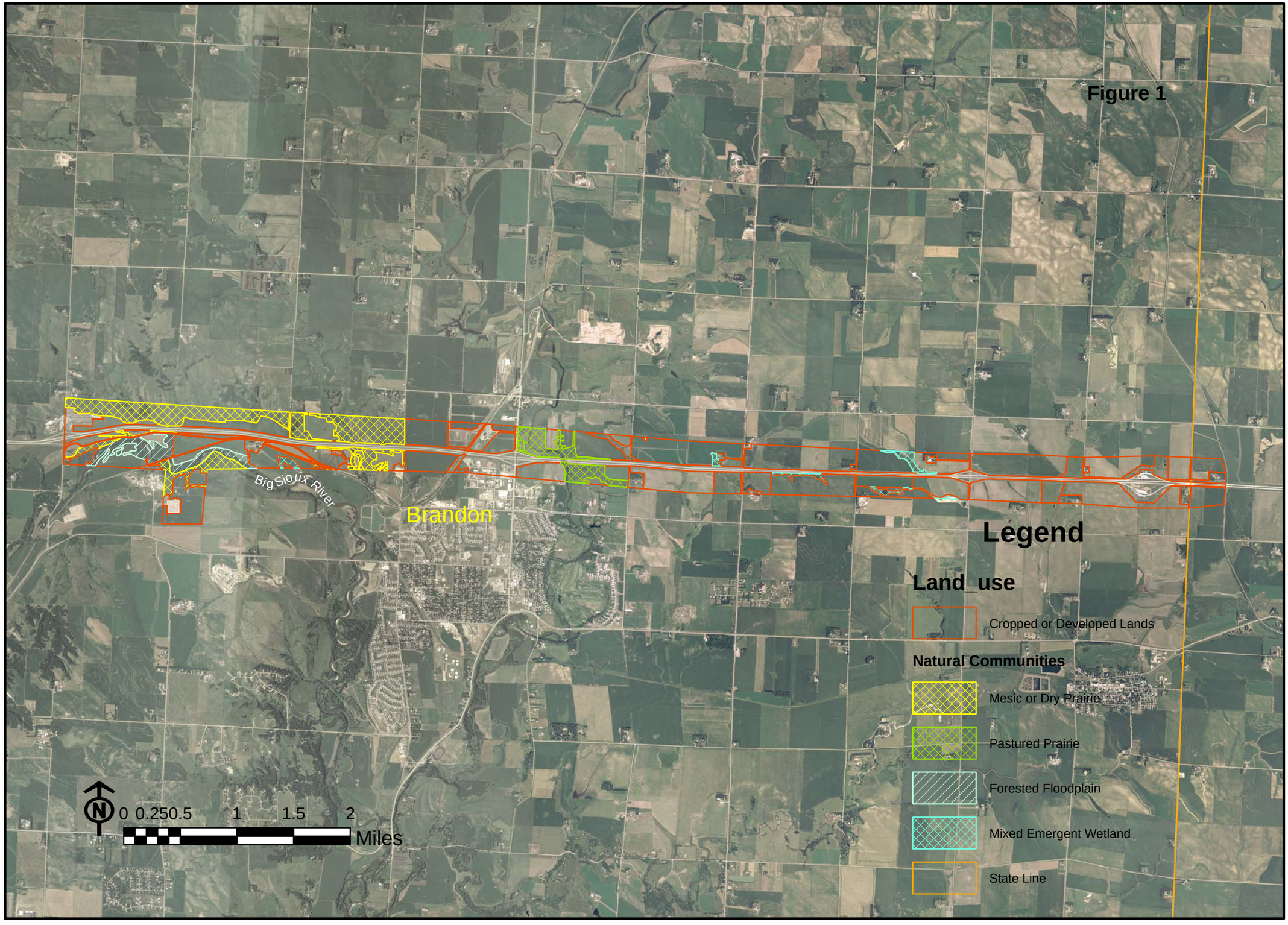
# Plant Community Typing Along Excel Enery 345 kV Transmission Line Minnehaha County, South Dakota

Figure 1



# APPENDIX 1

(Resumes of Staff Conducting Surveys)

# CURRICULUM VITAE

# SCOTT A. KRYCH, PWS

Senior Project Manager, Professional Wetland Scientist

**GRAHAM ENVIRONMENTAL SERVICES, INC.**

**EXPERTISE**

- Botanical and Ornithological Studies
- Ecological Investigations
- Wetland Restoration
- Wetland Delineation
- Wetland Mitigation Planning
- GPS/GIS Applications
- Regulatory Compliance Strategies
- Habitat and Ecosystem Mapping

**ACADEMIC BACKGROUND:**

- BS, Biology, Mankato State University, 1986

**REGISTRATION**:

- Professional Wetland Scientist, SWS, #000303

**PROFESSIONAL AFFILIATIONS:**

- Wilson Ornithological Society
- Minnesota Ornithologists Union
- Wetland Delineators Association
- Society of Wetlands Scientists

**SPECIALIZED TRAINING**

- Identification of Sedges and Rushes, Dr. Robert Mohlenbrock, 2004.
- Minnesota Wetland Plant Identification, Dr. Robert Mohlenbrock, 2003.
- Wisconsin DNR's Karner Blue Butterfly HCP Effectiveness Monitoring Training, 2003
- Training in Delineation of Problem and Disturbed Wetlands using 1987 Corps of Engineers Wetlands Delineation Manual. Corps of Engineers, Minnesota Board of Water & Soil Resources and Coon Creek Watershed District. 1993.
- Introduction to GPS. Dunwoody Institute, MN. 1995
- Regulatory Issues of Corridor Projects. U.W.-Madison. 1992.

## PROJECT RELATED EXPERIENCE

Mr. Krych has served as Project Manager for large biological and ecological field surveys and as Principal Investigator for threatened and endangered species on projects in the Great Lakes region for the past 16 years. He has managed and conducted field surveys for over 60 endangered and threatened species in the Chequamegon, Chippewa, Hiawatha, Nicolet and Ottawa National Forests. Mr. Krych has prepared and assisted in preparation of NEPA documents and National Forest Management Plans and has conducted surveys for endangered or threatened birds, plants and insects on over twelve large-scale projects in the Midwest. Mr. Krych has also managed and conducted wetland delineations using 1987 Corps Wetland Delineation Manual on over 2000 miles of utility corridors and on hundreds of local projects since 1989. Mr. Krych is versed in use of GIS (Arcview™), GPS (CMT PCGPS), and database (Access™) methods to map ecosystems, habitat types, land-use patterns, and endangered or threatened species locations on a number of projects located in the Great Lakes Region. He specializes in wetland delineation, regulatory assistance, habitat assessment/utilization, and the analysis of songbird and raptor communities.

- Project manager and principal investigator for endangered, threatened and special concern plant species on three projects of over 80 acres. Conducted habitat evaluation, natural community mapping, natural community classification, rare species searches, and impact assessments for state-listed plants with known occurrences within the Anoka Sand Plain. Target elements included: tubercled rein-orchid (*Platanthera flava* var. *herbiola*), cross-leaved milkwort (*Polygala cruciata*), twisted yellow-eyed grass (*Xyris torta*), lance-leaved violet (*Viola lanceolata*), tooth-cup (*Rotala ramosior*), autumn fimbristylis (*Fimbristylis autumnalis*), marginated rush (*Juncus marginatus*), tall nut-rush (*Scleria triglomerata*), willow-herb (*Decodon verticillatus*), butternut (*Juglans cinerea*), and sea-beach needlegrass (*Aristida tuberculosa*). Utilized GPS (CMT PCGPS) and GIS (Arcview™) technologies to locate community types and identify rare plant locations. Identified and located over nine community types within 240 acres of agricultural lands, wetlands, and upland forest types Anoka Sand Plain. 2004
- Project manager and principal investigator of regional forester sensitive species within the Chippewa National Forest for Enbridge and Great Lakes Gas Transmission Company. Evaluated and surveyed locations for threatened or endangered plants and animals along 26 miles of existing pipeline corridor. Botanical survey target elements included: meander searches for 15 species of threatened or endangered plants including *Botrychium pallidum, B. lanceolatum* var. *angustisegmentum, B. simplex, B. rugulosum, B. oneidense, B. mormo, Calypso bulbosa,*

*Cypripedium arietinum, Malaxis monophyllos* var. *brachypoda, Sparganium glomeratum* and *Taxus canadensis*. Avian target elements included; black-backed woodpecker *(Picoides arcticus)*, Connecticut warbler (*Oporomis agilis)*, LeConte's sparrow (*Ammodramus leconteii)*, olive-sided flycatcher (*Contopus cooperi)*, red-shouldered hawk (*Buteo lineatus)*, and northern goshawk (*Accipiter gentilis*). Utilized GPS (CMT PCGPS) and GIS (Arcview™) technologies. Identified over 157 threatened and endangered plants at 14 locations along the existing pipeline right-of-ways. 2003.

- Project manager and principal investigator of 19 forest sensitive plant species for the Chippewa National Forest. Evaluated and surveyed 206 stands for threatened or endangered plants. Utilized GPS (CMT PCGPS) and GIS (Arcview™) technologies to verify stand locations and identify rare plant locations. Identified and located over 13 threatened and endangered plants within 4,052 acres of northern hardwood , black spruce swamp, tamarack swamp, aspen and red pine forest types. 2003.
- Project manager and principal investigator on Loggerhead Shrike Nest Survey. Comprehensive site search for State Threatened Loggerhead Shrike nests and habitat on a 250 acre parcel located in Rosemount, MN. 2003.
- Project manager and principal investigator for surveys of breeding birds and rare plants within the Chippewa National Forest. Managed and conducted surveys for Region 9 sensitive species and federally threatened and endangered plants along 110 miles of Enbridge Pipleine corridor in northern Minnesota. Investigations included: call/response surveys for northern goshawk and red-shouldered hawks), helicopter surveys for bald eagle (*Haliaeetus leucocephalus*) and point count surveys for songbirds. Botanical elements included: meander searches for 15 species of threatened or endangered plants including *Botrychium pallidum, B. lanceolatum* var. *angustisegmentum, B. simplex, B. rugulosum, B. oneidense, B. mormo, Calypso bulbosa, Cypripedium arietinum, Malaxis monophyllos* var. *brachypoda,* and *Taxus canadensis*. Prepared sections of Chippewa National Forest EA and BE for the project. 2000-2002.
- Project manager and principal investigator of natural resource inventory for the City of Blaine. Evaluated and surveyed locations of wetlands, uplands and threatened or endangered plants and animals within 35 square miles of the Anoka Sandplain region of Minnesota. Utilized National Wetlands Inventory (NWI) maps, half section aerial photographs and field reconnaissance to identify wetlands or high quality ecosystems. Wetlands were classified according to guidelines established in Classification of Wetland and Deepwater Habitats of the United States (Cowardin et. al.) Identified 384 wetlands, 17 high quality upland sites, eight threatened and endangered plants at 15 locations and over 16 different community types using GPS (CMT PCGPS) and GIS (Arcview™) technologies. A general database was constructed to help the City plan for open space, greenway corridors and property acquisition. Blaine, MN. 1999-2000.
- Project manager for wetland evaluation/environmental assessment and permitting for over 300 local projects within the Mississippi River drainage in and around the Minneapolis-Saint Paul metropolitan area. Delineated Section 404 waters of the United States wetlands using 1987 Corps Wetland Delineation Manual (Waterways Experiment Station Technical Report Y-87-1, January 1987). Permits were issued for construction based on the delineation and subsequent planning . 1989 to present.
- Project manager for Vector Pipeline project in IL, IN and MI. Organized, planned, and managed the delineation of over 480 Section 404 Waters of the United States and Section 10 Waters along a 329.4-mile length of a proposed, natural gas pipeline route. Delineations made extensive use of GIS (Arcview™), GPS (CMT PCGPS), and database (Access™) methods. Investigator for a survey for Indiana Bat (*Myotis sodalis*) and suitable breeding habitat in select sites in Illinois and Indiana. 1999-2001.
- Project manager for Great Lakes Gas Transmission G.L. 300 Expansion Pipeline project in MN, WI and MI. Organized, planned, and managed the delineation of over 480 Section 404 Waters of the United States and Section 10 Waters along a 166 miles of a proposed, natural gas pipeline route. Delineations made extensive use of GIS (Arcview™), GPS (CMT PCGPS), and database (Access™) methods. 1998.
- Project investigator for Alliance Pipeline project in ND, MN, IA and IL. Assisted in organizing, managing and conducting the delineation of over 1100 Section 404 Waters of the United States and Section 10 Waters along a 850-mile length of a proposed, natural gas pipeline route. Assisted in developing GPS/GIS technologies that were used in the production of data forms compliant with 1987 COE Wetland Delineation Manual and NRCS specifications. Wetland polygons from several wetlands were seamlessly integrated into environmental worksheets prepared by the project engineer. Delineations made extensive use of GIS (Arcview™), GPS (CMT PCGPS), and database (Access™) methods., 1997-1999.
- Principal wetland biologist for citywide wetland inventory and functions and values analysis for the City of Plymouth, Minnesota. Duties included aerial photograph interpretation, field verification, and functional analysis of approximately 90 percent of the 770 individual wetlands within the city. Plymouth, MN. 1996
- Project manager and principal investigator of wetland delineation on over 1500 miles of pipeline right-of-way in MN, ND, WI, and MI. Wetland delineations were conducted for Great Lakes Gas Transmission projects, Lakehead Pipe Line and Northern Natural Gas projects. 1989-92
- Project manager and principal investigator for surveys of breeding birds in the Chippewa, Hiawatha and Chequamegon National Forests. Managed and conducted auditory and visual point counts along 105 miles of Natural Gas Pipeline corridor in MN, WI and MI. 1997.
- Project investigator for raptor surveys along natural gas pipeline corridors. Carried out surveys and impact assessments for Federal and state threatened, endangered, and sensitive species on 61 miles of natural gas pipeline proposed by Paiute Gas Corporation in Humboldt, Washoe, Pershing, Carson City, and Douglas Counties, Nevada. Species surveyed included bald eagle, golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*), prairie falcon (*Falco mexicanus*), northern

