APPENDIX C-1

ROUTE SEGMENTS RECOMMENDED BY THE PUBLIC DETERMINED TO BE UNSUITABLE FOR THE PROJECT

This page intentionally left blank.

C-1 INTRODUCTION

During the approximately 15-month long route development process, the Applicants received several hundred public comments on the Brookings County – Hampton 345 kV Project ("Project") from members of the public, government officials and agencies. Some noted specific features or areas and asked that the Applicants consider these in the route selection process. Others suggested specific route segments for the Applicants to consider when evaluating possible routes for the Project. When individuals or agencies made specific suggestions about alternatives for portions of the route, the Applicants mapped the suggested alternative segments in GIS and then applied the State route selection criteria to the alternatives to determine whether they should be included in the routes in the Route Permit Application ("Application"). Route segments that were suggested and incorporated into the Preferred Route or Alternate Route are discussed in Section 10.4 of the Application. Those suggested route segments that were determined not suitable for the new transmission facilities are described below.

C-1.1 COUNTY HIGHWAY 101 NORTH/COUNTY HIGHWAY 17 EAST IN LINCOLN COUNTY

For the Brookings County to Lyon County section, Lincoln County highway engineers and planners recommended an approximately 23-mile alternative from the intersection of County Highway 15 and County Road 101 to the intersection of County Road 114 and County Road 134 in Lincoln County. The alternative follows County Highway 101 north and then heads east along County Highway 17 near Hendricks in western Lincoln County. A detailed map of this alternative is located in Appendix C-3, All Segments Maps BL01 and BL04, and includes route segment numbers BL19, BL31, BL39, BL74, BL54, BL56, BL263, BL57, BL67, BL66, BL93, BL232, BL277, and BL279.

The Lincoln County representatives supported this alternative because it followed county roads with high weight classifications and they believed that there were fewer homes near these roads. The Applicants did not select this suggested alternative because of the proximity of Lake Shaokatan along County Highway 101 and because there is an existing 69 kV transmission line along County Highway 17 that would limit routing options along that corridor. In addition, this suggested alternative would result in slightly more impacts to human settlement due to the greater number of nearby homes than the equivalent route segments of the Preferred Route (19 versus eight, respectively). See Appendix C-3, All Segments Maps BL01 and BL02 route segment numbers BL50, BL53, BL273, BL331, BL332, BL297, BL1003, BL1004, BL1005, BL1008, BL296, BL339, and BL98 for the Preferred Route segments used for this comparison. This suggested Lincoln County alternative is not comparable to the Alternate Route because of a lack of routing options to get from the suggested alternative to the Alternate Route east of County Highway 101.

C-1.2 COUNTY HIGHWAY 28 IN LE SUEUR COUNTY

For the Helena to Lake Marion section, a public meeting participant recommended an approximately eight-mile alternative from County Road 121/221st Street to County Road 146/141st Street following County Highway 28 in Le Sueur County, along the south side of Heidelberg from the Preferred Route Helena Substation South area east to County Road 145/141st Avenue ("County Highway 28 alternative"). The County Highway 28 alternative joins the Alternate Route at its eastern terminus. See Appendix C-3, All Segments Maps, CH08 and HM2 route segment numbers HM67, HM68, HM60, HM191, HM72, and HM74.

This suggested County Highway 28 alternative is not comparable to the Preferred Route because it lacks routing options to get from the suggested alternative to the Preferred Route north of New Prague. The alternative would be shorter than the equivalent segments between the same points along the Alternate Route, would have fewer turns and would avoid Graham and Mud Lakes that are located within or near the Alternate Route. However, this suggested alternative would have greater impacts on human settlement than the equivalent segments of the Alternate Route (compared to route segments FH377, FH298, FH480, FH375, FH376, HM62, HM61, HM59, HM148, HM58, HM57, HM79, and HM76). The alternative would cross within the municipal boundaries of the City of Heidelberg. In addition, there are 51 homes within the County Highway 28 alternative compared to 31 homes within the equivalent segments of the Alternate Route. In addition, the alternative provides inferior interconnection opportunities with the existing Blue Lake to Wilmarth 345 kV transmission line. The County Highway 28 alternative crosses the 345 kV transmission line only once. The equivalent segments of the Alternate Route intersect this 345 kV transmission line at two locations.

C-1.3 280TH/STATE HIGHWAY 19/ COUNTY HWY 86 ON THE SCOTT/RICE COUNTY BORDER

For the Helena to Lake Marion section, Rice County government planners and highway engineers recommended an approximately 12-mile alternative from the intersection of State Highway 13 and County Highway 2 to the County Highway 86 and Interstate Highway 35 intersection in Scott and Rice counties, and then following the Alternate Route north along I-35 to the Lake Marion Substation. Starting at State Highway 13/Langford Avenue, the transmission line would follow 280th Street/Minnesota Highway 19 east. Where Minnesota Highway 19 turns south, the alternative would continue east on 280th Street/County Highway 86 to I-35. See Appendix C-3, All Segments Maps HM01, HM02, MP03, MP01, and MP01A route segment numbers HM196, HM195, HM43, HM45, HM201, HM104, HM190, HM103, HM102, HM106, HM131, MP21, MP20, MP6, HM178, HM130, and MP267.

The Rice County government officials supported this alternative because the County prefers that high voltage transmission lines co-locate with existing and planned major roads. Scott County Highway Department's and Rice County Highway Department's long-range plans include upgrading this corridor to a four-lane road within approximately 10 years.

This alternative is not comparable to the Alternate Route because of a lack of routing options to get from the suggested alternative to the Alternate Route from the Helena Substation North area to I-35. The Applicants did not incorporate this alternative into the Preferred Route because 11 more homes are within the alternative (80 homes) than the equivalent segments of the Preferred Route (69 homes). See Appendix C-3, All Segments Maps HM01 MP01, and MP01A route segment numbers HM158, HM108, HM160, HM167, HM168, HM111, HM114, HM172, HM118, HM174, and MP267 for the Preferred Route segments used for this comparison. In addition, along this alternative, there is a USFWS habitat easement on the north side of the Highway 86 across from homes on the south side of the road, limiting potential structure locations.

C-1.4 245TH EAST OF LAKE MARION SUBSTATION IN DAKOTA COUNTY

For the Lake Marion to Hampton section, a public meeting participant recommended an approximately 1.5-mile alternative from the Lake Marion Substation to the intersection of 245th Street and Dodd Road in Dakota County. See Appendix C-3, All Segments Maps MP01 and MP01A, route segment numbers MP229 and MP230. The corresponding Preferred Route segments

are shown in Appendix C-3, All Segments Maps MP01 and MP01A, route segment numbers MP1018, MP224, MP286, and MP236. In contrast to the corresponding segments of the Preferred Route along this 1.5 miles stretch, this alternative follows a road and is shorter with fewer turns than the Preferred Route. This alternative is not comparable to the Alternate Route because of a lack of routing options to get from the alternative to the Alternate Route from south of the Lake Marion Substation. The Applicants did not select this alternative because eight more homes would be impacted than on the comparable portion of the Preferred Route (15 homes within the alternative route compared to seven in the Preferred Route). The suggested alternative would also impact a wetland larger than 1,000 feet in diameter.

C-1.5 COUNTY HIGHWAY 50/COUNTY HIGHWAY 70/COUNTY ROAD 31 IN DAKOTA COUNTY

For the Lake Marion to Hampton section, Eureka Township and Eureka Township residents recommended an approximately 12-mile alternative from the Lake Marion Substation to the Canadian Pacific rail line south of Farmington at the section line between Sections 6 and 7 in Castle Rock Township, Dakota County ("County Highway 70 Alternative"). This alternative follows I-35 or existing transmission lines north from the Lake Marion Substation and then heads east at the southern side of Lakeville along County Highway 70 (215th Street West), north along Hamburg Avenue for 0.5 miles, and east on County Highway 50 (212th Street West/ Lakeville Boulevard). The County Highway 70 Alternative turns south on County Highway 31 (Denmark Avenue) west of Farmington to reconnect with the Preferred Route. See Appendix C-3, All Segments Maps MP01 and MP01A, route segment numbers MP1013, MP1008, MP1009, MP1010, MP1011, and MP1012. Eureka Township and Eureka Township residents recommended the alternative because it crosses primarily industrial and commercial land and would avoid crossing agricultural and residential land in Eureka Township.

The comparable Preferred Route segments are shown in Appendix C-3, All Segments Maps MP01 and MP01A, route segments MP1035, MP1020, MP1019, MP1018, MP224, MP286, MP236, MP237, MP238, MP282, MP119, MP239, MP241, MP243, MP245, MP293, and MP294. This alternative is not comparable to the Alternate Route because of a lack of routing options to get from the alternative to the Alternate Route from east of the Lake Marion Substation.

The lands parallel to the roads comprising the County Highway 70 Alternative are congested with existing transmission line facilities, commercial buildings and residences. The County Highway 70 Alternative is within runway flight path and secondary clearance zones of a regional airport. This alternative runs near residences, several schools and industrial buildings. Right-of-way ("ROW") width requirements could increase with the County Highway Alternative and displacements may be required. Because of the technical restrictions and these additional impacts, this Alternative is not recommended when compared with the Applicants' Preferred or Alternate routes.

The Applicants began their analysis by examining the existing structures in the County Highway 70 Alternative area. An existing double circuit 115 kV transmission line occupies the south side of County Highway 70 and the west side of Hamburg Avenue, and a 69 kV transmission line occupies the north side of County Highway 50 and the west side of County Highway 31. There are 13 non-residential commercial and industrial buildings within 150 feet of the south side edge of the County Highway 70 ROW. There are also 13 residences within 90 feet of the road ROW on the north side of County Highway 70 and within 90 feet of the road ROW on the east side of County Highway 31. Christian Life K-12 School, Farmington Senior High, and Dakota Prairie Alternative Learning

Center are all within 500 feet of the centerline of the roads on this Alternative. Lakeville South High School, John F. Kennedy Elementary, and McGuire Middle School are all within one-half mile of the road ROW.

