7.2 Lyon County Substation to MN Valley Substation

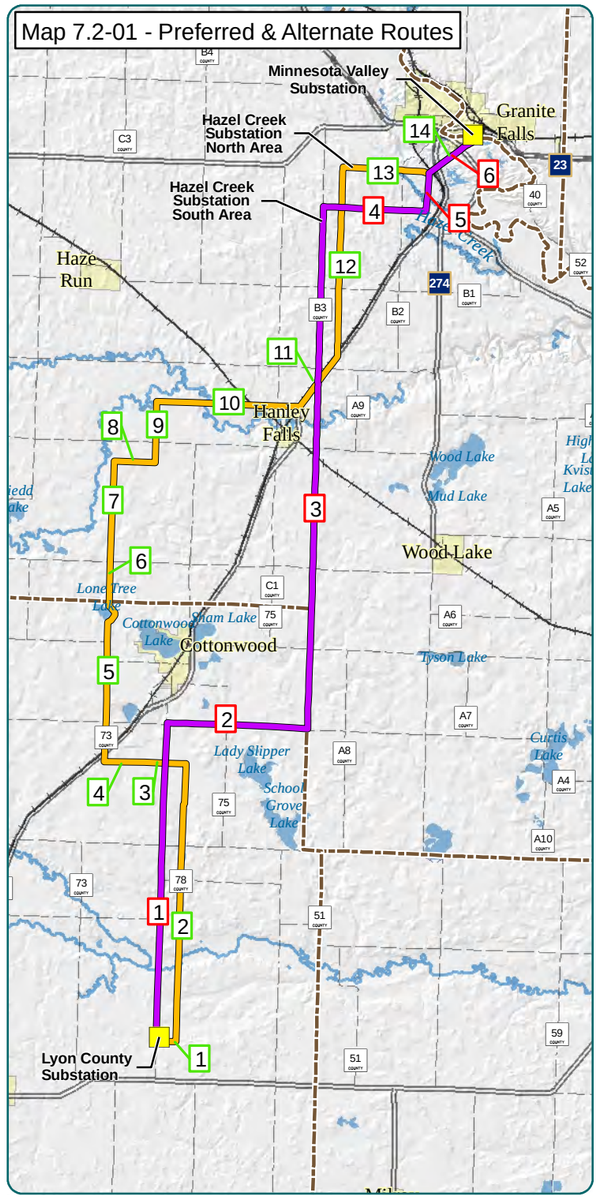
7.2.1 Description of Segment Alternatives

Segment 2 (Lyon County to Minnesota Valley) begins at the Lyon County Substation just east of Marshall and ends at the Minnesota Valley Substation on the southeast side of Granite Falls. Within Segment 2 there are two route alternatives that were suggested during the public comment period. The suggested route alternatives (2B-01 and 2B-02) are variations on both the Preferred and Alternate routes. Route 2B-01 as proposed does not meet the Certificate of Need (CON) requirements as it does not connect to the proposed Hazel Creek Substation. There are also two alignment alternatives within Segment 2 that were suggested during the public comment period.

The Preferred and Alternate Routes, all route alternatives and alignment alternatives are described in Section 7.2.1. Section 7.2.4 is an analysis and comparison of impacts by the Preferred and Alternate Routes and all suggested route alternatives.

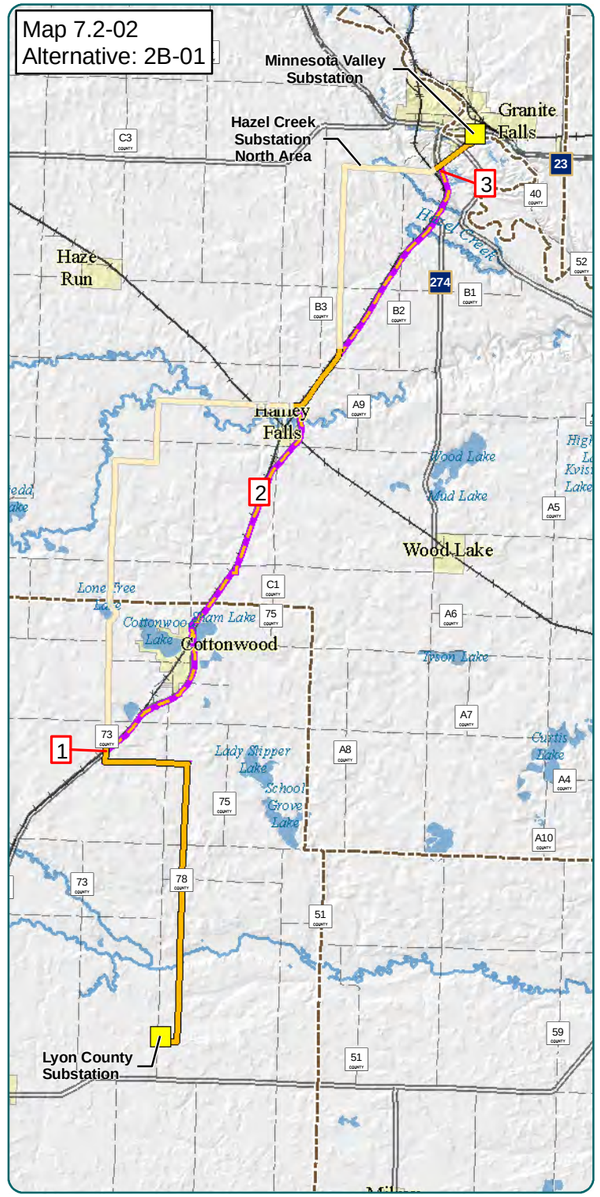
Lyon County to Minnesota Valley (Preferred Route)			
	Turn by Turn	Distance (miles)	Comments
1	From the Lyon County Substation follow Cnty Hwy 9 north to Cnty Hwy 24	8.0	
2	Turn east following Cnty Hwy 24 to 520th St	3.5	
3	Turn north following 520th St.	13.0	To the proposed Hazel Creek Substation
4	Turn east following 260th Ave.	2.6	
5	Turn north	1.0	
6	Turn northeast into the MN River Valley Substation	1.5	Bisects two USFWS easement areas and crosses THs 23 and 67 and the MN River before entering the MN Valley Substation