harrier (*Circus cyaneus*), common barn owl (*Tyto alba*), long-eared owl (*Asio otus*), northern goshawk, American kestrel (*Falco sparverius*), and burrowing owl (*Athene cunicularia*). 1992.

- Principal investigator for a cursory survey for Hine's Emerald Green Dragonflies and suitable breeding habitat in the vicinity of the Des Plaines River in Illinois. 1998.
- Project manager and principal investigator for historic osprey nesting location in the Chippewa National Forest at a proposed natural gas meter station improvement. 1996.
- Principal Investigator for threatened and endangered plants and animals on a 357-acre site in Scott County, MN. Project included, habitat mapping, botanical survey and site assessment, as part of an EAW, preceding issuance of a permit to proceed. Credit River, Minnesota. 1999.
- Principal Investigator for analysis of biotic communities, wetlands, and threatened and endangered species for preparation of federal Environmental Assessment and State of Minnesota EIS for Metropolitan Airports Commission Dual Track Airport Planning process. Conducted field investigations, reviewed literature, interviewed agency specialists, and participated in public hearings. Conducted waterfowl counts on Mississippi River and assisted in preparation of bird-aircraft hazard. 1996.
- Project Investigator for federal Environmental Assessment and State of Minnesota EIS project in Brainerd, MN. Conducted analysis of biotic communities, wetlands, and threatened and endangered species for proposed runway expansion. Conducted field investigations and reviewed literature. Conducted waterfowl counts on Mississippi River and assisted in preparation of bird-aircraft hazard analysis. 1995.
- Project manager and principal investigator for surveys of Blanding's Turtles (*Emydoidea blandingii*). Conducted surveys and prepared mitigation strategies for Blanding's turtles and critical habitat on several sites in the Minneapolis/St. Paul metropolitan area. 1995-present.
- Project manager and principal investigator for surveys of Loggerhead Shrike (*Lanius ludovicianus* var. *migrans*). Conducted surveys and prepared mitigation strategies for Loggerhead shrikes and critical habitat on several sites in the Minneapolis/St. Paul metropolitan area. 1995-present.
- Principal Investigator: Conducted survey for raptors nesting within 0.5 miles of a proposed 35-mile right-of-way in southwest and central Nevada. Included a Northern Goshawk (*Accipiter gentilis*) call/response survey and meander search. 1993.
- Regal Fritillary (*Speyeria idalia*). Surveyed a proposed Wisconsin wastewater treatment site for adult butterflies and host plant species. 1993.
- Project manager and principal investigator on Loggerhead Shrike Nest Survey. Comprehensive site search for State Threatened Loggerhead Shrike nest on a 50 acre parcel located in Shakopee, MN. 1994.

## PERTINENT PUBLICATIONS AND PRESENTATIONS

Timpson, M. E. , J. L. Arndt, and S. A. Krych. 1998. Innovative approaches to large-scale wetland delineation projects. p.328 *In* Agron. Abstracts. ASA, Madison, WI.

Arndt, J. L., M. E. Timpson, S. A. Krych, and D. Dignen. 1998. Integrated database strategies for wetland and soil resource assessments. p.62 *In* Agron. Abstracts. ASA, Madison, WI.

## Appendix 2: Species Observed along proposed 345 kV corridor.

| Genus | Species | Species Author | Variety or Subspecies Author | Common Name |
|---|---|---|---|---|
| **Understory Trees** | | | | |
| *Acer* | *negundo* | | | Box elder |
| *Acer* | *saccharinum* | | | Silver maple |
| *Fraxinus* | *pennsylvanica* | | | Green ash |
| *Juniperus* | *virginiana* | L. | | Eastern red cedar |
| *Populus* | *deltoides* | | | Eastern cottonwood |
| *Quercus* | *macrocarpa* | | | Bur oak |
| *Salix* | *nigra* | | | Black willow |
| *Ulmus* | *americana* | L. | | American elm |
| **Shrubs** | | | | |
| *Amelanchier* | *alnifolia* | | | Juneberry |
| *Amorpha* | *canescens* | Pursh | | Lead plant |
| *Parthenocissus* | *quinquifolia* | | | Virginia creeper |
| *Prunus* | *pumila* | | | Sand cherry |
| *Rhus* | *glabra* | | | Smooth sumac |
| *Symphoricarpos* | *occidentalis* | Moench | | Wolfberry |
| *Xanthoxyllum* | *americanum* | | | Prickly ash |
| **Forbs** | | | | |
| *Achillea* | *millefolium* | L. | | Yarrow |
| *Ambrosia* | *artemissiifolia* | | | Common ragweed |
| *Anemone* | *cylindrica* | | | Long-headed thimbleweed |
| *Anemone* | *canadense* | L. | | Meadow anemone |
| *Apocynum* | *sibericum* | Jacq. | | Dogbane |
| *Artemisia* | *dracunculus* | | | wormwood |
| *Artemesia* | *ludoviciana* | Nutt. | | Prairie sage |
| *Asclepias* | *viridflora* | | | Green milkweed |
| *Aster* | *sericeus* | | | Silvery aster |
| *Astragalus* | *agrestis* | Douglas | | |
| *Astragalus* | *crassicarpus* | | | Ground plum |
| *Calylophus* | *serrulatus* | | | Toothed evening primrose |
| *Chrysopsis* | *villosa* | | | Golden aster |
| *Cicuta* | *maaculata* | | | Water hemlock |
| *Cirsium* | *discolor* | Spreng. | | Pasture thistle |
| *Cirsium* | *flodmanii* | | | Flodman's thistle |
| *Comandra* | *umbellata* | | | Bastard toadflax |
| *Convovulus* | *sepium* | | | Hedge bindweed |
| *Coreopsis* | *palmata* | | | Coreopsis |
| *Delphinium* | *virescens* | Nutt. | | White larkspur |
| *Erigeron* | *strigosus* | | | Daisy fleabane |
| *Echinacea* | *angustifolia* | | | Purple coneflower |
| *Fragaria* | *virginiana* | | | Strawberry |

| | | | | |
|---|---|---|---|---|
| *Galium* | *boreale* | | | Northern bedstraw |
| *Geum* | *triflorum* | | | Prairie smoke |
| *Glycyrrhiza* | *lepidota* | Nutt. | | Wild licorice |
| *Heleanthus* | *grosseserratus* | | | Sawtooth sunflower |
| *Helianthus* | *maximiliani* | Schrad. | | Maximilian's sunflower |
| *Heliopsis* | *helianthoides* | L. | | Smooth oxeye |
| *Heuchera* | *americana* | | | Alum root |
| *Hypoxis* | *hirsuta* | L. | | Yellow star grass |
| *Laportea* | *canadense* | | | Wood nettle |
| *Lithospermum* | *canescens* | | | Hoary puccoon |
| *Liatris* | *aspera* | | | Rough blazing star |
| *Liatris* | *punctata* | | | Dotted blazing star |
| *Liatris* | *ligulistylis* | | | Plains blazing star |
| *Lilium* | *philadelphicum* | | | Wood lily |
| *Lobelia* | *spicata* | Lam. | | Pale spiked lobelia |
| *Lycopus* | *americana* | | | American bugleweed |
| *Monarda* | *fistulosa* | L. | | Wild bergamot |
| *Pedicularis* | *canadensis* | L. | | Wood betony |
| *Penstemon* | *grandiflorus* | Nutt. | | Large-flowered beard tongue |
| *Petalostemon* | *candidum* | | | White prairie-clover |
| *Petalostemon* | *purpureum* | Vent. | | Purple prairie clover |
| *Physalis* | *virginiana* | Mill. | | Ground cherry |
| *Plantago* | *aristida* | Michx. | | Poor Joe |
| *Polygonum* | *amphibium* | | | Water smartweed |
| *Psoralea* | *argophyllum* | Pursh | | Silverleaf scurfpea |
| *Rosa* | *arkansana* | | | Prairie rose |
| *Rudbeckia* | *hirta* | L. | | Black-eyed Susan |
| *Silphium* | *laciniatum* | L. | | Compass plant |
| *Silphium* | *perfoliatum* | L. | | Cup plant |
| *Sisyrinchium* | campestre | | | Field blue-eyed grass |
| *Solidago* | *rigida* | L. | | Stiff goldenrod |
| *Solidago* | *nemoralis* | Aiton | | Gray goldenrod |
| *Solidago* | *missouriensis* | | | Missouri goldenrod |
| *Solidago* | *gigantea* | | | Giant goldenrod |
| *Solidago* | *canadensis* | | | Canada goldenrod |
| *Taraxicum* | *officinale* | | | Common dandelion |
| *Thalictrum* | *dasycarpum* | Fisch. & Ave-Lall. | | Purple meadow rue |
| *Tradescanti* | *bracteata* | | | Spiderwort |
| *Urtica* | *dioica* | | | Stinging nettle |
| *Verbena* | *stricta* | Vent. | | Hoary vervain |
| *Vicia* | *americana* | Willd. | | American vetch |
| *Vitis* | *riparia* | | | Riverbank grape |
| *Zigadenus* | *glaucaus* | Nutt. | | White camas |
| *Zizea* | *aurea* | | | Golden alexanders |
| *Zizia* | *aptera* | | | Heart-leaved |