The County Highway 70 Alternative is within the runway flight path clearance zones and the secondary avoidance area of the Airlake Airport south of Lakeville. Construction along this Alternative would be subject to Federal Aviation Administration ("FAA") height restrictions. The Airlake Airport plans to expand the primary runway to 5,000 feet off the south end of the airport, which will expand the secondary avoidance area. Within the existing runway path, the FAA restricts structure heights to a maximum of approximately 90 feet above the airport elevation. In the secondary avoidance area, structures are limited to approximately 150 feet above airport elevation (Nelson, personal communication, 10/03/08). See Section 6.2.10 of the Application for more details on FAA airport clearance zones and structure height restrictions. Because the elevation of the potential line location is higher than the airport in numerous locations, structure heights would be required to be less than 90 feet/150 feet.

The double circuit capable single pole structures proposed for this section of the Project (minimum height of 130 feet tall) are not feasible on the County Highway 70 Alternative because the structure heights would exceed FAA height limitations in the runway path. The transmission line structures may be as tall as 175 feet, depending on the particular span, conflicting with FAA's 150-foot maximum height above airport elevation in the airport secondary avoidance area. The County Highway 70 Alternative would also cause significant land use and residential home impacts, particularly on the north side of County Highway 70 where 13 homes would need to be displaced.

Given the continued interest in this Alternative by Eureka Township and Eureka Township residents, the Applicants conducted additional analyses to determine whether a configuration utilizing specialty structures with varying height requirements and span lengths was physically constructible along the Country Highway 70 Alternative. The Applicants concluded that even with specialty structures, the transmission line would likely conflict with FAA height limitations and would create significantly more land use impacts than the equivalent segments of the Preferred Route. The Applicants also considered alternative conductor types, and potentially burying the facilities underground for a portion of this alternative proposal. The analyses of the structure types, conductors and burying the facilities are described below.

The Applicants analyzed three specialty structure designs for physical constructability given expected building structure obstructions, minimum clearance requirements of conductors above buildings, and airport height restrictions in the runway path (90 feet) and the runway secondary avoidance area (150 feet). The specialty structures are Quadruple Design, Double Circuit H-Frame Design and Two H-Frames Design.

The first specialty structure design ("Quadruple Design") included H-frame quadruple-circuit 345 kV/115 kV structures that would replace existing single pole double circuit 115 kV structures. Quadruple circuit structures are not recommended because they are difficult to maintain and typically are treated as a single circuit for reliability analyses if the length of multiple circuiting exceeds one mile. The Applicants also considered the physical constructability of the structures. Further analysis would need to be undertaken to determine if this specialty structure type would adversely impact electrical system reliability.

This configuration would require up to 150 feet of ROW, approximately 80 feet of which can be shared with the existing transmission line ROW in some locations.

The structures would be approximately 121 feet tall in the runway path, exceeding FAA limits and making this design infeasible. In the secondary avoidance area, the structures would be approximately 141 feet tall. This height is required to provide sufficient clearances above existing buildings, assumed to be approximately 25 feet tall. Conductors for 115 kV transmission lines must have, at a minimum, 15 feet of clearance above buildings at maximum sag, as required by the National Electrical Safety Code ("NESC"). (The Applicants' design standards require greater clearances). Compliance with height limits in the FAA secondary avoidance area will depend on the elevation at the structure locations.

The second specialty structure design ("Double Circuit H-Frames Design") includes double circuit 345 kV H-Frame structures, capable of carrying two 345 kV circuits, located next to the existing 115 kV structures on the south side of County Highway 70 in most locations. This design can generally be used for shorter spans, allowing shorter structures to be used. The ROW required for this option is typically 150 feet, although some portions could share minimal ROW with the existing 115 kV line. Significantly, the anticipated ROW for this alternative configuration contains two-story non-residential buildings approximately 25 feet in height, necessitating taller structures and spans of up to 800 feet to cross existing buildings and to meet clearance requirements. Conductors for 345 kV transmission lines must have, at a minimum, 20 feet of clearance above buildings at maximum sag, as required by the NESC (the Applicants' design standards require greater clearances). Transmission structures in the secondary avoidance area would be approximately 138 feet in height, which might meet FAA maximum requirements. However, in the runway path, the minimum structure height would be approximately 95 feet, which would likely exceed the FAA's maximum height limit.

The third specialty structure design ("Two H-Frames Design") includes two single-circuit 345 kV H-frame structures located side by side, south of the existing double circuit 115 kV transmission line structures on the south side of County Highway 70. This option requires up to 300 feet of ROW, significantly more new ROW than the equivalent segments of the proposed Preferred Route and Alternative Route that will typically require 150 feet. This results in a total ROW increase of approximately 200 acres. Like the second specialty structure alternative, the ROW for this third specialty structure includes numerous existing non-residential buildings. The Applicants estimate that approximately 14 industrial and/or commercial buildings would be impacted and potentially displaced. The same clearance heights above buildings are required as described in the second specialty structure design. In the airport secondary avoidance area, the spans between structures would be approximately 800 feet, with a maximum height of structures in the secondary avoidance area of approximately 113 feet, possibly meeting FAA requirements. In the runway zone, similar spans would be used and the minimum height of structures would be approximately 70 feet, which could potentially meet FAA requirements depending on elevation. This specialty structure design is inferior to the Preferred Route and Alternative Route because of the additional impacts, significant additional ROW required and potential displacement.

The Applicants also considered use of 3M-brand Aluminum Conductor Composite Reinforced ("ACCR") Cardinal 967 conductors on the Quadruple Design and Double Circuit H-Frame Designs to reduce structure heights. The ACCR conductors would reduce maximum sag by approximately three feet. Because structures are typically constructed in five-foot increments, the use of ACCR conductors would not result in a reduction in the height of structures.

The Applicants evaluated whether burying double circuit 345 kV facilities underground through the most congested area of the County Highway 70 Alternative might be physically feasible. The conclusions were that the cost of burying the facilities is significantly more expensive than overhead construction, it would provide less efficient electrical performance and it would have a shorter useful

life than overhead facilities. Ongoing or emergency repair of buried facilities is also much more costly than repair of overhead facilities.

In summary, as the result of these studies and evaluation, the Applicants concluded construction of new transmission line facilities along the County Highway 70 Alternative would cause more impacts to human settlement than anticipated from construction along equivalent segments of the Preferred Route and Alternative Route. Structure heights of all three specialty structure designs pose conflicts with airport runway path height restrictions on the south side of County Highway 70. The two H-Frames specialty structure design could potentially comply with FAA height requirements but would result in significantly more impacts to human settlement than the equivalent segments of the Preferred Route and Alternative Route as a result of the 300 feet of additional ROW width required. Similar industrial, commercial, and residential land uses occur in the Hamburg Avenue, County Highway 50, and County Highway 31 portions of the County Highway 70 Alternative. As a result of these additional impacts, the Applicants rejected the County Highway 70 Alternative.

C-1.6 COUNTY ROAD 78/240TH STREET WEST/FIELD LINES IN DAKOTA COUNTY

For the Lake Marion to Hampton section, a public meeting participant recommended an approximately 5.5-mile alternative following County Road 78/240th Street West to the Rosemount-Cannon Falls 115 kV transmission line at the section line between Sections 12 and 13 in Castle Rock Township, Dakota County. See Appendix C-3, All Segments Map MP02, route segment numbers MP273, MP248, MP249, MP250, MP252, MP256, MP158, MP159, and MP257. This suggested alternative would follow County Road 78/240th Street for three miles from County Road 31/Denmark Boulevard east to County Road 53N/Alveno Road, and then continue east across fields for approximately 2.5 miles to the Rosemount-Cannon Falls 115 kV transmission line.

This alternative was suggested to avoid homes and more developed areas along the eastern portion of the suggested alternative compared to the equivalent segments of the Preferred Route. The comparable Preferred Route segments are shown in Appendix C-3, All Segments Map MP02, route segments MP293, MP294, MP266, MP150, MP151, MP261, MP281, MP280, and MP279. This suggested alternative is not comparable to the Alternate Route because of a lack of routing options to get from this alternative to the Alternate Route. The Applicants did not select this alternative because it would create more human settlement impacts than the comparable segments of the Preferred Route due to the high density of homes along 240th Street. The alternative includes 28 homes within the route, while the comparable portion of the Preferred Route includes 22 homes. This alternative also requires field crossings, of which nearly half would not follow existing fences or property lines. In addition, the agricultural impacts would be greater because of the existence of three center pivot irrigation systems within the alternative.

This page intentionally left blank.

APPENDIX C-2

ROUTE SCREENING ANALYSIS

OTHER ROUTE SEGMENT SECTIONS CONSIDERED

This page intentionally left blank.

C-2 INTRODUCTION

As part of the route development process, the Applicants analyzed more than 1,800 route segments ranging in length from a fraction of a mile to several miles long. These segments are shown in Appendix C-3, All Segments Maps. These segments were grouped to create preliminary route sections comprising specific sections (substation to substation). Several preliminary route sections, as described below, were determined to be suitable for the new transmission facilities, but were not ultimately included in either the Preferred Route or the Alternate Route because a different section had fewer overall impacts in the context of the overall route. This appendix includes environmental information for these preliminary route sections in similar detail to the environmental information provided for the sections comprising the Preferred Route and Alternate Route. In this analysis, "route" refers to the 1,000-foot wide area centered on the "center feature," which is the feature on which the preliminary route section likely would be based such as a road or a transmission line, and "ROW" refers to the 150-foot wide area along the proposed alignment in which all construction and maintenance activities would take place. Some resources are analyzed within one mile of the center feature. Each resource's study area is noted within the following text.