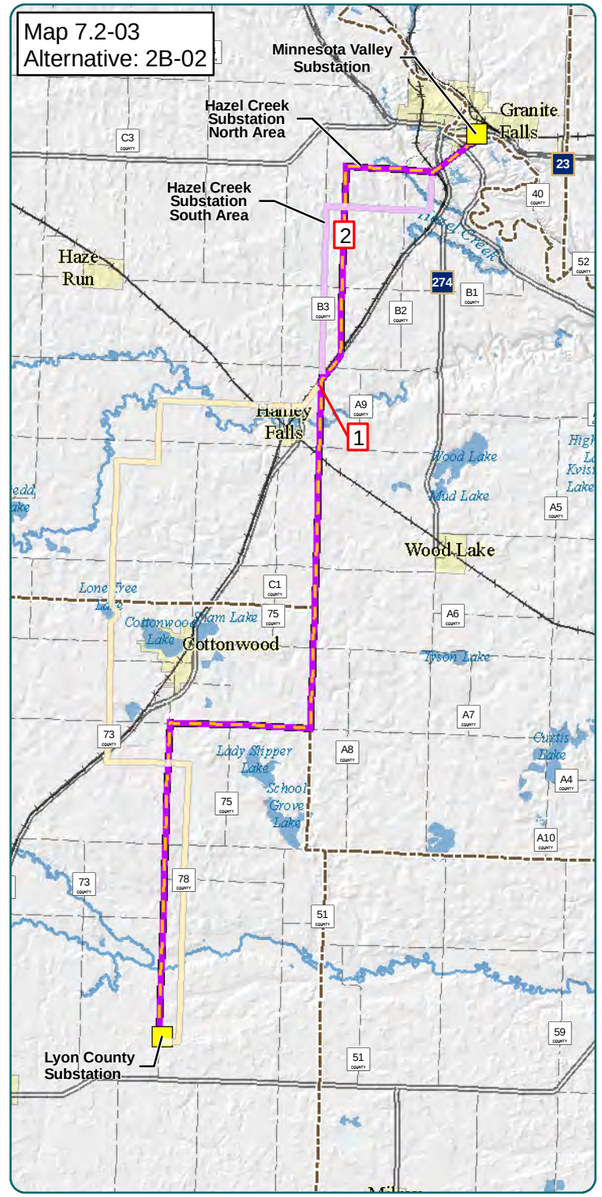
Lyon County to Minnesota Valley (Alternate Route)			
	Turn by Turn	Distance (miles)	Comments
1	From the Lyon County Substation go east following 290th St.	0.5	
2	Turn north following existing 69 kV line along field lines to 360th St.	7.0	
3	Turn west following 360th St.	1.0	
4	Continue west following field lines	1.0	
5	Turn north following 290th Ave	4.1	Crosses east edge of Gabriel Anderson WMA to County border
6	Continue north following field lines	1.0	
7	Continue north following 470th St.	2.5	
8	Turn east following existing 69 kV line along field lines	1.1	
9	Turn north for 1.5 miles following 480th St.	1.5	
10	Turn east following 210th Ave to TH 23	3.6	Just north of Hanley Falls
11	Turn northeast following TH 23 and BNSF railroad	1.5	
12	Turn north following field lines to 270th Ave.	4.8	
13	Turn east following 270th Ave	2.0	Joins existing 115 kV line and Preferred Route
14	Turn northeast into the MN River Valley Substation	1.6	Bisects two USFWS easement areas and crosses THs 23 and 67 and the MN River before entering the MN Valley Substation

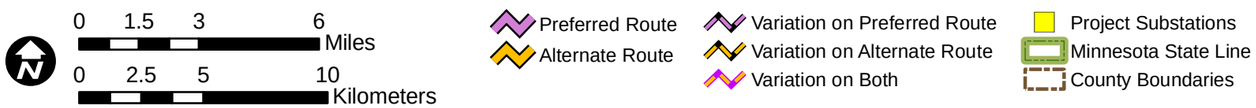


Lyon County to Minnesota Valley (2B-01)			
	Turn by Turn	Distance (miles)	Comments
1	Follow the alternate route until MN Hwy 23		
2	Turn northeast and follows MN Hwy 23	10.5	Runs on east side of MN Hwy 23 until just south of Sham Lake. Crosses MN Hwy 23 to west side for 0.4 miles and returns back to east side of TH 23
3	Connect to Preferred and Alternate Route as they enter the MN River Valley Substation		

Lyon County to Minnesota Valley (2B-02)			
	Turn by Turn	Distance (miles)	Comments
1	Follow the preferred route until the intersection of the preferred and alternate routes at MN Hwy 23		
2	Connect to alternate route at MN Hwy 23 and follows the alternate route to the MN River Valley Substation		Runs on east side of MN Hwy 23 until just south of Sham Lake. Crosses MN Hwy 23 to west side for 0.4 miles and returns back to east side of TH 23







7.2.1.1 Alignment Alternatives

Segment 2 has two alignment alternatives that were suggested during the public comment period.