| | | | | |
|---|---|---|---|---|
| | | | | alexanders |
| **Grasses, Rushes and Sedges** | | | | |
| *Andropogon* | *scoparius* | | | Little bluestem |
| *Andropogon* | *gerardii* | | | Big bluestem |
| *Bouteloua* | *curtipendula* | | | Side-oats grama |
| *Carex* | *atherodes* | | | Hairy-leaved sedge |
| *Carex* | *granularis* | Willd. | | Pale sedge |
| *Carex* | *gravida* | L.H.Baily | | Heavy sedge |
| *Carex* | *heliophila* | | | Sun-loving sedge |
| *Carex* | *pellita* | | | Wooly sedge |
| *Carex* | *vulpinoidea* | | | Fox sedge |
| *Eleocharis* | *smallii* | | | Marsh spike rush |
| *Hordeum* | *jubatum* | | | Squirrel-tail |
| *Koeleria* | *macrantha* | | | June grass |
| *Panicum* | *wilcoxianum* | Vasey | | Wilcox's panic grass |
| *Panicum* | *virgatum* | | | Panic grass |
| *Panicum* | *liebergii* | Vasey | | Prairie panic grass |
| *Sorghastrum* | *nutans* | | | Indian grass |
| *Scirpus* | *fluviatilis* | | | River bulrush |
| *Spartina* | *pectinata* | | | Cord grass |
| *Stipa* | *spartea* | | | Porcupine grass |
| **Exotic Invasive Species** | | | | |
| *Agropyron* | *repens* | | | Quackgrass |
| *Asclepias* | *syriaca* | | | Common milkweed |
| *Bromus* | *inermis* | | | Smooth brome |
| *Bromus* | *tectorum* | | | Cheet |
| *Carduus* | *nutans* | | | Musk thistle |
| *Cirsium* | *arvense* | (L.) Scop. | | Canada thistle |
| *Dactylis* | *glomerata* | | | Orchard grass |
| *Euphorbia* | *esula* | L. | | Leafy spurge |
| *Medicago* | *sativa* | | | Black medic |
| *Melilotus* | *alba* | Medik. | | White sweet clover |
| *Melilotus* | *officinalis* | L. | | Yellow sweet clover |
| *Phalaris* | *arundinacea* | | | Reed canary grass |
| *Phleum* | *pratense* | | | Timothy |
| *Plantago* | *major* | L. | | Common plantain |
| *Poa* | *compressa* | | | Canada bluegrass |
| *Poa* | *pratensis* | L. | | Kentucky bluegrass |
| *Polygonum* | *convolvulus* | L. | | Black bindweed |
| *Polygonum* | *persicaria* | | | Lady's thumb |
| *Rumex* | *crispus* | L. | | Curly dock |
| *Tragopogon* | *pratensis* | L. | | Goat's beard |
| *Trifolium* | *aureum* | Pollich | | Yellow hop clover |
| *Trifolium* | *hybridum* | L. | | Alsike clover |
| *Trifolium* | *pratense* | L. | | Red clover |

| | | | | |
|---|---|---|---|---|
| *Ulmus* | *pumila* | | | Siberian elm |

HDR | ONE COMPANY *Many Solutions*℠

# Memo

| | | | |
|---|---|---|---|
| To: | Suzanne Steinhauer | | |
| From: | Angela Gowan | Project: | Xcel Split Rock |
| CC: | | | |
| Date: | 8/1/05 | Job No: | 00006794077164 |

**RE: Noise monitoring at Brandon, SD**

On July 18 and 19, 2005, HDR performed short term and 24 hour noise monitoring at the Split Rock Substation, west of Brandon, SD, to obtain baseline noise readings prior to a planned substation addition. The short term monitoring consisted of a 20 minute measurement to determine the average noise level (Leq) at a point outside the fence of the substation where noise levels seemed greater relative to other locations along the fence. The 24 hour monitoring was performed at the closest residence to the substation to determine the Ldn, the day-night sound level which describes the 24 hour cumulative exposure level. The 24 hour monitoring location for the Split Rock Substation was approximately 3000 feet southeast of the substation.

The 24 hour noise monitoring was done utilizing a Larson-Davis model 820 Type I sound level meter at the Brandon location. The microphone for the meter was enclosed in a wind screen with wire bird spikes and mounted on a tripod approximately six feet above the ground. A cable connected the microphone to the noise meter which was preprogrammed to start and stop the measurements at the appropriate times. The meter was calibrated prior to use through the use of the manufacturer supplied calibration unit emitting a 114 dB signal.

The short term noise monitoring was done using a Quest model 2900 Type I sound level meter. The meter was mounted on a tripod approximately five feet above the ground and set to measure the Leq for 20 minutes. Prior to use, the meter was calibrated at 114 dB using the manufacturer supplied calibration unit.

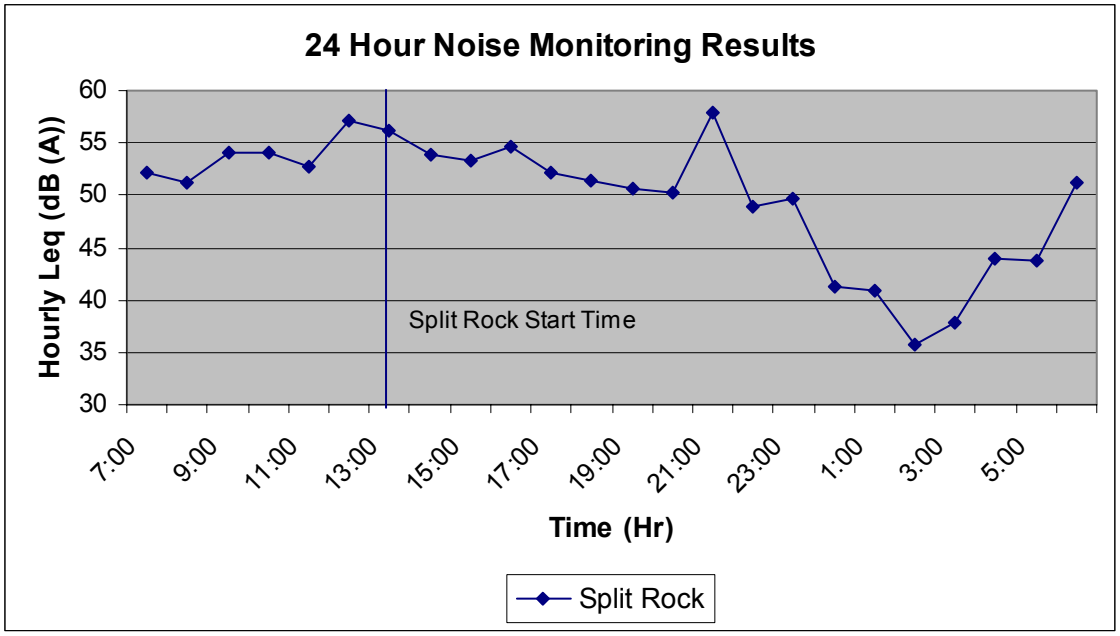
Weather conditions during monitoring consisted of clear skies with a falling barometric pressure. Temperatures ranged from 57 to 89 degrees Fahrenheit and winds were variable, ranging from west-northwesterly to easterly on the 18$^{th}$ to east-southeasterly to southerly on the 19$^{th}$. Wind speeds ranged from calm to 25 mph, with highest readings occurring during the afternoons and calm readings between 9:00 and 11:00 pm. Additional possible sources of noise at the Brandon location include: wind, roadway traffic, lawn mowers, dogs and trains.

The following table and graph show the data from the monitoring. All data are expressed in dB(A). Calculation of the Ldn imposes a 10 dB penalty on measurements made between 10pm and 7am. The penalty is not reflected in the individual hourly Leq values shown in the table.

The actual component of noise measured during the 24 hour periods attributable to the substation can be predicted using the measured short term Leq's. Assuming that the substation is a large spherical source, the noise produced by the substation will drop off at a rate of 6 dB as the distance from the substation doubles. For the Split Rock substation, the measured distance from the Quest 2900 meter to the closest source of noise within the substation was 100 feet. The measured Leq was 52 dB(A) and the distance to the 24 hour monitoring location was 3000 feet. This results in a calculated value of 22 dB(A) as the contribution of noise from the substation.

Given the relatively small calculated contribution from the substation to the noise level at the closest residence, the planned substation upgrade is not predicted to adversely influence noise levels at residences near this substation.

| Measurement | Split Rock Substation |
|---|---|
| Leq (Time interval) | 52 (13:00 -13:20) |
| Ldn * | 55 |
| Hourly Leq's from 24 hour measurement | |
| 7:00:00 | 52. |
| 8:00:00 | 51 |
| 9:00:00 | 54 |
| 10:00:00 | 54 |
| 11:00:00 | 52 |
| 12:00:00 | 57 |
| Start of Split Rock measurement 13:00:00 | 56 |
| 14:00:00 | 53 |
| 15:00:00 | 53 |
| 16:00:00 | 54 |
| 17:00:00 | 52 |
| 18:00:00 | 51 |
| 19:00:00 | 50 |
| 20:00:00 | 50 |
| 21:00:00 | 57 |
| 22:00:00 | 48 |
| 23:00:00 | 49 |
| 0:00:00 | 41 |
| 1:00:00 | 40 |
| 2:00:00 | 35 |
| 3:00:00 | 37 |
| 4:00:00 | 43 |
| 5:00:00 | 43 |
| 6:00:00 | 51 |



# EXHIBIT F
# ARCHAEOLOGICAL AND ARCHITECTURAL RESOURCES

Exhibit F.1

## Archaeological Surveys within the Project Area

| Survey Number | Report Title | Author/Date | Location | | | Comments |
|---|---|---|---|---|---|---|
| | | | T | R | S | |
| AMH-0006 | University of South Dakota Archaeology Laboratory Contract Completion Studies 17 | Buecher, 1976 | 102N | 48W | 35 | Within one mile of project area |
| AMH-0015 | Cultural Resource Reconnaissance Survey of Minnehaha County, South Dakota | Winham, 1985 | 102N | 48W | 31 | Within one mile of project area |
| AMH-0016 | An Intensive Cultural Resources Survey of a Proposed Housing Development Area in Brandon, Minnehaha County, South Dakota | Winham, 1986 | 102N | 48W | 35 | Within one mile of project area |
| AMH-0017 | Testing Site 39MH78, on the Site of a Proposed Housing Development Area in Brandon, Minnehaha County, South Dakota | Winham, 1986 | N/A | N/A | N/A | Location information not available (39MH0078 is in T102N, R48W, Sec.35) |
| AMH-0018 | An Intensive Cultural Resources Survey of a Proposed Quarry Area Near Corson, in Minnehaha County, South Dakota | Winham, 1986 | 102N | 48W | 14 | Within one mile of project area |
| AMH-0031 | Cultural Resources Survey of a Materials Pit in Section 24, T102N, R48W, Minnehaha County, South Dakota | Haberman, 1987 | 102N | 48W | 24 | Within one mile of project area |
| AMH-0057 | An Intensive Cultural Resources Survey of the Proposed Material Pit Near the City of Corson Minnehaha County South Dakota | Fosha, 1990 | 102N | 48W | 24 | Within one mile of project area |
| AMH-0060 | An Intensive Cultural Resources Survey of a Proposed Drainage and Road Widening Project Near Brandon in Minnehaha County, South Dakota | Winham, 1990 | 102N | 48W | 26, 35 | Within one mile of project area |
| AMH-0061 | Archaeology Laboratory of Augustana College Letter | Winham, 1990 | 102N | 48W | 31 | Within one mile of project area |
| AMH-0108 | An Intensive Cultural Resources Survey on a Highway SD11 From I-90 to the North Side of Corson in Minnehaha County, South Dakota | Braun, 1994 | 102N | 48W | 22-23, 26-27 | |
| AMH-0109 | An Intensive Cultural Resources Survey of Projected Development Lands in Sioux Falls Area - 1994 | Lueck, 1995 | 102N<br>102N | 48W<br>49W | 29,30-33<br>25, 36 | Crosses project area |

| Survey Number | Report Title | Author/Date | Location | | | Comments |
|---|---|---|---|---|---|---|
| | | | T | R | S | |
| AMH-0118 | An Intensive Cultural Resources Survey and Evaluation for a 1997 User Addition Project to the Minnehaha Community Water System in Minnehaha County, South Dakota | Winham, 1997 | 102N | 48W | 29-30 | Crosses project area |
| AMH-0123 | Cultural Resources Survey of a Portion of the Burkman Industrial Park for the City of Brandon, Minnehaha County, South Dakota | Winham, 1998 | 102N | 48W | 27 | Within one mile of project area |
| AMH-0129 | Dakota Research Services Cultural Resources Management Letter | Buechler, 1999 | 102N | 48W | 33-34 | Within one mile of project area |
| AMH-0153 | Cultural Resources Inventory East River Electric Power Cooperative, Inc.'s Corson Substation and Transmission Line | Rom and Potapova, 2002 | 102N | 48W | 22, 27 | Crosses project area |
| AMH-0165 | United States Department of Agriculture, Natural Resources Conservation Service (NRCS) Letter | Vaillancourt, 2003 | 102N | 48W | 23 | Within one mile of project area |
| ESD-0001 | An Archaeological Survey of the Proposed Watertown, South Dakota-Moville, Iowa 345 kV Transmission Line 1973 | Sigstad, 1973 | 102N | 48W | 12-13, 24-25 | Crosses project area |
| PSD-0025 | Cultural Resource Inventory of the Greg Carmon Dam Site | Loof, 1998 | 102N | 48W | 22 | Within one mile of project area |