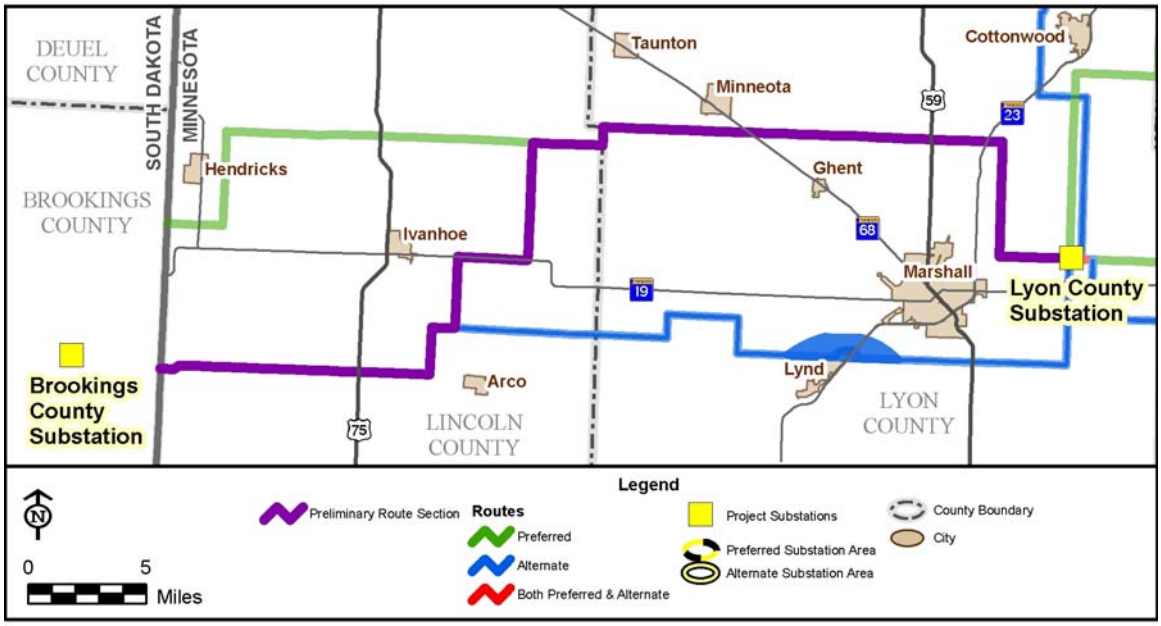
C-2.1 IVANHOE PRELIMINARY ROUTE SECTION ALTERNATIVE

This preliminary route section was a route section alternative to the Brookings County to Lyon County Preferred Route. The Ivanhoe Preliminary Route Section was not selected for inclusion in either of the two routes because it would have more impacts to homes, natural resource areas such as WMAs, and agriculture than the Preferred Route and Alternate Route. This preliminary route section may warrant further consideration in the event the South Dakota permitting process approves a border crossing different from that approved by the Minnesota Public Utilities Commission in this proceeding.

C-2.1.1 ROUTE SECTION DESCRIPTION

The Ivanhoe Preliminary Route Section (Figure C-1), located in Lincoln and Lyon counties, is an alternative section to the Brookings County – Lyon County section for the westernmost Minnesota portion of the Alternate Route. It is 54 miles long and coincides with the Alternate Route beginning at the South Dakota border at Lincoln County Road 137. The Ivanhoe Preliminary Route Section turns off the Alternate Route at Lincoln County Road 125 to follow agricultural field lines, 230th Avenue, Minnesota Highway 19, and then 260th Avenue/County Road 114 to connect with the Preferred Route. The Ivanhoe Preliminary Route Section terminates with the Preferred Route at the Lyon County Substation. Detailed maps are available in Appendix C-3, All Segments Maps BL01, BL02, BL04, and BL05.

Figure C-1. Ivanhoe Preliminary Route Section



C-2.1.2 DESCRIPTION OF ENVIRONMENTAL SETTING

Refer to Section 6.1.1 of the Application for a description of the environmental setting of this section of the Project area. The Ivanhoe Preliminary Route Section is located in the same Ecological Classification System ("ECS") as the Brookings to Lyon County section of the Preferred Route. Refer to Section 6.3 of the Application for a description of that section of the Project area. Elevations steadily decrease from 1,820 feet above mean sea level ("AMSL") in the west to 1,080 feet in the east.

C-2.1.3 HUMAN SETTLEMENT

Human settlement resources including public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation; public services; transportation; and communication tower interference are discussed in Section 6.2 of the Application.

Transportation resources include Mulder Field in Ivanhoe. This is a privately-owned airfield that abuts Trunk Highway 19. The landing strip is directionally aligned north-south. According to available data, the approach slope for this facility is 21:1 based on the presence of TH 19 at the end of the primary surface of the lone runway. The Ivanhoe Preliminary Route Section parallels the landing strip configuration approximately one and one-half miles east of the airfield along Township Road 149.

Other than the roads it parallels, there are no other surface transportation facilities located along this preliminary route section. Pipelines owned and operated by Williams Brothers and Northern Plains Pipeline Company extend across central Lincoln County on both ends of the Ivanhoe Preliminary Route Section between the Preferred and Alternate routes. There are five communication towers within the Ivanhoe Preliminary Route Section.

Impacts and Mitigation

Refer to discussions of impacts and mitigation for public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation, public services, transportation and communication tower interference in Section 6.2 of the Application. Impacts to these resources would be avoided and minimized to the extent practical.

C-2.1.4 LAND-BASED ECONOMIES

Refer to Section 6.3 of the Application for discussions of agriculture, forestry, tourism, and mining resources. No forest, tourism, or mining resources are known to occur within the Ivanhoe Preliminary Route Section.

Agricultural activities are widespread in the Ivanhoe Preliminary Route Section. Approximately 43 percent of the soils, or 3,183 acres, are listed by the NRCS as prime farmland, prime when drained, or farmland of statewide importance (NRCS 2005). Refer to Sections 6.3.1.1 of the Application for county agricultural information.

There is a large hog farm on the west side of the Ivanhoe Preliminary Route Section. There is one known organic farmer within one mile of the Ivanhoe Preliminary Route Section center feature. This is a certified organic farm as reported by the MnDOA or identified during the public involvement process. The State does not depict the exact location of an organic farm field.

Impacts and Mitigation

Refer to Section 6.3 of the Application for a discussion of impacts and mitigation to forestry, tourism, and mining resources. No impacts to these resources are anticipated within the Ivanhoe Preliminary Route Section.

Along the Ivanhoe Preliminary Route Section, the Applicants estimate that approximately four acres of agricultural land would be permanently impacted and approximately 115 acres would be temporarily impacted due to transmission line construction, including stringing and staging. No impacts to center pivot irrigation systems are expected. Clearing of the ROW in these areas would be limited to the amount necessary to permit the safe and reliable operation of the transmission line. Refer to Section 6.3.1.7 of the Application for additional impacts and mitigation information.

C-2.1.5 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Refer to Section 6.4 of the Application for a discussion of archaeological and historic resources. There are eight archaeological resources within one mile of the Ivanhoe Preliminary Route Section center feature (Appendix H, Table H-14).

None of these eight sites has been evaluated for listing on the NRHP. Sites 21LN0037, 21LN0038, 21LN0039, and 21LN0047 are within the Ivanhoe Preliminary Route Section.

Impacts and Mitigation

Refer to Section 6.4.4 of the Application for a discussion of impacts and mitigation for archaeological and historic resources. No previously recorded archaeological resources within one mile of the Ivanhoe Preliminary Route Section would be impacted by construction or operation of the Project.

C-2.1.6 NATURAL ENVIRONMENT

Refer to Section 6.5 of the Application for discussions of natural resources including air quality, water quality and resources, flora, and fauna in the Project area.

Water resources in the ROW of the Ivanhoe Preliminary Route Section are similar to those found in the Brookings County to Lyon County Preferred Route section as described in Section 6.5.2.1 of the Application. This preliminary route section includes a tributary to the South Branch Yellow Medicine River that is impaired due to fecal coliform. There are 27 NWI wetlands within the ROW. There is an approximate aggregate total of 3.6 acres of wetlands within the ROW, of which 0.3 acres are forested wetlands.

Habitats and vegetative land cover within the Ivanhoe Preliminary Route Section are similar to those found in the Brookings County to Lyon County Preferred Route section as described in Section 6.5.3.1 of the Application. GAP land use data show that approximately 89 percent of this area is used for agriculture, and 10 percent is grassland. Resources unique to this preliminary route section include the Rogge and Salix WMAs east of Ivanhoe.

Wildlife is similar to that found in the Brookings County to Lyon County section of the Preferred Route as described in Section 6.5.4.1 of the Application. The Rogge, Hawk's Nest, Salix, and Rost WMAs, located within one mile of the Ivanhoe Preliminary Route Section center feature, likely provide habitat for several wildlife species. This preliminary route section includes 10 land conservation easements. Otherwise, wildlife is typical for rural land use.

Impacts and Mitigation

Refer to Section 6.5 of the Application for discussions of impacts and mitigation for air quality, water quality and resources, flora, and fauna in the Project area.

C-2.1.7 RARE AND UNIQUE NATURAL RESOURCES

Ottoe skipper and slender milk vetch are found within one mile of the Ivanhoe Preliminary Route Section center feature.

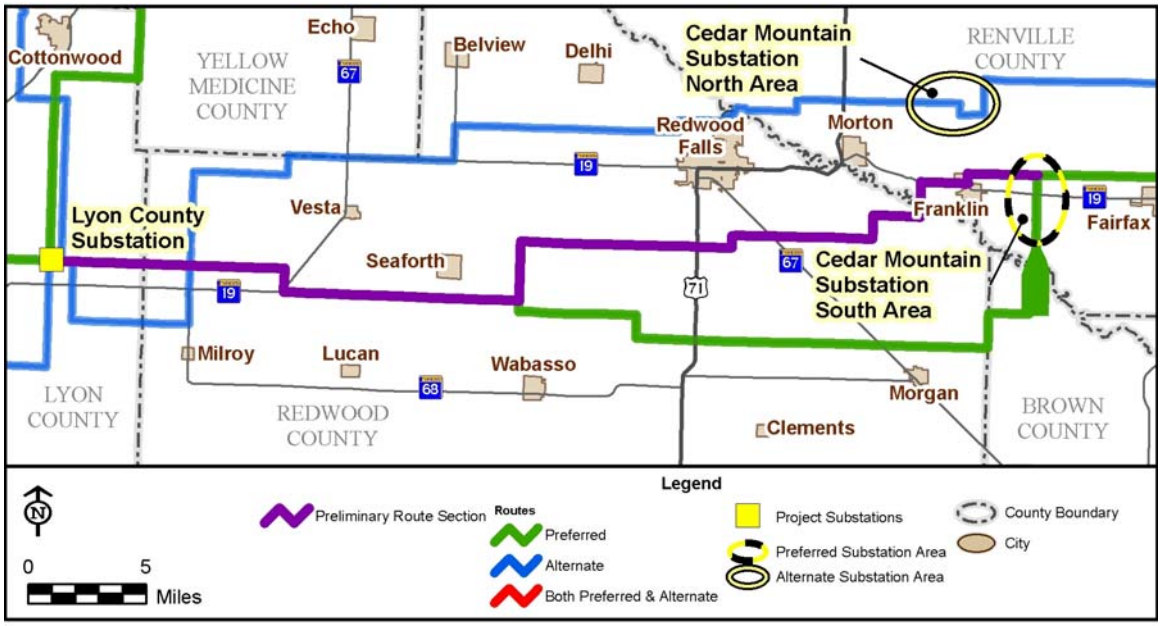
Impacts and Mitigation

Refer to Section 6.6 of the Application for a discussion of impacts and mitigation for rare and unique natural resources.