1) Route: Preferred (Inset #1)

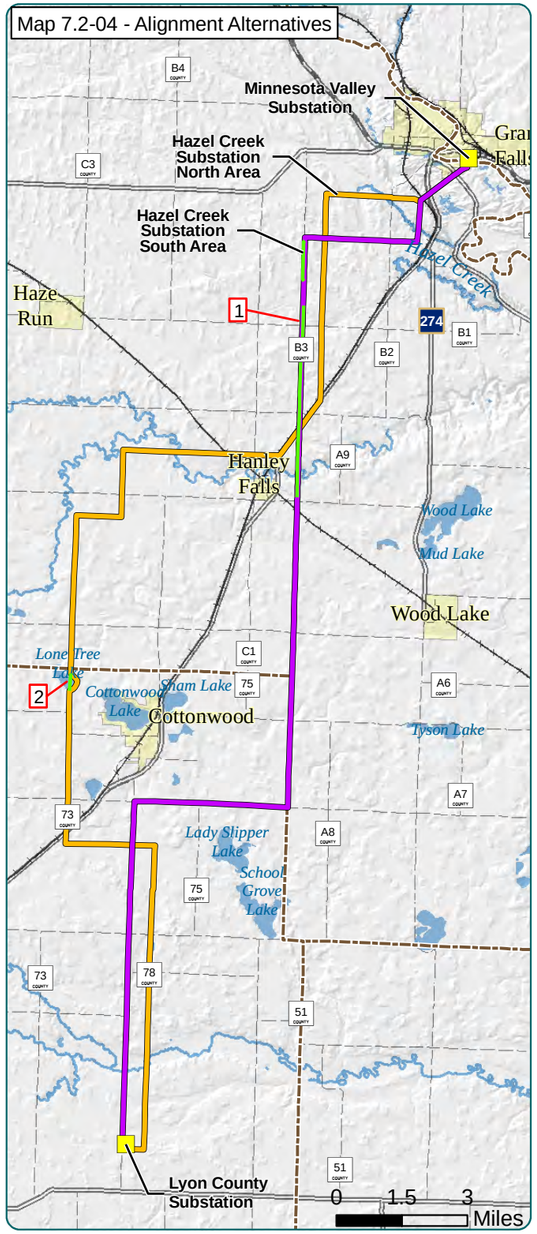
   Description: Run the line on the opposite side of the road that the farmsteads are on along 520th St. The line would switch to the west side of 520th St. just north of 200th Ave. and continue on the west side for 3.3 miles, then switches back to the east side and follows the proposed alignment for half a mile. Then switches back to west side of road for one mile.

   Purpose: To keep the line on the opposite side of the road of the farmsteads.

2) Route: Alternate (Inset #2)

   Description: Continue north across Gabriel Anderson WMA instead of jogging to the east following 290th Ave.

   Purpose: To avoid private property.



Preferred Route
Alternate Route
Alignment Alternatives
Variation on Preferred Route
Variation on Alternate Route
Variation on Both
Project Substations
Minnesota State Line
County Boundaries

7.2.2 Environmental Setting—Lyon County Substation to Minnesota Valley Substation

This segment of the route extends from the Lyon County Substation to the existing Minnesota Valley Substation in Granite Falls. This section is located in Lyon and Yellow Medicine counties and includes one Upper Minnesota River crossing at Granite Falls, and a proposed Hazel Creek Substation area southwest of Granite Falls. According to the ECS, the route lies within the Minnesota River Prairie Subsection of the Prairie Parkland Province. The Minnesota River Prairie landscape is dominated by large till plains on either side of the Minnesota River and is characterized by gently rolling terrain except where it is split by the broad Minnesota River Valley. Elevations along this segment of the route range from 880 feet to 1,111 feet AMSL. The highest elevation occurs in the south and the lowest in the north.

Pre-settlement vegetation consisted primarily of tallgrass prairie with small islands of wet prairie. Forested areas were located in the Minnesota River floodplains. The primary present-day use of the land along this section is agricultural; few remnants of native vegetation are present (DNR 2008). Many of the wetlands have been drained and most of the smaller watercourses have been channelized to increase the acreage of land available for agricultural production. The Minnesota River Prairie Subsection has been called the heart of the Minnesota cornbelt (Wright 1972).

This segment of the route crosses corn and soybean cropland. Communities near the Project are generally small farm-based towns including Cottonwood, Wood Lake, and Hanley Falls. A few WMAs are present near the route, along with several wetlands. Relatively few forested areas are present, especially in the western and central sections of the Project area. Most wooded areas are adjacent to farmsteads or are located in the Minnesota River Valley.

7.2.3 Socioeconomic Setting—Lyon County Substation to Minnesota Valley Substation

This segment is located in a sparsely-populated, rural portion of Minnesota and crosses parts of Lyon and Yellow Medicine Counties. The primary industries for Lyon and Yellow Medicine Counties include educational, health and social services, agriculture, manufacturing, retail trade, construction, and arts, entertainment and accommodation. Table 7.2.3-1 shows the differences in population, minority population percentage, and median age across the counties spanned by this segment of the Project.

Table 7.2.3-1. Socioeconomic stats in Lyon and Yellow Medicine Counties

County	2008 Population	Total Minority Population	Minority Population Percentage	Median Age
Lyon	24,844	2,385	9.6	36
Yellow Medicine	9,958	637	6.4	43

Source: U.S. Census Bureau

7.2.4 Analysis of Segment Alternatives for Lyon County Substation to Minnesota Valley Substation

The analysis of segment alternatives includes the following:

- Human settlement
- Public health and safety
- Air quality
- Interference
- Property values
- Archaeological and historic resources
- Land use compatibility
- Land-based economics
- Transportation and public services
- Recreation
- Water resources
- Flora and fauna
- Rare and unique natural resources/critical habitat

See Section 6 for a general overview of the potential impacts to the resources listed above and a summary of the mitigation measures that would be utilized to minimize impacts to these resources. General overview maps are present throughout Section 7; however, more detailed maps are provided in Appendix A.

7.2.4.1 Human Settlement—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

Impacts to human settlement have been assessed by looking at a variety of factors including noise, aesthetics, proximity to structures, displacement, tree groves and windbreaks, existing utilities, and domestic water well installation and maintenance. Section 6.1 provides detailed discussion of each of these potential impact areas.

The extent to which particular route alternatives may impact these features is primarily linked to the proximity of the proposed route alternatives to human settlement areas. Aesthetic impacts to humans, for example, are expected to be greatest where the line is located nearest to human settlement features such as homes, businesses, schools, daycares, hospitals, churches, and cemeteries. If the transmission line is in close proximity to human settlement areas, other features of these areas could also be impacted. For example, tree groves and wind breaks are frequently established to protect homes and other structures. Therefore, the potential for impacts to tree groves and wind breaks may be closely correlated with the proximity of the line to homes.