Exhibit F.2

**Previously Identified Archaeological Sites and Archaeological Sites Leads within the Project and Study Area**

| Site Number | Site Name | Type | Location | | | Comments |
|---|---|---|---|---|---|---|
| | | | T | R | S | |
| 39MH0010 | East Brandon | Burial and Prehistoric Artifact Scatter | 102N | 48W | 35 | Fragments of human skeleton and Great Oasis pottery identified in plowed field. Unevaluated for NRHP eligibility. |
| 39MH0029 | N/A | Mound | 102N | 48W | 35 | Conical shape, 2.5m high, 24m in diameter. Unevaluated for NRHP eligibility. |
| 39MH0031 | N/A | Prehistoric Occupation | 102N | 48W | 35 | Pottery and projectile points noted prior to site destruction by housing development. NRHP eligibility unknown. |
| 39MH0034 | Burkman Site | Prehistoric Artifact Scatter, Mound and Village | 102N | 48W | 35 | Lithics, shell and the remains of six individuals identified. Unevaluated for NRHP eligibility. |
| 39MH0054 | N/A | Prehistoric Artifact Scatter | 102N | 48W | 36 | Site consists of a lithic scatter. A catlinite pipe was also identified near the site. Unevaluated for NRHP eligibility. |
| 39MH0061 | N/A | Prehistoric Artifact Scatter | 102N | 48W | 26 | Sioux cultural affiliation. Unevaluated for NRHP eligibility. |
| 39MH0062 | N/A | Depression | 102N | 48W | 26 | Unknown cultural affiliation. Unevaluated for NRHP eligibility. |
| 39MH0063 | N/A | Depression | 102N | 48W | 26 | Reported trapper dugout. Unevaluated for NRHP eligibility. |
| 39MH0064 | N/A | Prehistoric Artifact Scatter | 102N | 48W | 26 | Flakes and shatter noted. Unevaluated for NRHP eligibility. |
| 39MH0065 | N/A | Stone Circle | 102N | 48W | 26 | Adjacent to Segment B. Tipis observed in the area between the 1870-1880s. Unevaluated for NRHP eligibility. |
| 39MH0066 | N/A | Prehistoric Artifact Scatter | 102N | 48W | 26 | Landowner reported finding “arrowheads.” Unevaluated for NRHP eligibility. |
| 39MH0072 | N/A | Prehistoric Artifact Scatter | 102N | 48W | 22 | Artifacts eroding from Split Rock Creek cut-bank. Unevaluated for NRHP eligibility. |
| 39MH0078 | N/A | Prehistoric Artifact Scatter | 102N | 48W | 35 | Lithic scatter. Unevaluated for NRHP eligibility. |
| 39MH0139 | N/A | Prehistoric Artifact Scatter | 102N | 48W | 23 | Lithic scatter. Unevaluated for NRHP eligibility. |
| 39MH0150 | D. & D. Risty | Prehistoric Artifact Scatter | 102N | 48W | 33 | Lithic scatter. Unevaluated for NRHP eligibility. |

| Survey Number | Report Title | | Author/Date | | | Location | | | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | T | R | S | |
| 39MH0155 | Big Sioux River | Prehistoric Artifact Scatter | 102N | 48W | 28 and 33 | Lithic scatter including end scraper and probable Fire-cracked rock (FCR). Unevaluated for NRHP eligibility. | | | |
| 39MH0157 | Constance | Prehistoric Artifact Scatter | 102N | 48W | 26 and 27 | Adjacent to Segment B. Lithic scatter, flakes biface fragments and possible FCR. Unevaluated for NRHP eligibility. | | | |
| 39MH0158 | N/A | Prehistoric Artifact Scatter | 102N | 48W | 23 | Lithic flakes. Unevaluated for NRHP eligibility. | | | |
| 39MH0161 | N/A | Prehistoric Artifact Scatter | 102N<br>102N | 48W<br>49W | 31<br>36 | Observed extensive lithic scatter. Unevaluated for NRHP eligibility. | | | |
| 39MH0162 | N/A | Prehistoric Artifact Scatter | 102N | 48W | 31 | Lithic scatter. Unevaluated for NRHP eligibility. | | | |
| 39MH0163 | AAGS | Prehistoric Artifact Scatter | 102N | 48W | 29 | Lithic scatter underneath route segment A. Unevaluated for NRHP eligibility. | | | |
| 39MH0166 | OF GORS | Prehistoric Artifact Scatter | 102N | 48W | 31 | Lithic scatter. Unevaluated for NRHP eligibility. | | | |
| 39MH0169 | N/A | Prehistoric Isolated Find | 102N | 48W | 32 | One tested pebble. Not eligible for the NRHP. | | | |
| 39MH0210 | N/A | Farmstead | 102N | 48W | 31 | Two foundations and one capped well. Not eligible for the NRHP. | | | |
| 39MH0229 | N/A | Foundation, Well/Cistern | 102N | 48W | 31 | Several foundations and drilled well. Unevaluated for NRHP eligibility. | | | |
| 39MH2000 | Burlington Northern Railroad | Railroad | 102N | 48W | 29-31 | NRHP Eligible. | | | |
| 39MH2003 | N/A | Railroad | 102N | 48W | 31, 33-34 | NRHP Eligible. | | | |

Exhibit F.3

**Previously Identified Historic Standing Structures within the Project and Study Area**

| Site Number | Site Name | Date | Location | | | Comments |
|---|---|---|---|---|---|---|
| | | | T | R | S | |
| MH00000903 | Railroad Bridge over Big Sioux River | c.1910s | 102N | 48W | 29 | Not Eligible |
| MH00000904 | Railroad Bridge over Big Sioux | c.1887 | 102N | 48W | 33 | NRHP Eligible |
| MH00000906 | Forman Ford | c.1900 | 102N | 48W | 27 | NRHP Eligible |
| MH00000907 | Ray's Motel | 1920 | 102N | 48W | 23 | NRHP Eligible |
| MH00000908 | Community / Township Hall | 1900 | 102N | 48W | 22 | Not Eligible |
| MH00000909 | Bank House | 1925 | 102N | 48W | 26 | Not Eligible |
| MH00000910 | Fauske-Christopherson House | 1902 | 102N | 48W | 27 | NRHP Eligible |
| MH00000945 | WPA Stone Bridge | 1935 | 102N | 47W | 33 | NRHP Eligible |
| MH00001244 | Axel Olson Farm | 1882 | 102N | 47W | 31 | NRHP Eligible |
| MH00001270 | Thomas Rovang Farm | 1901 - house | 102N | 48W | 22 | NRHP Eligible |
| MH00001272 | Gullick Risty Farm | c.1890 house | 102N | 48W | 33 | NRHP Eligible |
| MH00001273 | Ingebrigt Nelson Farm | 1877 | 102N | 48W | 33 | NRHP Eligible |
| MH00001378 | Christopherson, Ole, Homestead | N/A | 102N | 48W | 26 | NRHP Eligible |

# EXHIBIT G
# SOIL UNIT DESCRIPTIONS

**Exhibit G**
**Soil Units within Project Area**

| Unit Code | Unit Name | Description |
|---|---|---|
| AcA | Alcester silty clay loam, 0-2% slopes | very deep, well and moderately well drained soils formed in silty colluvial-alluvial sediments on terraces, foot slopes and flood plains |
| Ba | Baltic silty clay loam, 0-1% slopes | very deep, poorly drained and very poorly drained soils formed in clayey alluvial sediments in depressions and on bottom lands |
| BcA | Benclare-Corson complex, 0-2% slopes | very deep, well drained, moderately well drained or somewhat poorly drained soils on terraces formed in clayey lacustrine sediments or loess on uplands |
| Bo | Bon loam, 0-2% slopes | very deep, well drained and moderately well drained soils formed in alluvium on bottom lands of the glacial till plain |
| Cd | Chaska loam, 0-2% slopes | very deep, somewhat poorly drained soils that formed in recent calcareous loamy alluvium on flood plains |
| Ch | Chaska loam, channeled | very deep, somewhat poorly drained soils that formed in recent calcareous loamy alluvium on flood plains; has been channelized |
| Cm | Clamo silty clay, 0-1% slopes | very deep, somewhat poorly drained, poorly drained, and very poorly drained soils formed in clayey alluvium on bottom lands |
| CoB | Corson silty clay, 2-6% slopes | very deep, well drained soils formed in clayey lacustrine sediments or loess on uplands |
| CrD | Crofton-Nora complex, 9-15% slopes | very deep, well drained soils that formed in calcareous loess on uplands |
| DcB | Davis loam, 2-6% slopes | very deep, well drained and moderately well drained soils formed in loamy sediments on foot slopes, fans and high bottom lands |
| DeB | Delmont-Enet loams, 2-6% slopes | very deep, somewhat excessively drained and well drained soils formed in loamy alluvium over sand and gravel on outwash plains |
| DgC | Delmont-Talmo complex, 6-9% slopes | very deep, excessively drained and somewhat excessively drained formed in loamy alluvium over sand and gravel on outwash plains |
| DmA | Dempster silt loam, 0-2% slopes | very deep, well drained soils formed in silty sediments overlying outwash sand and gravel, 0-2% slopes |
| DmB | Dempster silt loam, 2-6% slopes | very deep, well drained soils formed in silty sediments overlying outwash sand and gravel, 2-6% slopes |
| GrA | Graceville silty clay loam, 0-2% slopes | very deep, well and moderately well drained soils formed in silty sediments overlying sand and gravel |
| HsC | Houdek-Shindler clay loams, 6-9% slopes | very deep, well drained soils formed in glacial till on uplands, 6-9% slopes |
| HsD | Houdek-Shindler clay loams, 9-15% slopes | very deep, well drained soils formed in glacial till on uplands, 9-15% slopes |
| La | Lamo silty clay loam, 0-1% slopes | very deep, somewhat poorly drained soils that formed in calcareous loamy alluvium |
| Lb | Lamo silty clay loam, channeled | very deep, somewhat poorly drained soils that formed in calcareous loamy alluvium; has been channelized |
| MdB | Moody silty clay loam, 2-6% slopes | very deep, well drained soils that formed in loess |

| Unit Code | Unit Name | Description |
|---|---|---|
| MnB | Moody-Nora silty clay loams, 2-6% slopes | very deep, well drained soils that formed in loess, 2-6% slopes |
| MnC | Moody-Nora silty clay loams, 6-9% slopes | very deep, well drained soils that formed in loess, 6-9% slopes |
| MtA | Moody-Trent silty clay loams, -2% slopes | very deep, well drained soils that formed in loess |
| NcC | Nora-Crofton complex, 6-9% slopes | very deep, well and moderately well drained soils that formed in loess on uplands and silty sediments in swales |
| Ob | Obert silty clay loam, 0-1% slopes | very deep, poorly drained and very poorly drained, moderately slow permeable soils that formed in calcareous loamy alluvium |
| Or | Orthents, loamy | Relatively new soil composed of loamy material; no horizons have formed |
| SdE | Shindler-Houdek clay loams, 15-40% slopes | very deep, well drained soils formed in glacial till on uplands, 15-40% slopes |
| SnE | Shindler-Talmo clay loams, 15-40% slopes | very deep, excessively drained and well drained soils formed in glacial till on uplands and sand and gravel outwash sediments |
| SpB | Splitrock silty clay loam, 2-6% slopes | very deep, moderately well drained soils formed in loess and the underlying glacial till on uplands |
| TdE | Talmo-Delmont complex, 15-40% slopes | very deep, somewhat excessively and excessively drained soils formed in loamy or sand and gravel outwash sediments on glacial outwash plains and moraines |
| Tr | Trent silty clay loam, 0-2% slopes | very deep, well and moderately well drained soils formed in silty sediments on uplands and in swales |
| Wk | Whitewood silty clay loam, 0-2% slopes | very deep, poorly drained and somewhat poorly drained soils formed in local silty alluvium on flats, swales, and upland drainageways |

# EXHIBIT H
# COMMENTS

received
3/21/05 RJC

RECEIVED

MAR 2 4 2005

HDR Engineering, Inc.