C-2.2 FRANKLIN SUBSTATION PRELIMINARY ROUTE SECTION

The Franklin Substation Preliminary Route Section, shown in Figure C-2, was a route section alternative to the Lyon County to Cedar Mountain Preferred Route that crossed the Minnesota River at the Franklin 69 crossing and connected to the existing Franklin Substation. The Applicants also considered routing opportunities using this preliminary route section to reach the proposed Cedar Mountain Substation areas (North and South). Refer to Section C-2.7 of this Appendix for a discussion of resources within the Franklin Substation Expansion. This preliminary route section was not selected for final consideration because the Applicants determined that routing the 345 kV facilities to the proposed Cedar Mountain Substation would best meet the needs of the Project.

Figure C-2. Franklin Substation Preliminary Route Section



C-2.2.1 ROUTE DESCRIPTION

The Franklin Substation Preliminary Route Section branches off the Preferred Route about three miles east of Seaforth to head north on County Road 65, and then follows field lines and existing 69 kV transmission lines northeast to Minnesota Trunk Highway 19, which leads into the existing Franklin Substation. The preliminary route section crosses the Minnesota River following an existing 69 kV transmission line west of Franklin. Detailed maps are available in Appendix C-3, All Segments Maps LC02, LC03, LC05, LC06, and CH05. The preliminary route section is 49 miles long and is located in Lyon, Redwood and Renville counties.

C-2.2.2 DESCRIPTION OF ENVIRONMENTAL SETTING

Refer to Section 6.1.3 of the Application for a description of the environmental setting of this section of the Project area. The Franklin Substation Preliminary Route Section is located in the same ECS as the Lyon County to Cedar Mountain section of the Preferred Route. The landscape is mostly open, flat or rolling agricultural farmland with some areas of tree cover. Elevations along this preliminary route section range from 820 feet to 1,081 feet AMSL. The highest elevation occurs in the west and the lowest occurs in the Minnesota River Valley.

C-2.2.3 HUMAN SETTLEMENT

Human settlement resources including, public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation; public services; transportation; and communication tower interference, are discussed in Section 6.2 of the Application.

Agriculture is the dominant land use for the area crossed by the Franklin Substation Preliminary Route Section in this region of Redwood County, with rural residences and farmsteads along the roads that this section parallels.

Recreation resources include a carry-in water access site and campsite approximately one mile northwest of the Minnesota River crossing location. The Minnesota River provides canoeing opportunities (Braun Intertech 1999). The Cedar Mountain Scientific Natural Area ("SNA") provides hiking opportunities among Cedar Mountain Gabbro and Cedar Mountain Granodiorite, which are some of the oldest rocks found in North America. The SNA provides habitat for several rare species. This SNA is located outside of the Project area, but is within one mile of the Franklin Substation Preliminary Route Section center feature.

Impacts and Mitigation

Refer to discussions of impacts and mitigation for public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation, public services, transportation and communication tower interference in Section 6.2 of the Application. Impacts to these resources would be avoided and minimized to the extent practical.

C-2.2.4 LAND-BASED ECONOMIES

Refer to Section 6.3 of the Application for discussions of agriculture, forestry, tourism, and mining resources. No forest or tourism resources are known to occur within the Franklin Substation Preliminary Route Section. One sand and gravel pit is located within Franklin Substation Preliminary Route Section near Redwood County Road 51.

Agricultural activities are the predominant land use in the Franklin Substation Preliminary Route Section. Refer to Section 6.3.1.3 for county agricultural information. There are two known organic farmers within one mile of the Franklin Substation Preliminary Route Section center feature. These are certified organic farms as reported by the MnDOA or identified during the public involvement process. The State does not depict the exact location of an organic farm field.

Impacts and Mitigation

Along the Franklin Substation Preliminary Route Section, the Applicants estimate that approximately three acres of agricultural land would be permanently impacted and approximately 113 acres would be temporarily impacted due to transmission line construction, including stringing and staging. No impacts to center pivot irrigation are expected. Clearing of the ROW in these areas would be limited to the amount necessary to permit the safe and reliable operation of the transmission line. Refer to Section 6.3.1.7 for additional impacts and mitigation information.

The Applicants anticipate no impacts to forestry, tourism, and mining resources. Refer to Section 6.3 for discussions of impacts and mitigation for these resources.

C-2.2.5 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Refer to Section 6.4 for a discussion of archaeological and historic resources. There are 11 archaeological resources within one mile of the Franklin Substation Preliminary Route Section center feature (Appendix H, Table H-3). Site 21RW0011 is listed on the NRHP. The remaining 10 sites have not been evaluated for listing on the NRHP.

Impacts and Mitigation

Refer to Section 6.4.4 of the Application for a discussion of impacts and mitigation for archaeological and historic resources. No previously recorded archaeological resources within one mile of the Franklin Substation Preliminary Route Section center feature would be impacted by construction or operation of the Project.

C-2.2.6 NATURAL ENVIRONMENT

Refer to Section 6.5 of the Application for discussions of natural resources including air quality, water quality and resources, flora, and fauna in the Project area.

Water resources in the Franklin Substation Preliminary Route Section include similar surface water resources as the Preferred Route as described in Section 6.5.2.3 of the Application. The Franklin Substation Preliminary Route Section crosses the Minnesota River along an existing 69 kV transmission line west of Franklin. The Minnesota River is designated as Scenic by the State of Minnesota at this crossing. Impaired waters include the Minnesota River (PCB, mercury) and the Redwood River (fecal coliform, turbidity, mercury). Federal Emergency Management Administration ("FEMA") floodplains occur at rivers and major streams. There are 37 NWI wetlands within the Franklin Substation Preliminary Route Section ROW. There is an approximate aggregate total of 20.5 acres of wetlands within the ROW, of which approximately 0.3 acres are forested wetlands.

Vegetative communities are similar to those encountered along the Lyon County to Cedar Mountain Preferred Route section as described in Section 6.5.3.3 of the Application. GAP land use data show that 94 percent of this preliminary route section is used for agriculture. Areas identified by the Minnesota County Biological Survey ("MCBS") as moderate biodiversity are found at the Minnesota River crossing. The Cedar Mountain SNA and WMA complex is nearby but outside of the preliminary route section. This Franklin Substation Preliminary Route Section contains an MCBS outstanding significance area and several high-quality native communities including dry, mesic, and wet prairie, maple-basswood forests, floodplain forest, oak woodland habitats, and rock outcrops. No WMAs, WPAs, other state or federal lands and easements, or other managed lands are found within this section.

Wildlife is more diverse and more common in the Minnesota River and river valley than in the surrounding agricultural areas. This river crossing would traverse approximately 1.9 miles of the Upper Minnesota River Valley IBA. This preliminary route section includes 11 land conservation easements. The Sheridan WMA is located within one mile of the preliminary route section center feature.

Impacts and Mitigation

Refer to Section 6.5 of the Application for discussions of impacts and mitigation for air quality, water quality and resources, flora, and fauna in the Project area.

C-2.2.7 RARE AND UNIQUE NATURAL RESOURCES

There are several rare habitats and species within one mile of the Franklin Substation Preliminary Route Section center feature near the Cedar Mountain SNA and surrounding MCBS area of moderate and outstanding significance. Prairie bush clover (state threatened, federal threatened) and plains prickly pear (state non-status) are found here, as is wet prairie remnant. Bald eagles (state species of concern) have been documented along the Minnesota River within one mile of the preliminary route section center feature. Bald eagles also have federal protection under the Bald and Golden Eagle Act (refer to Section 6.5.4 of the Route Permit Application). MCBS areas of moderate significance are found near the Minnesota River. Mesic prairie and native deciduous forest habitats are found in association with these resources. Low milk-vetch is also found within one mile of the preliminary route section center feature.

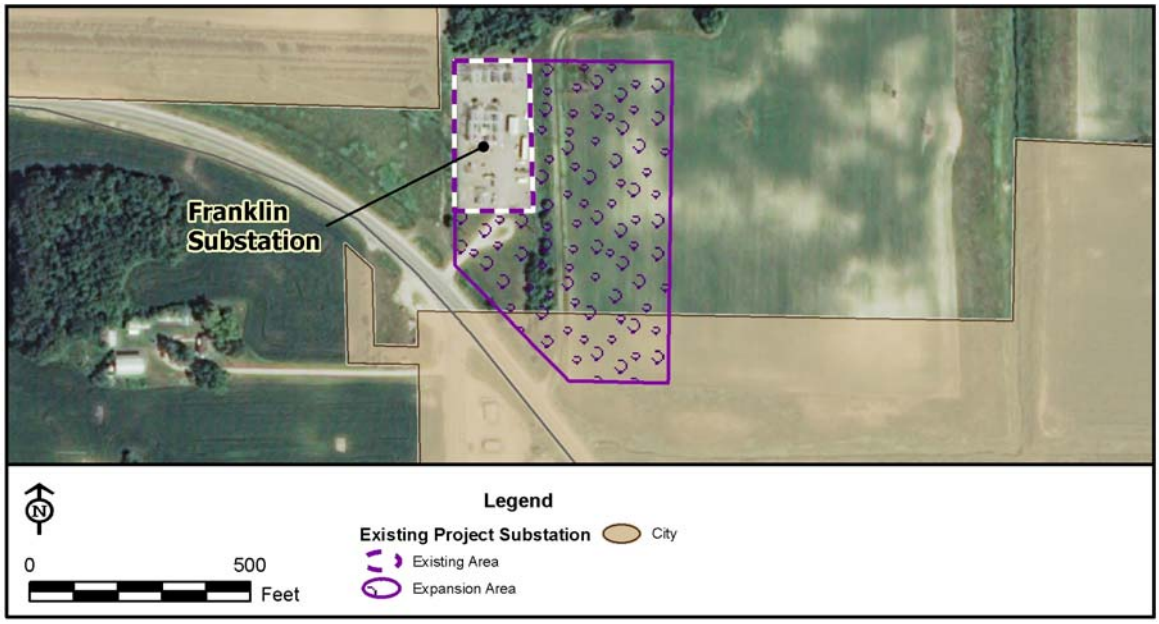
Impacts and Mitigation

Refer to Section 6.6 of the Application for a discussion of impacts and mitigation for rare and unique natural resources.