Displacement impacts are also dependent upon the proximity of the transmission line to homes. For electrical safety code and maintenance reasons, utilities would not generally allow residences or other buildings within the actual ROW easement for an HVTL.

Because of the close correlation between the extent to which particular route alternatives may impact human settlement and the proximity of the proposed route alternatives to homes and other human settlement features like schools, churches, cemeteries, nursing homes and hospitals, this impact summary focuses on the proximity of the proposed route alternatives to these features. For each alternative, pinch points, or narrow areas where human settlement impacts would be difficult to avoid, have also been identified.

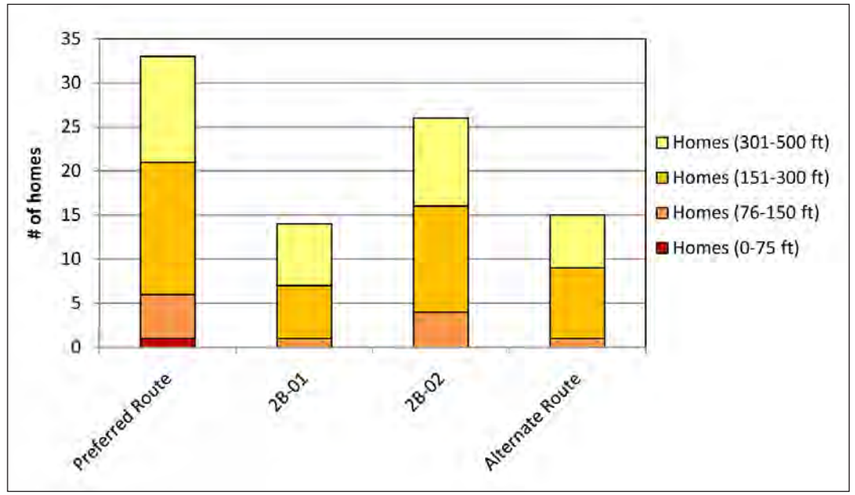
Proximity to homes, schools, churches, cemeteries, nursing homes and hospitals for each of the proposed alternatives for the route segment from the Lyon County Substation to Minnesota Valley Substation (shown in Map 7.2-05 and Appendix A) is summarized in Figures 7.2.4.1-1 to 7.2.4.1-2.

Figure 7.2.4.1-1 compares the number of homes within 75 feet, 150 feet, 300 feet, and 500 feet of the centerline of each route alternative in this segment.

Just north of Hanley Falls, the Preferred Route is proposed to follow the east side of the road, replacing the existing 115 kV line shown in the photo. With this placement, the proposed centerline would run within 75 feet of a house.

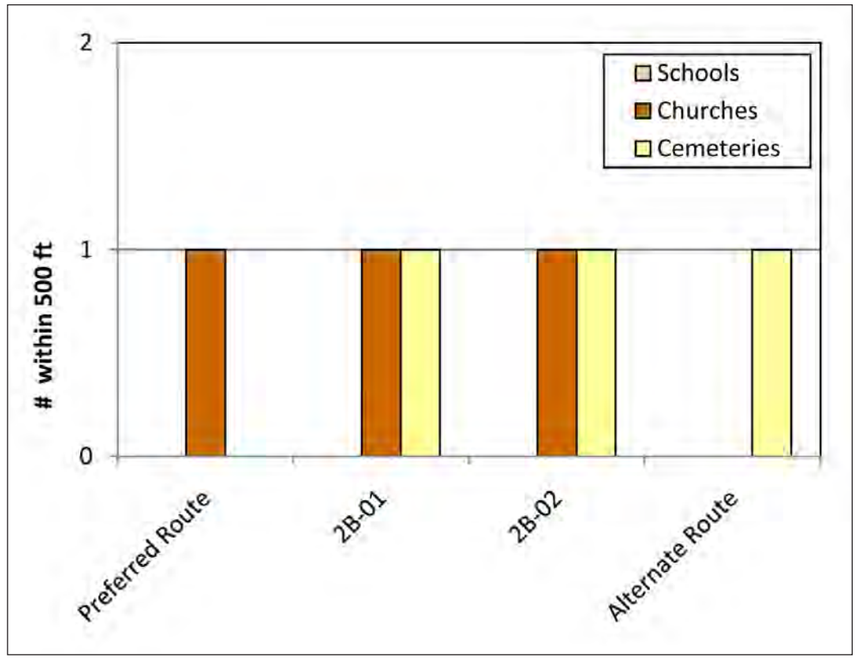
Source: Barr photograph, 2009

Figure 7.2.4.1-1. Proximity of homes along each proposed route alternative



Source: Field survey observations, comments from Project public meetings and aerial photograph interpretation by HDR.12/29/08, updated by Barr 7/21/09

Figure 7.2.4.1-2. Proximity of other human settlement features along each proposed route alternative



Source: Schools: Minnesota Department of Education 09/18/2008 (Published by LMIC)

Churches and Cemeteries: Field survey observations, comments from Project public meetings and aerial photograph interpretation by HDR. 12/29/08, updated by Barr 7/21/09

The route segments in the western portion of the proposed Project area are generally less densely populated than the route segments in the eastern portion of the Project area. The number of homes within 500 feet of the centerline for each route alternative in this route segment varies from 14 to 33. Proposed route alternative 2B-01 has the fewest homes within 500 feet of the centerline, while the Preferred Route has the most houses within 500 feet of the route centerline. Additionally, one house on the Preferred Route is located within the 150-foot ROW of the proposed centerline, which raises displacement concerns.

Figure 7.2.4.1-2 compares the number of schools, churches, and cemeteries for each of the proposed alternatives for the route segment. No nursing homes or hospitals are located within 500 feet of the centerline of any proposed route alternative along this segment.

No schools are located within 500 feet of the centerline of any of the routes. Few churches and cemeteries would be encountered within 500 feet of the centerline. At most, one church and one cemetery are located within 500 feet of the proposed route centerlines.