Ralph DeRaad, Clerk
Brandon Township
Minnehaha County
47912 257 St.
Garretson, SD 57030-6606
Phone 605-582-6111
3-14-05

Ms. Pam Rassmussen
Xcel Energy
P.O. Box 8
Eau Claire, WI 54702-0008

Dear Ms. Rasmussen:

At the Annual Brandon Township meeting several township residents brought to our attention the plans Excel Energy has for the construction of the Splitrock To Lakefield Junction Transmission line.

The voters directed me to inform you of the concerns township residents have concerning this project.

The residents do not oppose the construction of the transmission line. They recognize the need for such projects. The main concern is the location of the the line.

The voters present strongly favor the placement of the line on the Interstate 90 route. The reasons being:

1. This route would have the least amount of effect on land owners and residents along the line.
2. Economic Impact. The proposed Alliant Route would pass through the middle of the Brandon Development Park located west of Corson. It is the feeling of residents that this would be a huge detriment to the development of this park which is in the beginning stages. The placement of the line along The Interstate 90 Route would have considerably less impact on economic development. At this point in the development of our City, Township and Community we feel economic development is vital, and do not want to see any activity that will impede this progress.
3. It is the feeling of Township Residents that economic development should take precedence over aesthetics.

The Residents of Brandon Township ask your cooperation in these matters.
If you have any questions I can be contacted at the number above.

Sincerely,
Ralph DeRaad, Clerk
Ralph DeRaad

CC: SD PUC

C: Suzanne Stenhaug, HDR
Grant Stevenson
Jim Wilson, Sioux Falls

**OFFICE OF**
**PLANNING & ZONING**
**Minnehaha County Administration Building**



415 N. Dakota Avenue
Sioux Falls, South Dakota 57104-2465
Fax: (605) 367-7413

January 20, 2005

HDR Engineering, Inc.
Attention: Suzanne Steinhauer
6190 Golden Hills Drive
Minneapolis, MN 55416

RE: Split Rock to Lakefield Junction 345 kV Transmission Line

Dear Ms. Steinhauer:

Thank you for informing Minnehaha County that Xcel Energy plans to construct 345 kV transmission line through part of the County. I have reviewed the project and determined that a Zoning Permit is required for the proposed work. I am enclosing the application for a Zoning Permit. Please return the completed application and appropriate fees ($20.00) with any information needed to review the project. At a minimum, a site plan showing the location of the transmission line and narrative on the proposed construction will be required. It will take a couple of weeks to process the application.

On another note, David Queal has retired as Planning Director for Minnehaha County. I am the current Planning Director and you may list me as the future contact person on this matter. I look forwarding to working with you in the future. If you have any questions, please feel free to call.

Sincerely,

Scott Anderson,
Planning Director

March 10, 2005

Ms. Pamela J. Rasmussen
PO Box 8
Xcel Energy
Eau Claire, WI 54702-0008

RE: Splitrock to Lakefield Junction Transmission Line

Dear Ms. Rasmussen:

Thank you for taking the time to visit with me during your February 24, 2005 informational meeting at Tailgators. As we discussed, my family lives on a small acreage about one and ¼ mile west of Corson and have an interest in the location of the new 345 KV line originating at the Splitrock Substation.

During our discussion, you mentioned that Xcel currently prefers the Alliant route as opposed to the Interstate route for South Dakota for the following reasons:

1) Aesthetics for people driving on Interstate 90 and
2) Reliability by separating the two 345 lines by approximately 1,000 additional feet.

**We believe that this new line should be placed along the Interstate Route for the following reasons:**

1) Aesthetics for the existing homeowners should take precedent over aesthetics for people driving along Interstate 90.
2) Reliability would not be significantly different under the two scenarios and may actually be enhanced using the Interstate Route by eliminating several miles of double circuiting a 161 and 345 line.
3) The Draft Environmental Impact Study (DEIS) prepared for the State of Minnesota shows that fewer residences are impacted by the Interstate route in South Dakota than the Alliant route.
4) The DEIS appears to have missed at least one residence (Jarrod Johnson's) in South Dakota that would be within 300 feet (less than $1/16^{th}$ of a mile) of the Alliant route line and possibly 5 more, including ours, within 1,000 feet.
5) The South Dakota portion of the Alliant route is estimated to cost approximately $2.2 million (approximately 40%) more than the Interstate route.
6) The line segment paralleling the South Dakota/Minnesota border was not in the draft DEIS filed with Minnesota possibly requiring an addendum or a complete new DEIS.
7) The preferred route for South Dakota should be consistent with the route recommended in Minnesota (the Interstate route).
8) More land is available for development in the Brandon area under the Interstate route than the Alliant route due to reduced right of way requirements.

Following is additional explanation on why we believe the proposed line should be placed along the Interstate route in South Dakota:

1) Aesthetics for the existing homeowners should take precedent over aesthetics for Interstate drivers.
    a. You commented that having transmission lines on both sides of the Interstate was for the aesthetics of people driving along Interstate 90. Aesthetics of the homeowners which live close to the line that view it every day should take precedent over drivers that may notice it for a few minutes while driving through.
    b. Given that the line location under the two routes is only about 1,000 feet different, we question whether the aesthetics would be significantly different for drivers but would be significantly different for homeowners.
2) Reliability would not be significantly different under the two scenarios.
    a. The second reason you gave for locating the line along the Alliant route was the enhanced reliability in case of a tornado. The reason given was that there is less chance of a tornado taking out both lines if the new line was farther away. While we are not engineers or weather experts, we question whether there is any measurable increase in reliability if the line is moved approximately 1,000 feet north for the following reasons:
        i. If a tornado moved from southeast to northwest as they often do in South Dakota, it would almost certainly take out both lines, irrespective of whether the Interstate or Alliant route was chosen.
        ii. The only instance where it would make a difference is if the tornado touched down more than 1 and 1/4 miles east of the EROS exit and followed a very narrow path straight east along I-90.
        iii. If the tornado touched down 1 mile east of the EROS exit and went straight east, the line would be taken down where it crosses I-90 east of the EROS exit and it wouldn't matter whether the line was located along the Interstate or the Alliant route.
    b. A strong case can be made that reliability would actually be enhanced by building along Interstate 90 to the Minnesota border due to the elimination of double circuiting a 161 and a 345 line. The Interstate route has a new 345 line being built and retains the existing 161 line that runs north and east from Corson. The Alliant route has most of the line to the Minnesota border with both the 345 and the 161 line. If the Alliant route line went down for any reason, both the 345 and the 161 line would be out of service. By utilizing the Interstate route to the Minnesota border, two lines separated by approximately 1 mile would need to go down.
        i. In several documents, including Xcel April 30, 2004 Application to the Minnesota EQB (Application) and the DEIS, Xcel stated that double circuiting the 345/161 line causes reliability concerns. For example, page 106 of the Application states that "Double circuiting transmission lines may decrease the reliability of the system. This is because one structure supports two lines, and if a pole goes down in an outage, both lines are taken out of service, increasing the number of customers affected. Double circuiting along the

Alliant Route would also require significant coordination with Alliant Energy for outages. Finally, an outage to this lines impacts customers of at least two different utilities requiring additional coordination during restoration."

3) The DEIS prepared for the State of Minnesota shows that fewer residences are impacted by the Interstate route in South Dakota than the Alliant route. The DEIS shows the following for homes impacted by the South Dakota route of this line:

| Route Segments | Homes < 300' | Homes < 1,000' | Comments |
|---|---|---|---|
| I1 through I3 | 0 | 5 | South Dakota portion of Interstate route |
| T1 through T3 | 2 | 4 | South Dakota portion of Alliant route |

4) The DEIS appears to have missed at least one residence (Jarrod Johnson's) in segment T1 that would be within 300 feet of the line under the Alliant route and up to 5 more within 1,000 feet. Following is a revised comparisons of the homes impacted:

| Route Segments | Homes < 300' | Homes < 1,000' | Comments |
|---|---|---|---|
| I1 through I3 | 0 | 5 | South Dakota portion of Interstate route |
| Revised T1-T3 | 3 | Between 4 & 9 | South Dakota portion of Alliant route adjusted for homes excluded from the DEIS. |

The DEIS states on page 19 that the Minnesota EQB will not allow a high voltage transmission line within 300 feet of an occupied residence. Assuming that South Dakota has this same requirement, the line west of Corson would need to be moved closer to Interstate 90 to accommodate the two residences within 300 feet of the Alliant route.

5) The South Dakota portion of the Alliant route is estimated to cost approximately $2.2 million (approximately 40%) more than the Interstate route. This calculation is based on information in Appendix H to the DEIS plus $500,000 for the approximately one mile of additional line not included in the DEIS that parallels the South Dakota/Minnesota border.

6) Since the line segment that parallels the South Dakota/Minnesota border was not included in the DEIS filed with Minnesota, an addendum or a complete new EIS may need to be prepared.

7) The preferred route for South Dakota should be consistent with route recommended in Minnesota (the Interstate route).
   a. On pages 10 and 33 of the DEIS submitted to the Minnesota EQB, Xcel comments "In addition, the route in South Dakota largely depends on which route the Minnesota EQB approves."

b. In the Draft DEIS and your testimony dated February 14, 2005 to the Minnesota EQB, you indicated that the Interstate route was the preferred route. We recognize that this only applies to Minnesota but in referencing the Interstate route as the preferred route, but your testimony specifically referenced segments I1-I3, which are in South Dakota. Therefore, if Xcel is now proposing the Alliant route in South Dakota, it is inconsistent with the testimony in Minnesota.

8) More land is available for development in the Brandon area under the Interstate route than the Alliant route due to reduced right of way requirements. Page 4 of the DEIS states "The right of way required by running the line across country requires 150 feet (75 on each side of the center of the line) compared to 80 feet with the Interstate route." By utilizing the Interstate route, between 8 and 18 acres of additional land per mile would be available for development in the Brandon industrial park north of Interstate 90 and for all landowners west of the industrial park.

In summary, for the same basic reasons that Xcel prefers the Interstate route in Minnesota, we believe that the Interstate route should also be chosen in South Dakota.

I understood during our discussion that the South Dakota PUC requires that only the preferred line option be offered to them for consideration. In reviewing the statutes and the PUC rules, I was unable to locate this requirement. Is the preferred line option a PUC requirement or an Xcel preference?

Thank you for your attention in this very important matter. If you have any questions, please feel free to call or e-mail us.

Sincerely,

Merlin and Leann Sawyer
48077 260th Street
Brandon, South Dakota 57005
(605) 582-3286
msawyer@alliancecom.net

GREAT FACES. GREAT PLACES.

RECEIVED
JUL 5 2005
HDR Engineering, Inc.

**DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES**
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

July 1, 2005

Suzanne Lamb Steinhauer
HDR Engineering Inc
6190 Golden Hills Drive
Minneapolis MN 55416

Dear Ms. Steinhauer:

The South Dakota Department of Environment and Natural Resources (DENR) has reviewed the revised Split Rock to Lakefield Jct. Transmission Line in Minnehaha County, South Dakota project dated May 25, 2005. The DENR finds that this construction should not cause violation of any statutes or regulations administered by the DENR based on the following recommendations:

1. The department does not anticipate any adverse impacts to the air quality of the state. The Air Quality Program has no objections to this project.