C-2.2.8 FRANKLIN SUBSTATION EXPANSION

The Franklin Substation Preliminary Route Section (Figure C-3) would require the expansion of the existing Franklin Substation, including approximately four to six acres for fenced and graded substation area and associated equipment. The substation expansion would extend to the north and east and may require acquisition of additional land depending on final transmission route selection and final substation design. Because the substation expansion area is within the Franklin Substation Preliminary Route Section, environmental information for this portion of the Project area is already included in Section C-2.2 of this Appendix. However, because clearing and grading will take place within the expansion area and resources cannot be spanned or avoided to the same degree possible with transmission structures, a detailed analysis of environmental resources within the expansion area is appropriate.

Figure C-3. Franklin Substation Expansion



C-2.2.8.1 DESCRIPTION OF ENVIRONMENTAL SETTING

Refer to Section 6.1.3 of the Application for a description of the environmental setting of this section of the Project area. The proposed substation area is primarily flat in an agricultural setting in Renville County. There are small, farmed drainages and a wooded fencerow in the vicinity, and several homesteads present throughout the landscape. The elevation of the Franklin Substation Expansion area is approximately 1,020 feet AMSL.

C-2.2.8.2 HUMAN SETTLEMENT

No impacts are expected in the Franklin Substation Expansion area for the following: public health and safety; commercial, industrial and residential land use; displacement; noise; aesthetics; socioeconomics; cultural values; recreation; public services; transportation; or radio, television, cellular phone, and GPS. A discussion of these resources with respect to substations is provided in Section 7.1.2 of the Application.

C-2.2.8.3 LAND-BASED ECONOMIES

A discussion of forestry, tourism, mining, and agricultural resources regarding substations is provided in Section 7.1.3 of the Application. No forestry, tourism, or mining resources occur in the Franklin Substation Expansion area. The land to the northwest and east of the existing Franklin Substation is agricultural. Approximately 89 percent or 5.3 acres of land within the proposed expansion is used for agriculture.

Impacts and Mitigation

No impacts to forestry, tourism, or mining resources are anticipated with the Franklin Substation Expansion. Refer to Section 6.3.1.7 of the Application for agricultural impacts and mitigation information.

C-2.2.8.4 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

There are no previously recorded archaeological or architectural sites located within one mile of the Franklin Substation Expansion. No sites would be impacted by the construction or operation of the substation.

C-2.2.8.5 NATURAL ENVIRONMENT

Refer to Section 7.1.5 of the Application for discussions of air quality, water resources, flora, and fauna related to substation expansions. No air quality issues or water resources occur in the Franklin Substation Expansion area. Vegetative cover is agricultural row crop and a tree windrow. Wildlife would be typical of an agricultural setting.

Impacts and Mitigation

No impacts are expected to air quality, water resources, flora, and fauna within the Franklin Substation Expansion. Refer to Section 7.1.5 of the Application for discussions of impacts and mitigation for these resources.

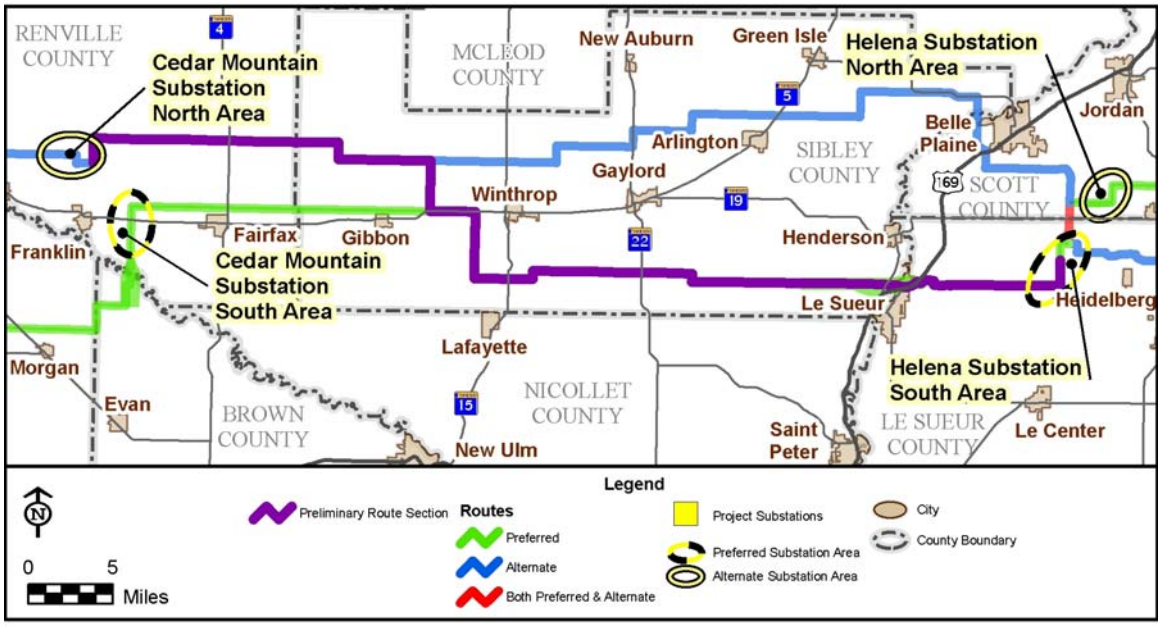
C-2.2.8.6 RARE AND UNIQUE NATURAL RESOURCES

There are no rare or unique species or habitats located within or near the Franklin Substation Expansion area.

C-2.3 WINTHROP PRELIMINARY ROUTE SECTION

The Winthrop Preliminary Route Section (Figure C-4) was an alternative to the Cedar Mountain to Helena Preferred Route section. This preliminary route section was not selected because it did not prove to be effective in minimizing Project length or minimizing impacts to environmental resources.

Figure C-4. Winthrop Preliminary Route Section



C-2.3.1 ROUTE DESCRIPTION

The Winthrop Preliminary Route Section deviates from the Alternate Route by going south on Sibley County Highway 3 for three miles to Minnesota Trunk Highway 19 and then joins the Preferred Route. The Winthrop Preliminary Route Section follows the Preferred Route to the Helena Substation South area. A detailed map is available in Appendix C-3, All Segments Maps CH02. The preliminary route section is 70 miles long and is located in Renville, Sibley and Scott counties.

C-2.3.2 DESCRIPTION OF ENVIRONMENTAL SETTING

Refer to Section 6.1.4 of the Application for a description of the environmental setting of the Cedar Mountain to Helena Preferred Route section. The Winthrop Preliminary Route Section crosses the Minnesota River Prairie Subsection and Big Woods Subsection. The existing landscape is flat, open agricultural land with isolated woodlands. Elevations range from 717 feet to 1,073 feet AMSL.

C-2.3.3 HUMAN SETTLEMENT

Human settlement resources including public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics and cultural values; recreation; public services; transportation; and communication tower interference are discussed in Section 6.2 of the Application.

A home-based daycare facility has been identified on the west side of County Highway 3 near the intersection with a local township road. The Winthrop Preliminary Route Section would utilize County Highway 3 in Sibley County, crossing a natural gas pipeline west of Winthrop. A Dome Pipeline Company pipeline cuts diagonally across the Winthrop Preliminary Route Section. No other

surface transportation facilities are located along the preliminary route section. There are 16 communication towers located within the Winthrop Preliminary Route Section.

Impacts and Mitigation

Refer to discussions of impacts and mitigation for public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation; public services; transportation; and communication tower interference in Section 6.2 of the Application. Impacts to these resources would be avoided and minimized to the extent practical.

C-2.3.4 LAND-BASED ECONOMIES

Refer to Section 6.3 of the Application for discussions of agriculture, forestry, tourism, and mining resources. No forestry, tourism, or mining resources are known to occur within the Winthrop Preliminary Route Section.

Refer to Section 6.3.1.4 for county agricultural information. Approximately 29 percent, or 2,933 acres, of the soils are listed by the NRCS as prime farmland, prime when drained, or farmland of statewide importance along the Winthrop Preliminary Route Section (NRCS 2005). There is one known organic farmer within one mile of the Winthrop Preliminary Route Section center feature. This is a certified organic farm as reported by the MnDOA or identified during the public involvement process. The State does not depict the exact location of an organic farm field.

Impacts and Mitigation

The Applicants anticipate no impacts to forestry, tourism, and mining resources. Refer to Section 6.3 for discussions of impacts and mitigation for these resources in the Project area.

Along the Winthrop Preliminary Route Section, the Applicants estimate that an approximate aggregate total of five acres of agricultural land would be permanently impacted and approximately 158 acres would be temporarily impacted due to transmission line construction, including stringing and staging. No impacts to center pivot irrigation are expected. Clearing of the ROW in these areas would be limited to the amount necessary to permit the safe and reliable operation of the transmission line. Refer to Section 6.3.1.7 for additional impacts and mitigation information.