Mitigation

General mitigation measures to minimize impacts to human settlement are discussed in Section 6.1. Within this route segment, impacts to human settlement can be managed through choosing a route that minimizes the proximity of the line to homes as well as minimizing the total number of homes located within the Project route width. In this route segment route alternative 2B-01 has the fewest homes within the 1,000-foot route width. However this route does not meet the criteria outlined in the CON for this Project.

In the one narrow area where a home is located within the ROW of the Preferred Route, it may be possible to simply move the line to the opposite side of the road. Other options may include routing the line around or behind the house or compensation for structures that must be removed.

7.2.4.2 Public Health and Safety—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

Public health and safety impacts associated with this Project are not anticipated. Any perceived risk of health impacts from electric and magnetic fields is likely to be correlated with the proximity of human dwellings to the proposed line. Information on the proximity of homes to each proposed route alternative within this route segment is provided in Section 7.2.4.1.

7.2.4.3 Air Quality—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

Detailed discussion of potential air quality impacts are provided in Section 6.3. Potential air quality impacts are primarily associated with the production of small amounts of ozone and oxides of nitrogen in the air surrounding transmission line conductors and the potential release of small amounts of SF_6 during operation and maintenance of certain electrical substation equipment. These features do not vary notably between the proposed route alternatives in this segment. Thus, the nature of impacts to air quality are not expected to vary notably from one route alternative to the next. The operation of the proposed transmission line would not create any potential for the concentration of these pollutants to exceed existing air quality standards.

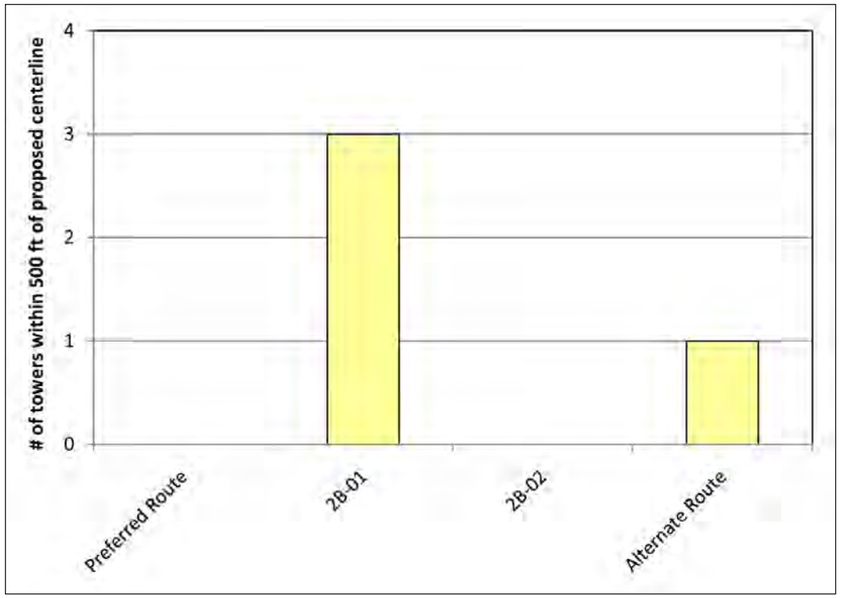
7.2.4.4 Interference—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

The nature of impacts related to interference, are not likely to vary notably between route segments or route alternatives. Impacts are expected to be greatest very close to the line for AM radio reception and very minor for all other types of reception. The placement of structures may also result in interference. Structure placement would be coordinated so as not interfere with microwave communication corridors.

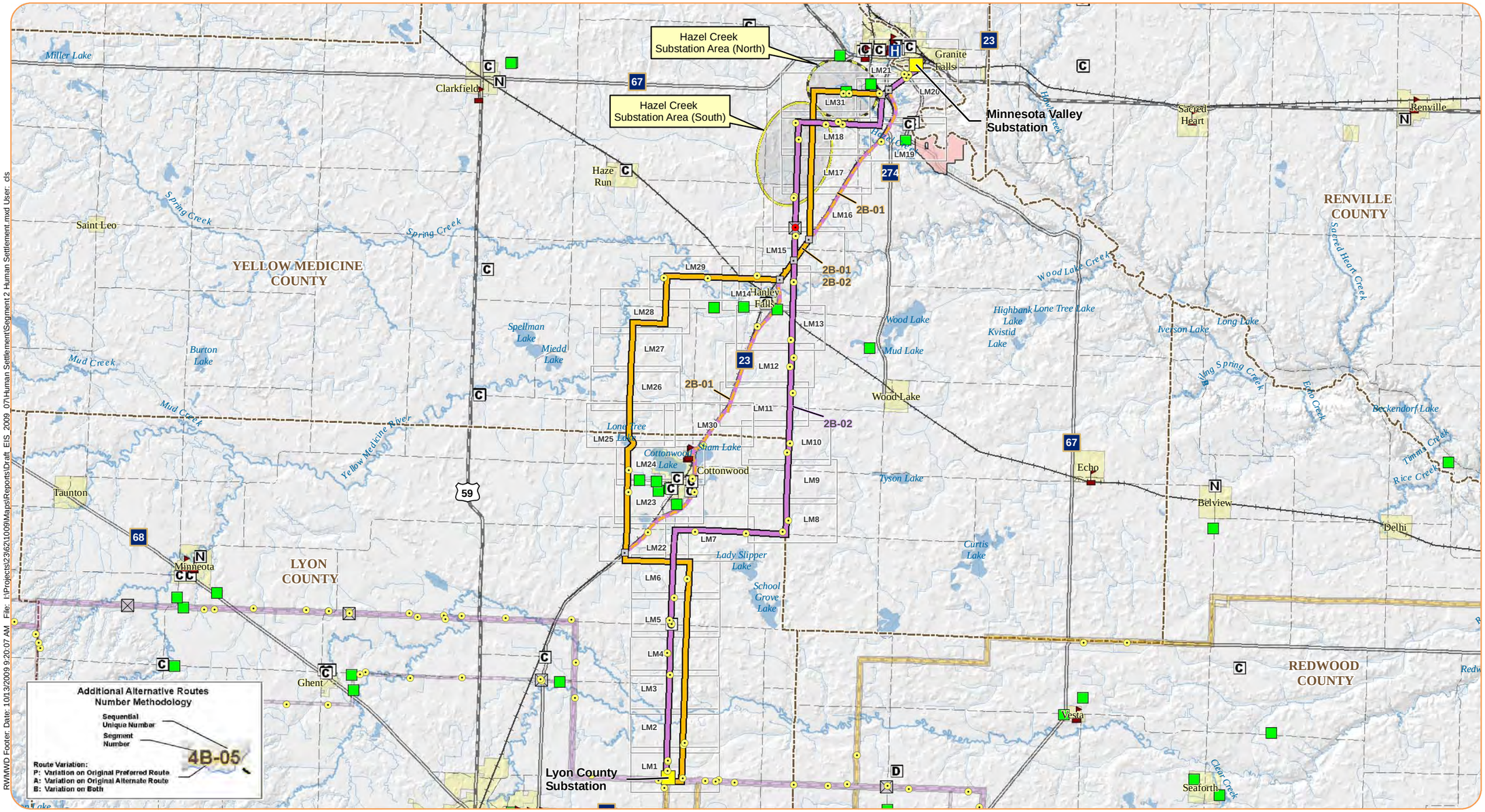
Figure 7.2.4.4-1 shows the number of communication towers within 500 feet of the proposed centerline for each route alternative in the Lyon County Substation to Minnesota Valley Substation segment.