2. Best Management Practices (BMP) for sediment and erosion control should be incorporated into the planning, design, and construction of this project.

3. Wetlands and tributaries may be impacted by this project. These water bodies are considered waters of the state and are protected under the South Dakota Surface Water Quality Standards. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment except where authorized under Sections 402 or 404 of the Federal Water Pollution Control Act. Please contact the U.S. Army Corps of Engineers concerning these permits.

4. Split Rock Creek is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

   (5) Warmwater semipermanent fish life propagation waters;
   (7) Immersion recreation waters;
   (8) Limited contact recreation waters;
   (9) Fish and wildlife propagation, recreation, and stock watering waters; and
   (10) Irrigation waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 90 mg/L is not violated.

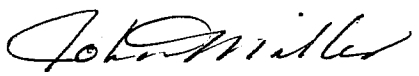
5. This segment of the Big Sioux River is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

   (5) Warmwater semipermanent fish life propagation waters;
   (7) Immersion recreation waters;
   (8) Limited contact recreation waters;
   (9) Fish and wildlife propagation, recreation, and stock watering waters; and
   (10) Irrigation waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 90 mg/L is not violated.

If you have any questions concerning these comments, please contact me at (605) 773-3351.

Sincerely,



John Miller
Environmental Program Scientist
Surface Water Quality Program

# Department of Transportation

## Sioux Falls Area Office

5316 West 60th Street North
Sioux Falls, SD 57107 605/367-5680
FAX: 605/367-5685




January 21, 2005

Suzanne Steinhauer
Environmental Planner
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

Ref: Split Rock to Lakefield Junction 345 kV Transmission Line.

Dear Suzanne,

SDDOT appreciates the opportunity to work with you and Xcel Energy on the above mentioned project. We have one construction project planned for the South Dakota Rest Area located at the SD\MN border, which may impact Crossover 2. After reviewing your proposed transmission crossing we would like for you to fill out a utility permit which is attached for approval by this office.

Should you have any questions or wish to discuss this further please contact this office.

Sincerely,
SD Department of Transportation
Craig Smith, Area Engineer

Brian VanDam


*Brian VanDam*
*Transportation Engineer*
*5316 W. 60th Street North*
*Sioux Falls, SD 57107*
*(605) 364-4970 Ext. 2115*
*SDDOT-SF Area*
*Brian.Vandam@state.sd.us*


cc: Smith, Aalberg, file

(5-2001)

# APPLICATION FOR UTILITY PERMIT

Highway No._____ County _____ Approximately _____ Mi. ____N ____S ____E ____W

From_____ for construction of_____

(City or well defined point) (Type of utility facility)

Begin Section_____ Township_____ Range _____ End Section _____ Township _____ Range _____

Intended usage or rating _____

Cable size and type_____

Outsize pipe diameter _____ Maximum pipeline operation pressure _____

Size and type of metal casing_____

Minimum depth of cable or pipeline: (Rural Roadway 48") _____ (Curb-Gutter 24") _____ (Other Areas 36") _____

Method of installation _____

Approximate construction dates -Start _____ Finish_____

Special conditions _____

_____

I, the undersigned, request permission to construct and maintain a utility facility on public right-of-way at the above location and as shown on the attached layout sheet and in accordance with provisions of Administrative Rules of South Dakota, Chapter 70:04:05. In consideration for this permission, I agree to abide by all conditions of said rules and in addition, the following:

1. To furnish all materials, labor, incidentals and pay all costs involved with the construction and maintenance of the utility facility. To perform approved open cut trench operations in accordance with current DOT Open Cut Trench Policy. To restore any damaged portions of the roadway and right-of-way to equal or better conditions than existed prior to beginning work covered by this permit.

2. To provide protection to highway traffic during construction and maintenance by the use of proper signs, barricades, flag persons and lights as prescribed in the "Manual on Uniform Traffic Control Devices."

3. To indemnify, hold and save harmless the State of South Dakota, its Department of Transportation, its Officers and Employees, from any and all suits, actions or claims of any kind or nature brought because of any injuries or damage received or sustained by any person or property on account of the use or occupancy of highway right-of-way designated in this application.

Company _____ Date_____

Address _____ City_____ State_____ Zip_____ Telephone_____

By: (Sig.)_____ (Typed)_____ Title_____

**### To be completed by the Department of Transportation ###**

Project (Const.) _____ Station _____ Milepost _____

Project (Maint.) _____ Maintenance Unit_____

1. Prior to commencing construction and upon completion of work the applicant shall notify_____

_____ at_____ telephone_____

2. Special Conditions: _____

_____

_____

3. Failure to construct and maintain the utility facility in accordance with the provisions of this permit will automatically render this permit null and void and constitute grounds for its removal and/or full restoration of the site at the applicant's expense.

Recommended:_____ 20____ _____ 20____

City Representative/Date Bridge/Roadway Design/Date

Recommended:_____ 20____

Engineering Supervisor/Date

Approved:_____ 20____

Area/Region Engineer/Date

This permit to construct and maintain a utility facility is granted subject to all conditions as herein stated.

Issued this_____ day of_____ 20____ _____

PERMIT MANAGER

# Department of Transportation

**Sioux Falls Area Office**
**5316 West 60th Street North**
**Sioux Falls, SD 57107 605/367-5680**
**FAX: 605/367-5685**




June 21, 2005

Suzanne Steinhaur
Environmental Planner
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, Minnesota 55416

Ref: Split Rock to Lakefield Junction 345kV Transmission Line
Minnehaha County

Dear Suzanne,

As per your request the Department has reviewed your proposed route change for the above referenced transmission line and the following comments are offered:

A utility permit application will be required for each interstate crossing.

As per Administrative rule 70:04:05.01 the Department will not allow any portion of this facility to encroach into the Right-Of-Way. Based on the Administrative rules for interstate Right-Of-Way only fiber optic facilities are permitted to be installed longitudinally in the Right-Of-Way.

Should you have any questions please contact this office.

Sincerely,
Craig Smith, Area Engineer

Greg L. Aalberg
Engineering Supervisor

cc: file

# Department of Transportation

## Office of Legal Counsel

700 East Broadway Avenue
Pierre, South Dakota 57501-2586 605/773-3262
FAX: 605/773-3921


July 14, 2005

David A. Gerdes
May, Adam, Gerdes & Thompson
P.O. Box 160
Pierre, SD 57501-0160

RE: Xcel Energy Interstate utility installation

Dear Dave:

The department has reviewed your inquiry on behalf of Xcel concerning the location of above-ground utility facilities that will overhang a segment of Interstate highway right-of-way in Minnehaha County. The location is within the Sioux Falls Area of the Mitchell Region of DOT.

Your client may apply for a Permit to Occupy the right-of-way through the Sioux Falls Area Office. Craig Smith is the Area Engineer. In accord with its administrative rules, DOT has discretion to grant such a permit in this case if:

1. highway and traffic safety is not adversely affected;
2. alternative locations aren't available or aren't financially or operationally reasonable; accommodation will not adversely affect design, operation, maintenance or current or future use of the highway;
3. disapproval of the permit will result in the loss of additional agricultural land or productivity; and,
4. restrictions on access for construction and maintenance are complied with

Of course, any and all other applicable permit conditions for such a utility installation would have to be complied with as well.

If the permit is granted, it will need to be reviewed by the Federal Highway Administration Division Office for South Dakota before it is finally approved.

Very truly yours,

Bill

William J. Nevin
Assistant Attorney General

WJ/jm
cc: Craig Smith, Sioux Falls Area Engineer

**DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

February 08, 2005

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

RE: Split Rock to Lakefield Junction 345 kV Transmission Line Project

Dear Ms. Steinhauer:

The Ground Water Quality Program of the South Dakota Department of Environment and Natural Resources has reviewed the above-referenced project for potential impacts to ground water quality. Based on the information submitted in your letter dated January 10, 2005 to Steve Pirner, the department does not anticipate adverse impacts to ground water quality by this project.

However, there have been accidental petroleum and other chemical releases throughout the state. Of the accidental releases reported to the department, we have identified three release cases in the vicinity of this project.

- A diesel release at Farmland Feed Mill, ¼ mile south of the town of Corson along Hwy. 11, Department Case No. 88.209. This case has been closed.
- A small diesel release at Split Rock Creek where it intersects the transmission line route, Department Case No. 97.367. This case has been closed.
- A hydraulic oil release at NSP Split Rock Substation, Department Case No. 99.033. This case has been closed.

The location information provided to us regarding releases is sometimes inaccurate or incomplete. Therefore, other releases may have occurred that may affect the project area. If you would like to do more research regarding this and other accidental releases, information on accidental releases reported in South Dakota may be obtained at the website: http://www.state.sd.us/denr/DES/ground/dataspil.htm. In the unlikely event that contamination is encountered during construction, Xcel Energy or its designated representative must report the contamination to the department at (605) 773-3296. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements and the materials of construction through the contaminated area should be evaluated for chemical compatibility and adjusted accordingly.

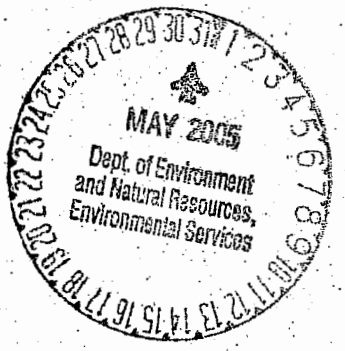
If you have any questions regarding the information provided, please contact this office at (605) 773-3296. Thank you for providing the opportunity to comment on this project.

Sincerely,

Anita Yan, P.E.
Ground Water Quality Program

R:\WORK\GWQ\GWSection\EAs&MiscReviews\Minnehaha County\SpltRock-LakefldJcnTransLine (Minnehaha).doc

DRINKING WATER QUALITY DETERMINATION
It appears, based on the information provided, that this project will not have adverse environmental effects to drinking water in this area. This project is approved.
Approved by: Mark S Mayer
Date: 6/7/05 ID No.: 2005013
605-773-3754 Fax 605-773-5286
SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT & NATURAL RESOURCES




May 25, 2005

Mr. Steve Pirner
Environmental Program Scientist
South Dakota Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501

RECEIVED
JUN 13 2005
HDR Engineering, Inc.

**RE:** Revised Route – Split Rock to Lakefield Junction 345 kV Transmission Line

Dear Mr. Pirner:

In a letter dated January 10, 2005, HDR requested your comments on a proposed 345 kV transmission line in Minnehaha County. Since that letter, Xcel Energy has adjusted the South Dakota portion of route (shown in the attached map). The proposed overhead 345 kV transmission line will still be routed from the Split Rock Substation, near Brandon, South Dakota to the Lakefield Junction Substation, near Lakefield, Minnesota; but the route will now follow Interstate 90 (I-90) from the Minnesota border into the Split Rock Substation. The route was revised in response to concerns about reliability and constructability, feedback from the public, and indications that the Minnesota portion of the route will likely follow I-90. Xcel Energy plans to apply to the South Dakota Public Utilities Commission (PUC) for a permit to construct the new 345 kV transmission line this summer. Xcel Energy will request that the line be permitted as a transmission facility under South Dakota Codified Law 49-41B-11. Potentially affected sections are as follows:

| Township | Range | Section |
|---|---|---|
| 102 | 47 | 27-30 |
| 102 | 48 | 25, 29, 32 |

HDR received four responses from the DENR (see attached). The comments provided recommendations on construction practices to minimize impacts from the project and addressed potential project impacts to groundwater, drinking water and waste management. Xcel Energy would like to inform the DENR of the route change and provide you with the opportunity to comment on the revised route for the project. Construction and operation of the line will not change, only the proposed route. We would appreciate receiving any comments by June 17, 2005, to allow time for them to be incorporated into the application. Your input on the project will assist Xcel Energy, HDR and the PUC in their review of the project.

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

Xcel Energy appreciates the opportunity to work with your office and will be seeking on-going feedback from you and your agency as this project proceeds through review. Enclosed is a project location map to facilitate your review. If you require further information or have questions regarding this matter, please call me at (763) 591-5434.