C-2.3.5 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Refer to Section 6.4 of the Application for a discussion of archaeological and historic resources in the Project area. There are 13 archaeological sites within one mile of the Winthrop Preliminary Route Section center feature (Appendix H, Table H-17). These sites include pre-contact lithics and ceramic artifacts, as well as the suspected locations of historic-period townsites. One of these sites, 21LE0045 (Le Sueur Site, a pre-contact earthwork and artifact scatter), is considered eligible for listing on the NRHP.

Impacts and Mitigation

Refer to Section 6.4.4 of the Application for a discussion of impacts and mitigation for archaeological and historic resources. No previously recorded sites within one mile of the Winthrop Preliminary Route Section center feature would be impacted by construction or maintenance of the Project.

C-2.3.6 NATURAL ENVIRONMENT

Refer to Section 6.5 of the Application for discussions of natural resources including air quality, water quality and resources, flora, and fauna in the Project area.

Surface water resources are similar to those found in the Cedar Mountain to Helena Preferred Route section as described in Section 6.5.2.4 of the Application, including the Minnesota River near Le Sueur. FEMA floodplains occur at rivers and major streams. There are 26 NWI wetlands within the Winthrop Preliminary Route Section ROW. There is an approximate aggregate total of 15.5 acres of wetlands within the ROW, of which approximately 0.3 acres are forested wetlands.

Habitats and vegetative land cover within this preliminary route section are similar to those found in the Cedar Mountain to Helena Preferred Route section, described in Section 6.5.3.4 of the Application. GAP land use data show that approximately 90 percent of this area is used for agriculture, and six percent is grassland. Wildlife within this preliminary route section is typical of agricultural settings. Wildlife found in the Minnesota River Valley is described in Section 6.5.4.4 of the Application. This preliminary route section includes 17 land conservation easements.

Impacts and Mitigation

Refer to Section 6.5 of the Application for discussions of impacts and mitigation for air quality, water quality and resources, flora, and fauna in the Project area.

C-2.3.7 RARE AND UNIQUE NATURAL RESOURCES

Several special status species are found mostly within the Minnesota River Valley. Paddlefish (state threatened) and blue sucker (state species of concern) are fish species found in the Minnesota River within one mile of the Winthrop Preliminary Route Section center feature. Bald eagle and American ginseng are also found in this area. Non-status species within one mile of the preliminary route section center feature include upland sand piper, Western fox snake, and Kentucky coffee-tree.

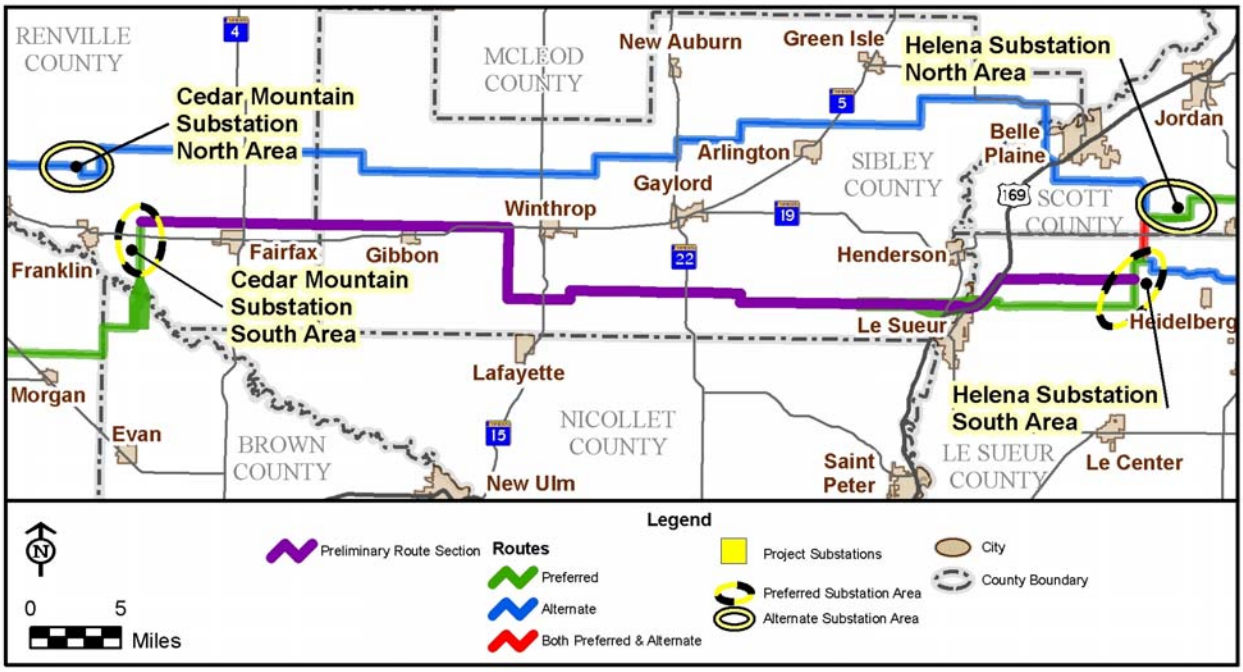
Impacts and Mitigation

Refer to Section 6.6 of the Application for a discussion of impacts and mitigation for rare and unique natural resources.

C-2.4 HIGHWAY 169 PRELIMINARY ROUTE SECTION

The Highway 169 Preliminary Route Section (Figure C-5) was developed to offer an alternative path for the Cedar Mountain to Helena Preferred Route section and passes through the industrial areas north and northeast of Le Sueur, and crosses fields instead of following County Road 156/320th Street. The Applicants concluded that human settlement impacts were comparable between this preliminary route section and the equivalent segments of the Preferred Route, but that this section would have greater agricultural impacts because it crosses farm fields. This section also does not provide as much flexibility to interconnect with the Blue Lake to Wilmarth 345 kV transmission line as required for the Project.

Figure C-5. Highway 169 Preliminary Route Section



C-2.4.1 ROUTE DESCRIPTION

The Highway 169 Preliminary Route Section deviates from the Preferred Route approximately 1.5 miles east of the Minnesota River. It continues north along U.S. Highway 169 for 1.75 miles. The preliminary route section then turns east to follow County Road 156/County Highway 28 through northern Le Sueur County. The Highway 169 Preliminary Route Section rejoins the Preferred Route at the Helena Substation South area. A detailed map is available in Appendix C-3, All Segments Maps CH08. The preliminary route section is 61 miles long and is located in Renville, Sibley, and Le Sueur counties.

C-2.4.2 DESCRIPTION OF ENVIRONMENTAL SETTING

Refer to Section 6.1.4 of the Application for a description of the environmental setting of this section of the Project area. The Highway 169 Preliminary Route Section is within the Big Woods Province. The landscape is largely agricultural with interspersed homes, farmsteads, and isolated wooded areas. Elevations along the Highway 169 Preliminary Route Section range from 866 feet to 1,031 feet AMSL.

C-2.4.3 HUMAN SETTLEMENT

Human settlement resources including public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation; public services; transportation; and communication tower interference are discussed in Section 6.2 of the Application.

CapX2020
Delivering electricity you can rely on

While agriculture is the primary land use crossed by the preliminary route section in this region, there are some light industrial and manufacturing facilities near the City of Le Sueur. Zoning specifications along the Highway 169 Preliminary Route Section are similar to those described for Le Sueur County in Chapter 6.

County Road 156/County Highway 28 is a gravel-topped roadway, with some private driveway access points and intersections with other roadways, mostly carrying local commuter traffic and farm vehicles. No rail lines, landing strips or underground pipelines are known to exist near this roadway. There are 26 communication towers located within the Highway 169 Preliminary Route Section.

Impacts and Mitigation

Refer to discussions of impacts and mitigation for public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation, public services, transportation and communication tower interference in Section 6.2 of the Application. Impacts to these resources would be avoided and minimized to the extent practical.

C-2.4.4 LAND-BASED ECONOMIES

Refer to Section 6.3 of the Application for discussions of agriculture, forestry, tourism, and mining resources. No forestry, tourism, or mining resources are known to occur within the Highway 169 Preliminary Route Section.

Agricultural activities are widespread in this preliminary route section. Refer to Section 6.3.1.4 of the Application for county agricultural information.

Impacts and Mitigation

Along the Highway 169 Preliminary Route Section, the Applicants estimate that an approximate aggregate total of four acres of agricultural land would be permanently impacted and approximately 139 acres of agricultural land would be temporarily impacted due to transmission line construction. No impacts to center pivot irrigation are expected. Clearing of the ROW in these areas would be limited to the amount necessary to permit the safe and reliable operation of the transmission line. Refer to Section 6.3.1.7 of the Application for additional impacts and mitigation information.

The Applicants anticipate no impacts to forestry, tourism, and mining resources. Refer to Section 6.3 of the Application for discussions of impacts and mitigation for these resources.

C-2.4.5 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Refer to Section 6.4 of the Application for a discussion of archaeological and historic resources. There are 12 archaeological resources within one mile of the Highway 169 Preliminary Route Section center feature (Appendix H, Table H-5).

Site 21LE0045 is considered to be eligible for listing on the NRHP; the remaining 13 sites have not been evaluated for listing on the NRHP.

Impacts and Mitigation

Refer to Section 6.4.4 of the Application for a discussion of impacts and mitigation for archaeological and historic resources. No previously recorded archaeological resource within one mile of the Highway 169 Preliminary Route Section center feature would be impacted by construction or operation of the Project.

C-2.4.6 NATURAL ENVIRONMENT

Refer to Section 6.5 of the Application for discussions of natural resources including air quality, water quality and resources, flora, and fauna in the Project area.

Surface water resources in the Highway 169 Preliminary Route Section (including Prairie Creek) are similar to those in the Cedar Mountain to Helena section of the Preferred Route as described in Section 6.5.2.4 of the Application. FEMA floodplains occur at rivers and major streams. There are 25 NWI wetlands within the Highway 169 Preliminary Route Section ROW. There is an approximate aggregate total of 29.9 acres of wetlands within the ROW, of which approximately 0.3 acres are forested wetlands.