Section 6.4 provides an overview of potential impacts from interference and outlines general steps that would be taken to mitigate impacts to interference.

Figure 7.2.4.4-1. Number of towers within 500 feet of proposed centerline for each proposed route alternative



Source: Federal Communications Commission. Data added by HDR based on public comments 12/29/08, updated by Barr September 2009



SL1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Original Alignments
- Preferred Route
- Alternate Route

Additional Alternative Routes
- Variation on Preferred Route
- Variation on Alternate Route
- Variation on Both

Project Substations

Proposed Substation Areas
- Preferred
- Alternate

County Boundaries
- Residences within 75 Feet of Alternatives
- Residences within 500 Feet of Alternatives
- Narrrows

- Hospitals
- Nursing Homes
- Observed Day Cares
- Schools
- Churches
- Cemeteries
- Tribal Land

Map 7.2-05
Human Settlement Map
Segment 2
Lyon County Substation to MN Valley Substation

Source: Refer to Appendix B for information on data sources

7.2.4.5 Property Values—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

Impacts to property values are a concern of many residents near existing or proposed transmission lines. Research assessing the relationship between property value and proximity to transmission lines suggests that the presence of a transmission line is one of several factors that interact to affect the value of a particular property. Since property value is influenced by many other factors that may vary widely from one property to the next and that may vary over time and across different regions, the results of current research is limited. Current studies have been unable to provide detailed quantitative assessments of how transmission lines may impact property values at the scale necessary to provide insight in comparing property value impacts across proposed route alternative within this section or across this Project.

7.2.4.6 Historical and Archaeological Resources—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

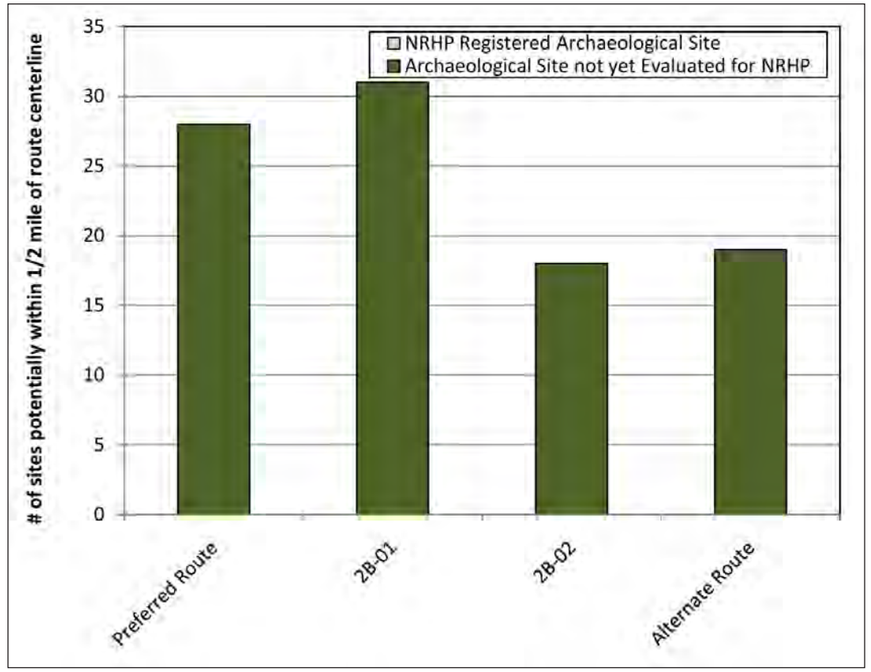
Within the Lyon County to Minnesota Valley Substation segment, available SHPO records have been used to identify known archaeological resources, historical structures, and historic landscapes within one-half mile on either side of the proposed centerline for each route alternative. In order to protect information about the specific location of certain resources that may be vulnerable to unauthorized removal of artifacts or other unauthorized disturbances, SHPO records only provide a township, range and section for certain resources. If any part of one of these identified areas is within one-half mile of a proposed route centerline, it has been assumed that the resource is potentially within the relevant area. Due to the uncertainty about the exact location of certain SHPO identified resources, total impacts have been characterized in terms of the total number of sites potentially within one-half mile of the route centerline.

Within the SHPO records, particular consideration is given to historical and archaeological resources listed on the National Park Service's NRHP as these locations have been identified as critical national resources and are protected by the *National Historic Preservation Act of 1966*.

This area is a culturally and historically rich area of Minnesota, particularly on the margins of the Minnesota River. The identified archaeological sites illustrate the broad cross section of pre-contact and historic period occupations and activities. Pre-contact earthworks and habitations are common along the margins of the Minnesota River Valley. Historic-period town sites, transportation features, and even Dakota War-era sites are also present.