Sincerely,

Suzanne Steinhauer
Environmental Planner

Enclosures: Project Location Map

Anita Yan letter, February 8, 2005
Waste Management Determination, February 8, 2005
John Miller letter, February 9, 2005
Drinking Water Quality Determination, February 10, 2005

Cc: Pam Rasmussen, Xcel Energy

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr



February 9, 2005

Suzanne Lamb Steinhauer
HDR Engineering Inc
6190 Golden Hills Drive
Minneapolis MN 55416

Dear Ms. Steinhauer:

The South Dakota Department of Environment and Natural Resources (DENR) has reviewed the Split Rock to Lakefield Jct. Transmission Line in Minnehaha County, South Dakota. The DENR finds that this construction should not cause violation of any statutes or regulations administered by the DENR based on the following recommendations:

1. The department does not anticipate any adverse impacts to the air quality of the state. The Air Quality Program has no objections to this project.

2. Best Management Practices (BMP) for sediment and erosion control should be incorporated into the planning, design, and construction of this project.

3. Wetlands and tributaries may be impacted by this project. These water bodies are considered waters of the state and are protected under the South Dakota Surface Water Quality Standards. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment except where authorized under Sections 402 or 404 of the Federal Water Pollution Control Act. Please contact the U.S. Army Corps of Engineers concerning these permits.

4. Split Rock Creek is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

   (5) Warmwater semipermanent fish life propagation waters;
   (7) Immersion recreation waters;
   (8) Limited contact recreation waters;
   (9) Fish and wildlife propagation, recreation, and stock watering waters; and
   (10) Irrigation waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 90 mg/L is not violated.

5. This segment of the Big Sioux River is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

    (5) Warmwater semipermanent fish life propagation waters;
    (8) Limited contact recreation waters;
    (7) Immersion recreation waters;
    (9) Fish and wildlife propagation, recreation, and stock watering waters; and
    (10) Irrigation waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 90 mg/L is not violated.

If you have any questions concerning these comments, please contact me at (605) 773-3351.

Sincerely,

John Miller

John Miller
Environmental Program Scientist
Surface Water Quality Program

January 10, 2005



Mr. Steve Pirner
Environmental Program Scientist
South Dakota Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501

**RE:** Split Rock to Lakefield Junction 345 kV Transmission Line

Dear Mr. Pirner:

Xcel Energy plans to apply to the South Dakota Public Utilities Commission (PUC) for a permit to construct a 345 kV transmission line in Minnehaha County, South Dakota in the first quarter of 2005. Xcel Energy will request that the line be permitted as a transmission facility under South Dakota Codified Law 49-41B-11. The proposed 345 kV transmission line will be routed from the Split Rock Substation, located west of Brandon, South Dakota to the Lakefield Junction Substation, east of Lakefield, Minnesota. The Minnesota Environmental Quality Board is currently reviewing two route alternatives for the Minnesota portion of the line and a decision on that portion of the line is expected in the first half of 2005. HDR Engineering, Inc. (HDR) is assisting Xcel Energy with both of these applications.

HDR requests your review of the above-mentioned project to identify potential impacts from the project and any permits that the project might require. Your input on the project will assist Xcel Energy, HDR and the PUC in their review of the project.

After receiving comments from the public and from a number of agencies Xcel Energy has adapted and refined its initial routing concepts and will apply for a construction permit for the route shown in the attached map. Because the MEQB has not yet chosen a route for the Minnesota portion of the project, the route shown on the map shows two possible "crossover" segments, (Crossover 1 and Crossover 2) in the event that the MEQB approves a Minnesota route along I-90. Potentially affected sections are:

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Sincerely,

Suzanne Steinhauer
Environmental Planner

Enclosures: Project Location Map

Cc: Pam Rasmussen, Xcel Energy

**DEPARTMENT OF GAME, FISH AND PARKS**
Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182



January 24, 2005

Suzanne Steinauer, Environmental Planner
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

RE: Split Rock to Lakefield Junction 345 kV Transmission Line

Suzanne:

As requested I have searched the South Dakota Natural Heritage Database for records of rare, threatened or endangered species along the transmission line route described in your letter of January 10. There is a record of a bald eagle nest in the XCEL power plant vicinity. A pair of bald eagles has nested in this area since 2002. The attached printout provides additional information.

In addition to the above record, the proposed route crosses Split Rock Creek. Split Rock Creek is known to have populations of Topeka shiners, a federally endangered fish. No records of Topeka shiners have been documented on the proposed route but collections of this species have been made on the upper portions of Split Rock Creek. There are a number of records of species considered rare in South Dakota that have been reported from habitats along Split Rock Creek. These include trout-perch (a state threatened species), blackside darter, fox snake, ringneck snake, and the spiny softshell turtle. Although no surveys have been conducted on the specific area of Split Rock Creek identified on the map, this area could be biologically sensitive.

If you have any questions or need additional information, please contact me.

Sincerely,

Doug Backlund
Wildlife Biologist

# Element Occurrence Record

**Scientific Name:** *Haliaeetus leucocephalus*

**Occurrence #:** 43

**Common Name:** Bald Eagle

**SD Protection Status:** ST
**Federal Status** Threatened

**Global Rank** G4

**State Rank** S1B,S2N

| County Name | State |
|---|---|
| Minnehaha | SD |

**Township Range** 102N048W
**Section** 30

**Directions:**

Big Sioux River, Sioux Falls, Minnehaha County; .75 MILE ESE OF I-90 EXIT 402; ALONG THE BIG SIOUX RIVER

## Survey Information:

**First Observation:** 2002-05-10 **Survey Date:** **Last Observation:** 2004-07-24
**Eo Type:** BREEDING SITE - migratory animals

**EO Data:** ACTIVE NEST 2004--nest occupied and one fledged

---

**Scientific Name:** *Apalone spinifera*

**Occurrence #:** 10

**Common Name:** Spiny Softshell

**SD Protection Status:**
**Federal Status**

**Global Rank** G5

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 434325N **Longitude:** 0963000W

**Directions:**

SPLIT ROCK CREEK; GARRETSON CITY PARK

## Survey Information:

**First Observation:** 1960-07-21 **Survey Date:** **Last Observation:** 1960-07-21
**Eo Type:**

**EO Data:** SPECIMEN COLLECTED

# Element Occurrence Record

**Scientific Name:** *Apalone spinifera*

**Occurrence #:** 26

**Common Name:** Spiny Softshell

**SD Protection Status:**
**Federal Status**

**Global Rank** G5

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 434148N **Longitude:** 0963049W

**Directions:**

1 1/2 miles south and 1 mile west of Garretson

## Survey Information:

**First Observation:** 2002 **Survey Date:** **Last Observation:** 2002

**Eo Type:**

**EO Data:** spiny softshell (2) caught in hoop net trap in Split Rock Creek

---

**Scientific Name:** *Apalone spinifera*

**Occurrence #:** 38

**Common Name:** Spiny Softshell

**SD Protection Status:**
**Federal Status**

**Global Rank** G5

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 434026N **Longitude:** 0963203W

**Directions:**

Palisades State Park; approximately 6-7 miles NNE of Brandon.

## Survey Information:

**First Observation:** 2002-06-07 **Survey Date:** **Last Observation:** 2002-06-07

**Eo Type:**

**EO Data:** In the morning I walked to the bridge and saw 5 softshell turtles basking on quartzite boulders in the creek below.

# Element Occurrence Record

**Scientific Name:** *Apalone spinifera*

**Occurrence #:** 39

**Common Name:** Spiny Softshell

**SD Protection Status:**
**Federal Status**

**Global Rank** G5

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 434532N **Longitude:** 0962759W

**Directions:**

InSplit Rock Creek, just downstream a quarter mile from Sherman

## Survey Information:

**First Observation:** 2002-06-12 **Survey Date:** **Last Observation:** 2002-06-18
**Eo Type:**

**EO Data:** 3 large softshell turtles in Split Rock Creek

---

**Scientific Name:** *Diadophis punctatus*

**Occurrence #:** 16

**Common Name:** Ringneck Snake

**SD Protection Status:**
**Federal Status**

**Global Rank** G5

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 434146N **Longitude:** 0963106W

**Directions:**

About 1 mile SSW of the north edge of Garretson, very near the point where Hwy 11 curves to the west; Pallisades State Park.

## Survey Information:

**First Observation:** 1999-10-05 **Survey Date:** **Last Observation:** 2002-10-01
**Eo Type:**

**EO Data:** 2 snakes were found and both were dead. Weather was cold and cloudy after a downpour: nothing else was seen. A photo was included of a ring-necked snake found in the park on Oct. 5, 1999.

# Element Occurrence Record

**Scientific Name:** *Elaphe vulpina*

**Occurrence #:** 39

**Common Name:** Fox Snake

**SD Protection Status:**
**Federal Status**

**Global Rank** G5

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 434109N **Longitude:** 0963146W

**Directions:**

Found below the bridge at the intersection of Split Rock Creek and 257 st. Approximately 3 miles SW and one more mile south of
Garretson.

## Survey Information:

**First Observation:** 1999-10-05 **Survey Date:** **Last Observation:** 2002-06-11
**Eo Type:**

**EO Data:** Looked down among the boulders on the SE side of the bridge and saw a large fox snake slip into a crack under a big rock.

---

**Scientific Name:** *Notropis topeka*

**Occurrence #:** 27

**Common Name:** Topeka Shiner

**SD Protection Status:**
**Federal Status** Endangered

**Global Rank** G3

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 434510N **Longitude:** 0962820W

**Directions:**

SPLIT ROCK CREEK JUST SOUTH OF SHERMAN

## Survey Information:

**First Observation:** 1998-07-23 **Survey Date:** **Last Observation:** 1999-06-26
**Eo Type:**

**EO Data:** TOPEKA SHINERS COMMON, 10 COLLECTED FOR GENETIC ANALYSIS. 22 TOPEKA SHINERS COLLECTED HERE IN 1999 (U02CUN01SDUS).

# Element Occurrence Record

**Scientific Name:** *Diadophis punctatus*

**Occurrence #:** 12

**Common Name:** Ringneck Snake

**SD Protection Status:**
**Federal Status**

**Global Rank** G5

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 433744N **Longitude:** 0963401W

**Directions:**

8.5 MI E, 1 MI N OF THE INTERSECTION OF HIGHWAYS 77 AND 38.

## Survey Information:

**First Observation:** 1964 **Survey Date:** **Last Observation:** 2000-SU

**Eo Type:**

**EO Data:** MUS#2563,2564,2565, COLLECTED BY D.DUNLAP. CRAIG MILEWSKI COLLECTED DOR ON BRIDGE OVER SPLIT ROCK CREEK, .5 WEST OF THIS EOR.

---

**Scientific Name:** *Percina maculata*

**Occurrence #:** 14

**Common Name:** Blackside Darter

**SD Protection Status:**
**Federal Status**

**Global Rank** G5

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 433750N **Longitude:** 0963455W

**Directions:**

SPLIT ROCK CREEK; ABOUT 3 MILES NORTH OF BRANDON

## Survey Information:

**First Observation:** 2001-08-16 **Survey Date:** **Last Observation:** 2001-08-16

**Eo Type:**

**EO Data:** SEVEN BLACKSIDE DARTERS EXAMINED AND RELEASED

# Element Occurrence Record

**Scientific Name:** *Percopsis omiscomaycus*

**Occurrence #:** 13

**Common Name:** Trout-perch

**SD Protection Status:** ST
**Federal Status**

**Global Rank** G5

**State Rank** S2

| County Name | State |
|---|---|
| Minnehaha | SD |

**Latitude:** 433750N **Longitude:** 0963455W

**Directions:**

SPLIT ROCK CREEK; ABOUT 3 MILES NORTH OF BRANDON

## Survey Information:

**First Observation:** 2001-08-16 **Survey Date:** **Last Observation:** 2001-08-16
**Eo Type:**

**EO Data:** ONE TROUT-PERCH EXAMINED AND RELEASED

**DEPARTMENT OF GAME, FISH AND PARKS**
Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

RECEIVED
JUN 10 2005
HDR Engineering, Inc.