Habitats and vegetative land cover within this preliminary route section are similar to those found in the Cedar Mountain to Helena Preferred Route section, as described in Section 6.5.3.4 of the Application. GAP land use data show that 86 percent of this preliminary route section is used for agriculture, and seven percent is grassland.

The Highway 169 Preliminary Route Section crosses one MCBS area of moderate significance and includes 15 land conservation easements. Grundmeyer WMA is located within one mile of the Highway 169 Preliminary Route Section center feature and is unique to this section. Otherwise, wildlife would be typical for agricultural habitats.

Impacts and Mitigation

Refer to Section 6.5 of the Application for discussions of impacts and mitigation for air quality, water quality and resources, flora, and fauna in the Project area.

C-2.4.7 RARE AND UNIQUE NATURAL RESOURCES

Where the Highway 169 Preliminary Route Section overlaps with the Cedar Mountain to Helena section of the Preferred Route, special status species American ginseng, found east of the Minnesota River, is within one mile of the Highway 169 Preliminary Route Section center feature. Kentucky coffee tree and Western fox snake are non-status species also located in that same area. No additional rare or unique species or habitats are located within one mile of the Highway 169 Preliminary Route Section center feature.

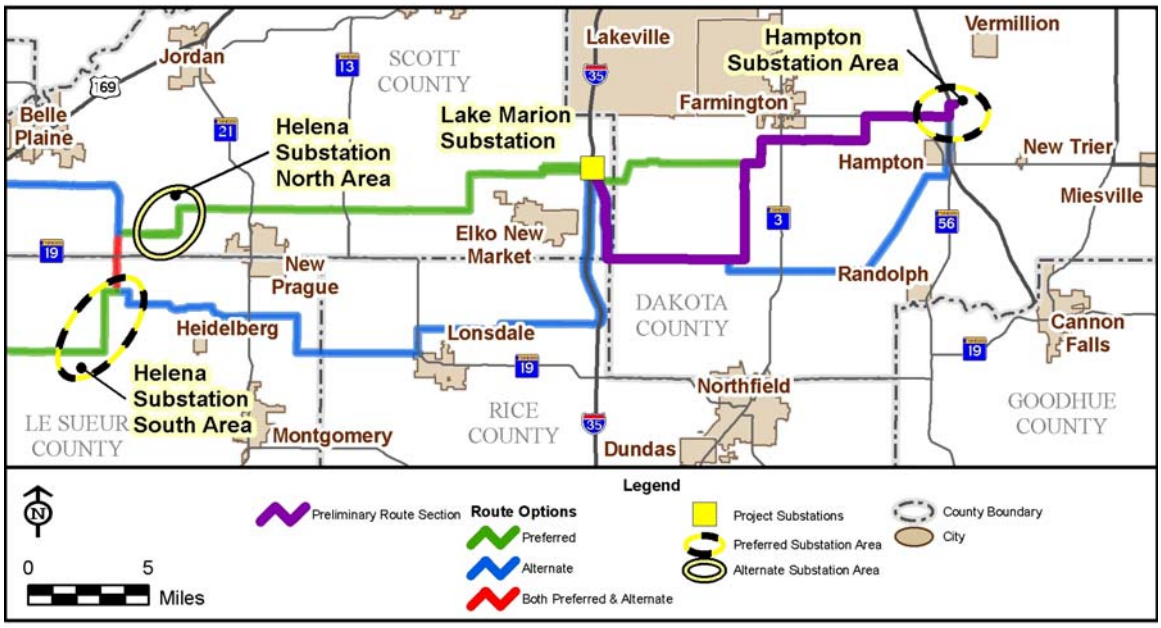
Impacts and Mitigation

Refer to Section 6.6 of the Application for a discussion of impacts and mitigation for rare and unique natural resources.

C-2.5 FARMINGTON PRELIMINARY ROUTE SECTION

The Farmington Preliminary Route Section (Figure C-6) was developed as an alternative to the Lake Marion to Hampton section of the Alternate Route to avoid routing conflicts with the CapX2020 Twin Cities – La Crosse 345 kV Transmission Line Project. Planners for that project are considering following the US Highway 52 corridor to the proposed Hampton Substation. The Applicants determined that the final Alternate Route is the most suitable alternate routing option based on the route selection criteria.

Figure C-6. Farmington Preliminary Route Section



C-2.5.1 ROUTE DESCRIPTION

The Farmington Preliminary Route Section deviates from the Alternate Route along Dakota County Highway 86. The Farmington Preliminary Route Section continues east along County Highway 86 for 0.6 miles then turns north along mostly field lines for four miles. At this point, it joins the Preferred Route to terminate at the Hampton Substation area. A detailed map is available in Appendix C-3, All Segments Maps MP01. The preliminary route section is 25 miles long and is located in Scott and Dakota counties.

C-2.5.2 DESCRIPTION OF ENVIRONMENTAL SETTING

Refer to Section 8.1.6 of the Application for a description of the environmental setting of this section of the Project area. The Farmington Preliminary Route Section crosses the Oak Savanna ECS Subsection. Elevations range from 867 feet to 1,072 feet AMSL. The agricultural landscape is mostly rolling terrain with increasing suburban development. Wooded areas occur particularly in areas unsuitable for farming. Porous karst geologic formations located southwest of Chub Lake may create unstable geologic conditions for transmission structure construction.

C-2.5.3 HUMAN SETTLEMENT

Human settlement resources including public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation; public services; transportation; and communication tower interference are discussed in Section 8.2 of the Application.

There is a private airstrip in Eureka Township less than one mile west of the Farmington Preliminary Route Section. This airstrip parallels this preliminary route section in the north-south

CapX2020
Delivering electricity you can rely on

direction. The Farmington Preliminary Route Section would follow farm field lines between County Highway 86 and 240th Street in Eureka Township. It would then co-locate with the MinnCan pipeline. East of the Farmington Preliminary Route Section, the Canadian Pacific Railway operates a rail line through southern Dakota County, which is approximately 0.75 miles east of the Farmington Preliminary Route Section. There are three communication towers within the Farmington Preliminary Route Section.

Impacts and Mitigation

Refer to discussions of impacts and mitigation for public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics and cultural values; recreation; public services; transportation; and communication tower interference in Section 8.2 of the Application. Impacts to these resources would be avoided and minimized to the extent practical.

C-2.5.4 LAND-BASED ECONOMIES

Refer to Section 8.3 of the Application for discussions of agriculture, forestry, tourism, and mining resources. No forestry, tourism, or mining resources are known to occur within the Farmington Preliminary Route Section.

Refer to Section 8.3.1.6 for county agricultural information. Approximately 65 percent, or 1,830 acres, of the soils are listed by the NRCS as prime farmland, prime when drained, or farmland of statewide importance along the Farmington Preliminary Route Section (NRCS 2005).

There are 14 center pivot irrigation systems along the Farmington Preliminary Route Section. There is one known organic farmer located within one mile of the Farmington Preliminary Route Section center feature. This is a certified organic farm as reported by the MnDOA or identified during the public involvement process. The State does not depict the exact location of an organic farm field. Dakota County has a Farmland and Natural Area Program ("FNAP") that allows landowners the opportunity to place agricultural and natural areas into permanent conservation easements and restricts the future development of the property. There are approximately 66 acres of FNAP land at the Hallcock Farmland Area within the preliminary route section.

Impacts and Mitigation

The Applicants anticipate no impacts to forestry, tourism, and mining resources. Refer to Section 8.3 for discussions of impacts and mitigation for these resources.

Along the Farmington Preliminary Route Section, the Applicants estimate that approximately one acre of agricultural lands would be permanently impacted and approximately 42 acres would be temporarily impacted due to transmission line construction, including stringing and staging. No impacts to center pivot irrigation are expected. Clearing of the ROW in these areas would be limited to the amount necessary to permit the safe and reliable operation of the transmission line. Refer to Section 8.3.1.7 for additional impacts and mitigation information.

C-2.5.5 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Refer to Section 8.4 of the Application for a discussion of archaeological and historic resources in the Project area. Ten archaeological sites were identified within one mile of the Farmington Preliminary Route Section center feature (Appendix H, Table H-20). Two of these sites are shown in the SHPO database as Non-Sites after field verification or other methods determined that they were not cultural resources.

None of these sites has been evaluated for listing on the NRHP. Sites 21DKae, 21DK0075, and 21DK0078 are within the Farmington Preliminary Route Section.

Impacts and Mitigation

Refer to Section 8.4.4 of the Application for a discussion of impacts and mitigation for archaeological and historic resources. No other previously recorded sites within one mile of the Farmington Preliminary Route Section center feature would be impacted by the Project.

C-2.5.6 NATURAL ENVIRONMENT

Refer to Section 8.5 of the Application for discussions of natural resources including air quality, water quality and resources, flora, and fauna in the Project area.

Surface water resources are similar to those found in the Lake Marion to Hampton Alternate Route section as described in Section 8.5.2.6 of the Application. This section crosses the South Branch Vermillion River, which is impaired due to fecal coliform. There are 57 NWI wetlands within the Farmington Preliminary Route Section ROW. There is an approximate aggregate total of 25.3 acres of wetlands within the ROW, of which approximately 1.0 acres are forested wetlands.

Habitats and vegetative land cover within the Farmington Preliminary Route Section are similar to those found in the Lake Marion to Hampton Alternate Route section described in Section 8.5.3.6 of the Application. GAP land use data show that 74 percent of this area is used for agriculture and 15 percent is grassland.

Wildlife within the Farmington Preliminary Route Section is typical for agricultural and suburban landscapes. Refer to Section 8.5.4.6 for a discussion of typical wildlife in this portion of the Project area. Chub Creek Marsh is a designated Shallow Lake that provides habitat for waterfowl and several other wetland and shallow water dependent species. There are no land conservation easements within this preliminary route section.

Impacts and Mitigation

Refer to Section 8.5 of the Application for discussions of impacts and mitigation for air quality, water quality and resources, flora, and fauna in the Project area.

C-2.5.7 RARE AND UNIQUE NATURAL RESOURCES

Loggerhead shrike are common within the Farmington Preliminary Route Section. Waterwillow, big tick-trefoil, and American ginseng are found near Chub Lake. Non-status species within one mile of the preliminary route section center feature include upland sandpiper, long-bearded hawkweed, lilia-leaved twayblade, and cowbane.