At river crossings within this route segment, additional permitting though the U.S. Army Corps of Engineers (USACE) (Clean Water Act, Rivers and Harbors Act, Section 404, and Section 10 permits) would be initiated after the Route Permit is issued. For areas under their jurisdiction and within their Area of Potential Effect (APE), the USACE has already initiated activities in preparation for these permit applications. Cultural resources may be identified in this process and any adverse effects to NRHP-eligible or listed properties would be addressed through a federal consultation process.

Figure 7.2.4.6-1. Number of archaeological sites along the proposed route alternatives



Source: State Historic Preservation Office (SHPO)

Potential historical and archaeological resource impacts for each of the proposed alternatives for the route segment from the Lyon County Substation to Minnesota Valley Substation (shown in Map 7.2-06 and Appendix A) are summarized in Figures 7.2.4.6-1 to 7.2.4.6-2.

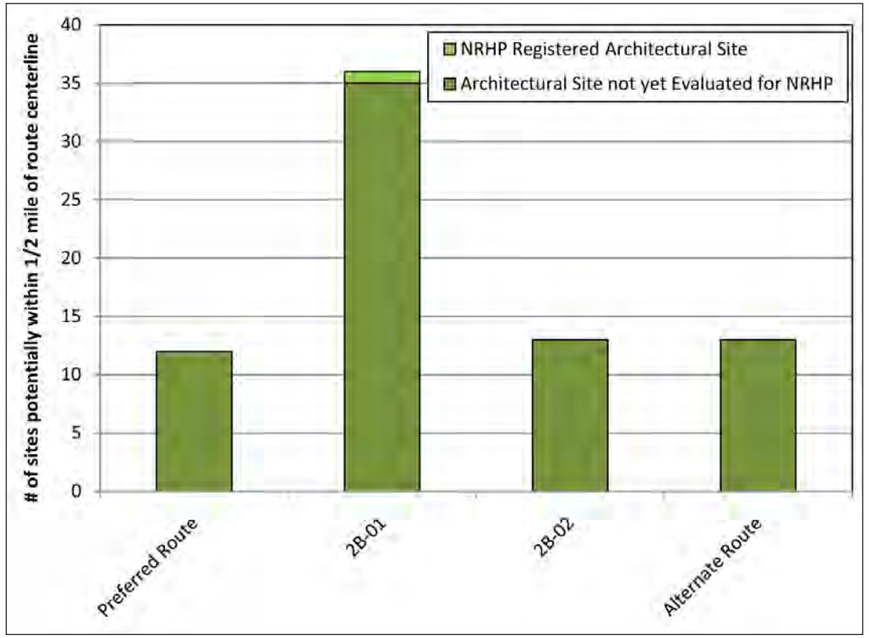
Figure 7.2.4.6-1 compares the number of archaeological sites within one-half mile on either side of the proposed centerline for each route alternative in this segment.

No NRHP registered archaeological sites are located within one-half mile of any route alternative in this segment. None of the archaeological sites potentially located within the one-half mile of the route have been evaluated for eligibility for listing on the NRHP and thus, these sites have not been evaluated for significance. The proposed route alternative 2B-02 has the fewest archaeological sites within one-half mile of the proposed centerline, with a total of 18 sites. Proposed route alternative 2B-01 has the greatest number of potentially impacted archaeological resource areas, with 31 sites located within one-half mile of the proposed centerline.

Figure 7.2.4.6-2 compares the number of historical architectural sites within one-half mile on either side of the proposed centerline for each route alternative in this segment.

One NRHP registered historical architectural site is located within one-half mile of the proposed route alternatives in this segment. The Martin Norseth House (site LY-CWC-018), an NRHP registered site and a landmark in the city of Cottonwood, is located within one-half mile of the centerline of proposed route alternative 2B-01. This proposed route alternative also has the highest number of total sites within one-half mile of the centerline, at 36 Sites. Aside from the Martin Norseth House, all other architectural sites potentially located within the one-half mile of the route centerline have not been evaluated for eligibility for listing on the NRHP and thus, have not been evaluated for significance. The Preferred Route has the fewest potentially impacted archaeological resource areas, with 12 sites located within one-half mile of the proposed centerline.

Figure 7.2.4.6-2. Number of historical architectural sites along the proposed route alternatives