June 7, 2005

Suzanne Steinauer, Environmental Planner
HDR Engineering, Inc.
6190 Golden Hills Drive
Minneapolis, MN 55416

RE: Split Rock to Lakefield Junction 345 kV Transmission Line

Suzanne:

I have checked for additional records of rare, threatened or endangered species in the potentially affected sections listed in your letter of May 25th. There are no additional records. There is no change to our comments or the species list provided on January 24, 2005.

Sincerely,

Doug Backlund
Wildlife Biologist

May 25, 2005

This constitutes a report of the Department of the Interior prepared in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). We have reviewed and have NO OBJECTION to this proposed project.

6-7-05 Date

Supervisor

Mr. Pete Gober
Field Supervisor
U.S. Fish and Wildlife Service
Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, SD 57501-5408

RE: Route Change– Split Rock to Lakefield Junction 345 kV Transmission Line

Dear Mr. Gober:

In a letter dated January 10, 2005, HDR requested your comments on a proposed 345 kV transmission line in Minnehaha County. Since that letter, Xcel Energy has adjusted the South Dakota portion of route (shown in the attached map). The proposed overhead 345 kV transmission line will still be routed from the Split Rock Substation, near Brandon, South Dakota to the Lakefield Junction Substation, near Lakefield, Minnesota; but the route will now follow Interstate 90 (I-90) from the Minnesota border into the Split Rock Substation. The route was revised in response to concerns about reliability and constructability, feedback from the public, and indications that the Minnesota portion of the route will likely follow I-90. Xcel Energy plans to apply to the South Dakota Public Utilities Commission (PUC) for a permit to construct the new 345 kV transmission line this summer. Xcel Energy will request that the line be permitted as a transmission facility under South Dakota Codified Law 49-41B-11. Potentially affected sections are as follows:

| Township | Range | Section |
|---|---|---|
| 102 | 47 | 27-30 |
| 102 | 48 | 25, 29, 32 |

The USFWS responded on February 1, 2005 (see attached), concurring with our conclusion that the Project will not adversely affect listed species. Xcel Energy would like to inform the USFWS of the route change and provide the USFWS with the opportunity to comment on the revised route.

HDR Engineering, Inc.

6190 Golden Hills Drive
Minneapolis, MN 55416

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

Construction and operation of the line will not change, only the proposed route. We would appreciate receiving any comments by June 17, 2005, to allow time for them to be incorporated into the application. Your input on the project will assist Xcel Energy, HDR and the PUC in their review of the project.

Xcel Energy appreciates the opportunity to work with your office and will be seeking on-going feedback from you and your agency as this project proceeds through review. Enclosed is a project location map to facilitate your review. If you require further information or have questions regarding this matter, please call me at (763) 591-5434.

Sincerely,

Suzanne Steinhauer

Suzanne Steinhauer
Environmental Planner

Enclosures: Project Location Map

February 1, 2005 response and concurrence

Cc: Pam Rasmussen, Xcel Energy


January 10, 2005

Mr. Steve Pirner
Environmental Program Scientist
South Dakota Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501

**RE:** Split Rock to Lakefield Junction 345 kV Transmission Line

Dear Mr. Pirner:

Xcel Energy plans to apply to the South Dakota Public Utilities Commission (PUC) for a permit to construct a 345 kV transmission line in Minnehaha County, South Dakota in the first quarter of 2005. Xcel Energy will request that the line be permitted as a transmission facility under South Dakota Codified Law 49-41B-11. The proposed 345 kV transmission line will be routed from the Split Rock Substation, located west of Brandon, South Dakota to the Lakefield Junction Substation, east of Lakefield, Minnesota. The Minnesota Environmental Quality Board is currently reviewing two route alternatives for the Minnesota portion of the line and a decision on that portion of the line is expected in the first half of 2005. HDR Engineering, Inc. (HDR) is assisting Xcel Energy with both of these applications.

HDR requests your review of the above-mentioned project to identify potential impacts from the project and any permits that the project might require. Your input on the project will assist Xcel Energy, HDR and the PUC in their review of the project.

After receiving comments from the public and from a number of agencies Xcel Energy has adapted and refined its initial routing concepts and will apply for a construction permit for the route shown in the attached map. Because the MEQB has not yet chosen a route for the Minnesota portion of the project, the route shown on the map shows two possible "crossover" segments, (Crossover 1 and Crossover 2) in the event that the MEQB approves a Minnesota route along I-90. Potentially affected sections are:

| Township | Range | Section |
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| 102 | 48 | 18-30 |

**Waste Management Determination**
**Hazardous Waste/Solid Waste/Asbestos**
**It appears, based on the information provided, that this project will have little or no impact on the waste management in this area.**
**Approved By:** Donni Kallareyn
**Date:** 2-8-05
**South Dakota Department of Environment & Natural Resources**
**Phone: (605) 773-3153 Fax: (605) 773-6035**

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

Xcel Energy appreciates the opportunity to work with your office and will be seeking on-going feedback from you and your agency as this project proceeds through review. Enclosed is a project location map to facilitate your review. If you require further information or have questions regarding this matter, please call me at (763) 591-5434.

Sincerely,

Suzanne Steinhauer
Environmental Planner

Enclosures: Project Location Map

Cc: Pam Rasmussen, Xcel Energy

**DEPARTMENT OF THE ARMY**
CORPS OF ENGINEERS, OMAHA DISTRICT
SOUTH DAKOTA REGULATORY OFFICE
28563 POWERHOUSE ROAD, ROOM 118
PIERRE SD 57501-6174

REPLY TO
ATTENTION OF :

January 18, 2005



South Dakota Regulatory Office
28563 Powerhouse Road, Room 118
Pierre, South Dakota 57501

HDR Engineering, Inc.
Attn: Suzanne Steinhauer
Environmental Planner
6190 Golden Hills Drive
Minneapolis, Minnesota 55416

Dear Ms. Steinhauer:

Reference is made to preliminary information received in this office January 14, 2005, concerning Department of the Army authorization requirements for the construction of a 345kV transmission line for Xcel Energy located in Minnehaha County, South Dakota.

Based on the preliminary information provided, it can not be determined if the proposed construction activities involves the discharge of dredged or fill material in jurisdictional waterways. The Corps' jurisdiction stems from Section 404 of the Clean Water Act passed by Congress in 1972. Section 404 calls for Federal regulation of the discharge of dredged or fill material in all waterways, lakes and/or wetlands. Activities that do not involve a discharge of dredged or fill material in a lake, river, stream or wetland (Section 404) do not require Department of the Army authorization.

Enclosed is the necessary application form (ENG Form 4345) and information pamphlet. When completing the application form, we would request from the applicant (a) a detailed description of the work activity [i.e., explain precisely what you are going to do and how you are going to accomplish it; include fill and/or excavation quantities and dimensions to be performed below the ordinary high water elevation (if in a lake, river, or stream) or to be performed within the boundary of jurisdictional wetlands (if the project involves wetlands), along with the source/type of fill and the type of equipment to be used during construction]; (b) the purpose, need, and/or benefits of the proposed project; and (c) any alternative project designs or locations considered.

Along with the completed application form, we would request from the applicant (1) detailed drawings (plan and cross-sectional views; the drawings may be submitted on 8-1/2x11 inch paper), (2) a location map showing the project site, (3) a delineation of affected wetlands if the project involves wetlands, (4) if available, colored pictures showing at least two views of the proposed project site and (5) any ecological or environmental information available that you feel may be pertinent to your project (i.e., area wildlife activity, area vegetation, area land use, quality of fishery, etc.).

Adherence to the above information requests will speed up the application evaluation and permit processing time. The requested information is used to help the Corps determine the type of permit to process if a permit is required and is used in the public review.

If we do not hear from you within sixty (60) days from the date of this letter, we will assume that you have decided not to complete your proposed project and that this proposal requires no further action. You may however, at any time in the future, submit an application for this project or any other proposal to conduct work in waters of the United States.

You can obtain additional information about the Regulatory Program and download forms from our website: www.nwo.usace.army.mil/html/od-rsd/frame.html

If you have any questions or need any assistance, please feel free to contact this office at the above Regulatory Office address or telephone Carolyn Kutz at (605) 224-8531 and reference action ID 200530008.

Sincerely,

Steven E. Naylor

Steven E. Naylor
Regulatory Program Manager,
South Dakota

Enclosures

The U.S. Fish and Wildlife Service concurs with your conclusion that the described project will not adversely affect listed species. Contact this office if changes are made or new information becomes available.

2-1-05 Date — J. Gober — SD Acting Supervisor USFWS



January 10, 2005

Mr. Pete Gober
Field Supervisor
U.S. Fish and Wildlife Service
Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, SD 57501-5408

RE: Split Rock to Lakefield Junction 345 kV Transmission Line

Dear Mr. Gober:

Xcel Energy plans to apply to the South Dakota Public Utilities Commission (PUC) for a permit to construct a 345 kV transmission line in Minnehaha County, South Dakota in the first quarter of 2005. Xcel Energy will request that the line be permitted as a transmission facility under South Dakota Codified Law 49-41B-11. The proposed 345 kV transmission line will be routed from the Split Rock Substation, located west of Brandon, South Dakota to the Lakefield Junction Substation, east of Lakefield, Minnesota. The Minnesota Environmental Quality Board is currently reviewing two route alternatives for the Minnesota portion of the line and a decision on that portion of the line is expected in the first half of 2005. HDR Engineering, Inc. (HDR) is assisting Xcel Energy with both of these applications.

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

HDR requests that the U.S. Fish and Wildlife Service (USFWS) comment on any potential effects to known federally-listed threatened or endangered species in accordance with Section 7 of the Endangered Species Act of 1973, as amended, for the proposed 345 kV transmission line. Your input on the project will assist Xcel Energy, HDR and the PUC in their review of the project.

On June 7, 2002, our office received a letter from the USFWS outlining several concerns related to a number of transmission system improvements that were under consideration in the Buffalo Ridge area in southwestern Minnesota and eastern South Dakota (attached). Xcel Energy and HDR reviewed your response and provides the following response to USFWS concerns identified in that letter that are pertinent to the proposed 345 kV transmission line and associated facilities

- Cactus Hills (An environmentally sensitive area within Minnehaha County): Cactus Hills is located west of Brandon South Dakota. The existing Xcel Energy Substation is located north of the Cactus Hills area. The proposed transmission line will parallel existing transmission lines in the immediate vicinity of the substation, and will not affect this environmentally sensitive area.

- Electrocution of Raptors (Recommended mitigation measures, and identified application of the Migratory Bird Treat Act of 1918): As a general rule, Xcel Energy routinely implements measures to protect raptors from electrocution. Mitigation measures for raptors are regularly applied to transmission lines, and include having sufficient clearance between the structure's conductor and crossarm.

- Bald Eagles (A federally threatened species, with active nests near the Big Sioux River, and identified application of the Bald Eagle Protection Act of 1940): Xcel Energy is aware of the location of a nest near the Split Rock Substation and will avoid the nest. Xcel Energy will conduct Section 7 consultation with the USFWS, to assure that their activities would not "jeopardize the continued existence" of that species.

- Western Prairie Fringed Orchid (A federally threatened species, recommended surveys): As the exact location of the transmission line and poles have not been determined, Xcel Energy proposes surveys be conducted once project approvals are acquired and before construction begins for this project

- Topeka Shiners (A federally endangered species, with known occurrences in Split Rock and Beaver Creeks): Xcel Energy will implement appropriate Best Management Practices, including those highlighted by the USFWS, to protect the water quality of all streams within the project area, including those with known populations of Topeka Shiners. No poles will be placed within any stream.

Xcel Energy appreciates the opportunity to work with your office to protect these rare natural features. We will be seeking on-going feedback from you and your agency as this project proceeds

through review. If you require further information or have questions regarding this matter, please call me at (763) 591-5434.

Sincerely,

Suzanne Steinhauer
Environmental Planner

Enclosures: Project Location Map

Cc: Pam Rasmussen, Xcel Energy