Impacts and Mitigation

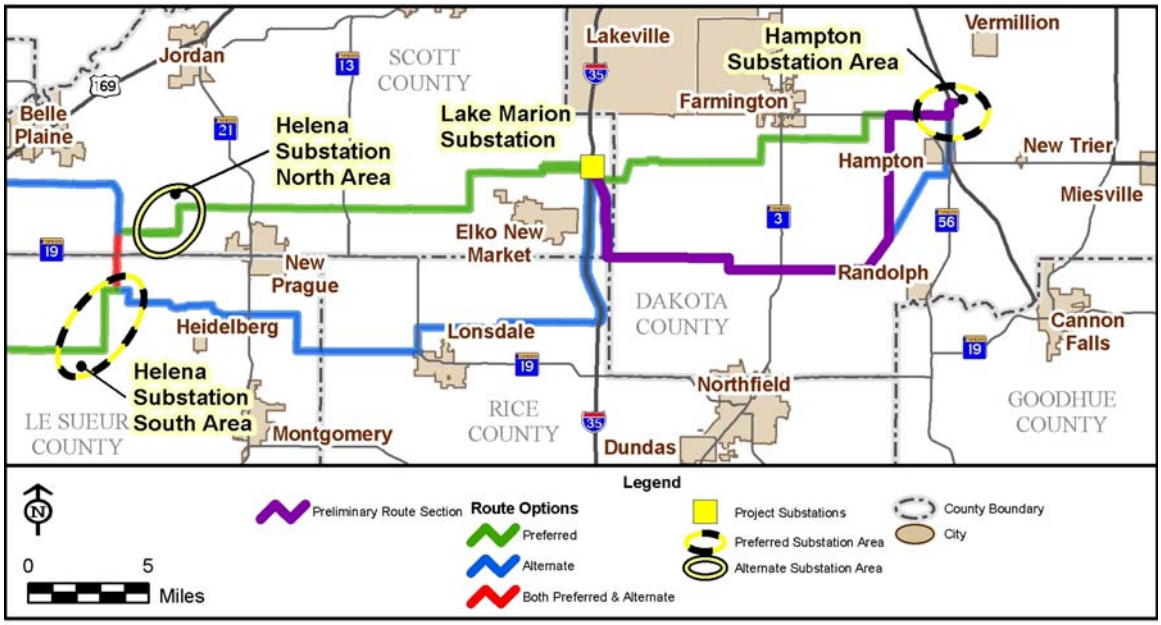
Refer to Section 8.6 of the Application for a discussion of impacts and mitigation for rare and unique natural resources.

C-2.6 HAMPTON PRELIMINARY ROUTE SECTION

The Hampton Preliminary Route Section (Figure C-7) was developed as an alternative to the Lake Marion to Hampton section of the Alternate Route to minimize potential routing conflicts with the CapX2020 Twin Cities – La Crosse 345 kV Transmission Line Project. Planners for that project are considering following the US Highway 52 corridor to the proposed Hampton Substation. The

Applicants determined that the final Alternate Route is the most suitable alternate routing option based on the route selection criteria.

Figure C-7. Hampton Preliminary Route Section



C-2.6.1 ROUTE DESCRIPTION

The Hampton Preliminary Route Section diverges from the Alternate Route by turning north along the existing Rosemount to Cannon Falls 115 kV transmission line approximately five miles southwest of the City of Hampton. The Hampton Preliminary Route Section travels north along the 115 kV transmission line for approximately 5.2 miles. A wider route would be requested in this preliminary route section to allow for flexibility if paralleling or double circuiting the existing 115 kV transmission line. At this point, the Hampton Preliminary Route Section returns to 1,000 feet wide and turns east following Minnesota Highway 50 for 1.1 miles and field lines for 1.3 miles. The Hampton Preliminary Route Section then turns north along U.S. Highway 52 for 0.5 miles, entering the proposed Hampton Substation area. A detailed map is available in Appendix C-3, All Segments Maps MP02. The preliminary route section is 25 miles long and is located in Scott and Dakota counties.

C-2.6.2 DESCRIPTION OF ENVIRONMENTAL SETTING

Refer to Section C-2.5.2 of this Appendix for a description of the environmental setting for the Project area including the Hampton Preliminary Route Section. Porous karst geologic formations located southwest of Chub Lake may create unstable geologic conditions for transmission structure construction.

CapX2020
Delivering electricity you can rely on

C-2.6.3 HUMAN SETTLEMENT

Human settlement resources including public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation; public services; transportation; and communication tower interference are discussed in Section 8.2 of the Application.

Portions of the Hampton Preliminary Route Section follow Minnesota Highway 50 and US Highway 53. This preliminary route section would cross a natural gas pipeline south of County Highway 80, and would cross two proposed locations for future extensions of the Metropolitan Council's Metropolitan Urban Services Area ("MUSA") sewer pipelines. In addition to the MUSA interceptor service line, there is an underground pipeline owned and operated by Williams Company. No other surface transportation facilities are located near this preliminary route section. There are two communication towers within the Hampton Preliminary Route Section.

Impacts and Mitigation

Refer to discussions of impacts and mitigation for public health and safety; commercial, industrial, and residential land use; displacement; noise; aesthetics; socioeconomics, cultural values; recreation, public services, transportation and communication tower interference in Section 8.2 of the Application. Impacts to these resources would be avoided and minimized to the extent practical.

C-2.6.4 LAND-BASED ECONOMIES

Refer to Section 8.3 of the Application for discussions of forestry, tourism, and mining resources in the Project area. No forestry or tourism resources are known to occur within the Hampton Preliminary Route Section.

Refer to Sections 8.3.1.6 for county agricultural information. Approximately 67 percent, or 1,991 acres, of the soils are listed by the NRCS as prime farmland, prime when drained, or farmland of statewide importance along the Hampton Preliminary Route Section (NRCS 2005).

There are 22 center pivot irrigation systems along the Hampton Preliminary Route Section. There is one known organic farmer located within one mile of the Hampton Preliminary Route Section center feature. This is a certified organic farm as reported by the MnDOA or identified during the public involvement process. The State does not depict the exact location of an organic farm field. There are approximately 78 acres of FNAP land at the Hallcock Farmland Area within this preliminary route section.

Impacts and Mitigation

The Applicants anticipate no impacts to forestry, tourism, and mining resources. Refer to Section 8.3 for discussions of impacts and mitigation for these resources.

Along the Hampton Preliminary Route Section, the Applicants estimate that approximately one acre of agricultural land would be permanently impacted and approximately 40 acres would be temporarily impacted due to transmission line construction, including stringing and staging. No impacts to center pivot irrigation are expected. Clearing of the ROW in these areas would be limited to the amount necessary to permit the safe and reliable operation of the transmission line. Refer to Section 8.3.1.7 for additional impacts and mitigation information.

C-2.6.5 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Refer to Section 8.4 of the Application for a discussion of archaeological and historic resources. There are 13 archaeological sites within one mile of the Hampton Preliminary Route Section center feature (Appendix H, Table H-21). Six of these sites are shown in the SHPO database as Non-Sites after field verification or other methods determined that they were not cultural resources.

None of these sites has been evaluated for listing on the NRHP. Sites 21DKae and 21DK0078 are within the Hampton Preliminary Route Section.

Impacts and Mitigation

Refer to Section 8.4.4 of the Application for a discussion of impacts and mitigation for archaeological and historic resources. No previously recorded archaeological resources within one mile of the Hampton Preliminary Route Section center feature would be impacted by construction or operation of the Project.

C-2.6.6 NATURAL ENVIRONMENT

Refer to Section 8.5 of the Application for discussions of natural resources including air quality, water quality and resources, flora, and fauna in the Project area.

Surface water resources are similar to those found in the Lake Marion to Hampton Alternate Route section described in Section 8.5.2.6 of the Application. This section crosses the South Branch Vermillion River, which is impaired due to fecal coliform. There are 36 NWI wetlands within the Hampton Preliminary Route Section. There is an approximate aggregate total of 28.7 acres of wetlands within the ROW, of which approximately 1.9 acres are forested wetlands.

Habitats and vegetative land cover within this preliminary route section are similar to those found in the Lake Marion to Hampton Alternate Route section described in Section 8.5.3.6 of the Application. GAP land use data show that 71 percent of this area is used for agriculture, 15 percent is grassland, five percent is wooded, and four percent is wetland or open water. A portion of a large parcel of forest would be within this preliminary route section approximately two miles northwest of the town of Hampton. This forest is a MCBS area of outstanding significance due to its age, complexity, and species composition. The forest is composed of sugar maple, basswood, American elm, and northern red oak.

Wildlife within the Hampton Preliminary Route Section is typical of agricultural and suburban areas. Refer to Section 8.5.4.6 of the Application for a description of typical wildlife. Species likely to occur in the high-quality forest habitat northwest of Hampton include white tail deer, skunks, opossums, mice, shrews, turkeys, vireos, warblers, garter snakes, and gray tree frogs. Chub Creek Marsh is a designated Shallow Lake that provides habitat for waterfowl and several other wetland and shallow water dependent species.

Impacts and Mitigation

Refer to Section 8.5 of the Application for discussions of impacts and mitigation for air quality, water quality and resources, flora, and fauna in the Project area.

C-2.6.7 RARE AND UNIQUE NATURAL RESOURCES

Loggerhead shrikes are common in the Hampton Preliminary Route Section with 11 documented occurrences within one mile of the center feature. There is a MCBS outstanding significance area about one mile northwest of Hampton. This old growth forest area contains American ginseng and big tick trefoil (state species of concern) and several big woods habitats such as maple-basswood and

oak forest communities. Milk snake (state non-status) is also found within one mile of the Hampton Preliminary Route Section center feature.

Impacts and Mitigation

Refer to Section 8.6 of the Application for a discussion of impacts and mitigation for rare and unique natural resources.

2272869v2

This page intentionally left blank.

APPENDIX C-3

ALL SEGMENTS MAPS

This page intentionally left blank.