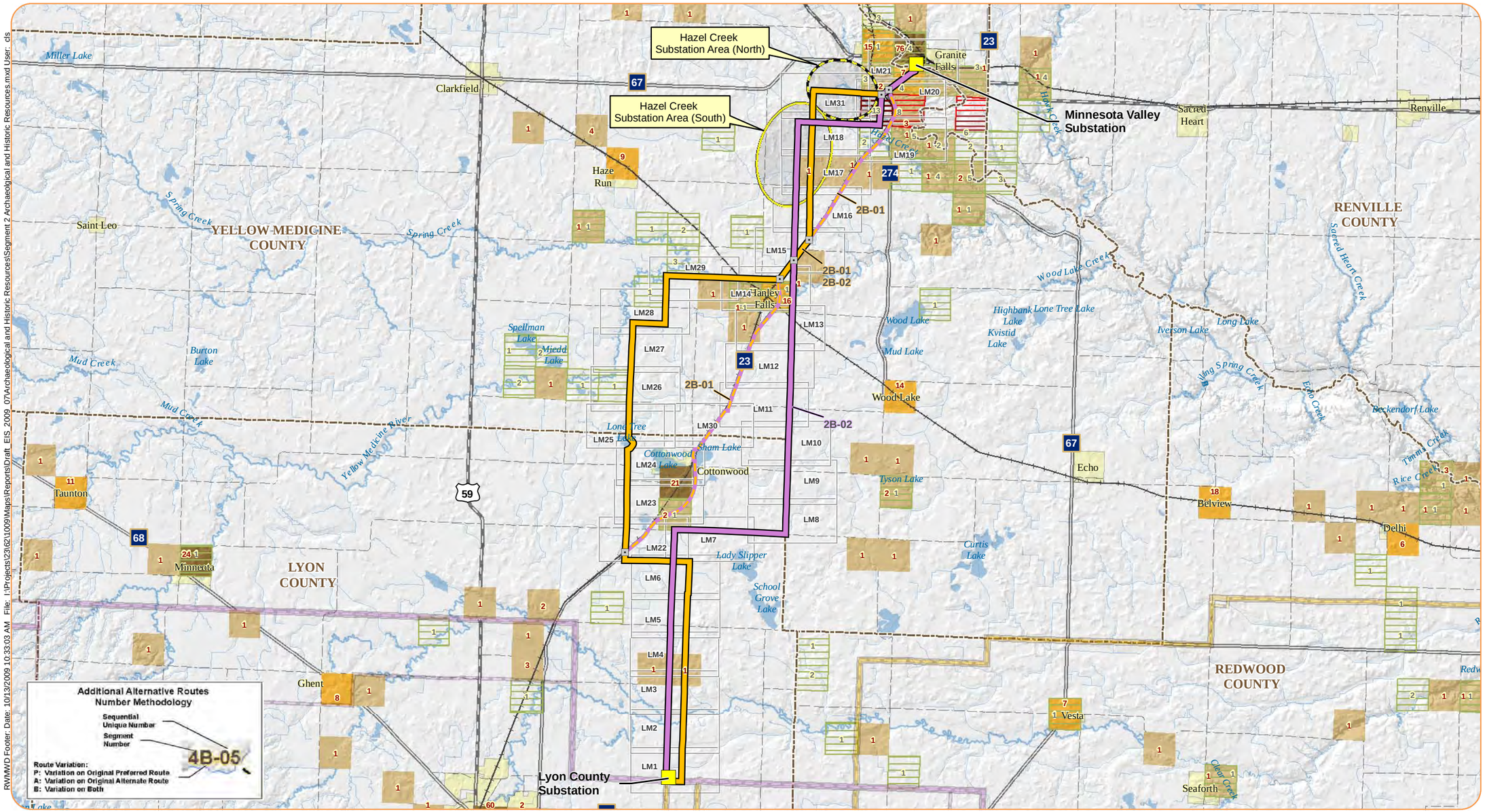


Source: State Historic Preservation Office (SHPO)

Mitigation

Project planning and engineering efforts would strive to avoid any sites within the proposed route width for each alternative. For any resources within the route width, once the Project ROW is accessible, the Applicants, as indicated in the RPA, would sponsor an archaeological investigation to locate these sites and provide a report to the OES and SHPO on the existing conditions, site management recommendations, and efforts, if known, to avoid, minimize, or treat impacts related to construction and maintenance of the Project. Mitigation would entail compensating for the losses of properties that are eligible for listing on the NRHP. The Applicants have also indicated that they may invite other parties (particularly Native American tribes and other state and federal permitting or land management agencies) to assist in the development of the avoidance, minimization, or treatment measures. Section 6.6 provides an overview of potential impacts to archaeological and historical resources and outlines general steps that would be taken to mitigate impacts to these resources. Project planning and engineering efforts would strive to avoid any sites within the proposed route width for each alternative. Route alternative 2B-01 has the fewest archaeological sites potentially within one-half mile of the route centerline.

The Preferred Route has the fewest historical architectural sites potentially within one-half mile of the route centerline. At this time it is not clear which route would have the fewest actual impacts on archaeological or historical resources or what the magnitude of the impacts since a complete assessment of all sites for NRHP status has not been completed. Specific mitigation plans cannot be made until a complete assessment of these sites has been made. For any resources within the route width, once the Project ROW is accessible, the Applicants, as indicated in the RPA, would sponsor an archaeological investigation to locate these sites and provide a report to the OES and SHPO on the existing conditions, site management recommendations, and efforts, if known, to avoid, minimize, or treat impacts related to construction and maintenance of the Project. Planning specific mitigation measures Mitigation would entail compensating for the losses of properties that are eligible for listing on the NRHP. The Applicants have also indicated that they may invite other parties (particularly Native American tribes and other state and federal permitting or land management agencies) to assist in the development of the avoidance, minimization, or treatment measures. Section 6.6 provides an overview of potential impacts to archaeological and historical resources and outlines general steps that would be taken to mitigate impacts to these resources. Specific mitigation plans cannot be made until the steps described above have been completed.



SL1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Original Alignments
- Preferred Route
- Alternate Route

Additional Alternative Routes
- Variation on Preferred Route
- Variation on Alternate Route
- Variation on Both

Project Substations

Proposed Substation Areas
- Preferred
- Alternate

County Boundaries

Archaeological Sites
- 1 - 5
- 6 - 10
- 11 - 15

Historical Sites
- 1 - 5
- 6 - 20
- >20

Map 7.2-06
Archaeological & Historic Resources Map
Segment 2
Lyon County Substation to MN Valley Substation

Source: Refer to Appendix B for information on data sources

7.2.4.7 Land-Use Compatibility—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

Impacts to current land use can be caused by activities associated with transmission line development. These impacts may range from temporary construction impacts to permanent impacts introduced where structure, substation, and line placement disturb current land uses or future land use plans. Current land use and zoning and available plans for future development have been evaluated in order to assess the compatibility of the proposed route alternatives with these land uses.

Current land cover types along the 150 foot right of way (ROW) for each route alternative in this route segment have been reviewed and are summarized in Figure 7.2.4.7-1.

All route alternatives in this segment are located on or adjacent to agricultural land in crop, pasture or grassland use. Proposed route alternative 2B-01 parallels TH 23 through Hanley Falls and Cottonwood in close proximity to commercial and higher density residential areas. Proposed route alternative 2B-02 runs adjacent to two wildlife management areas.

Transmission lines may affect agricultural land use in this segment by the amount of land removed from productive use by the footprint of each tower. Tower placement may affect the operation of irrigation equipment if present as well as crop spraying operations. Stray voltage and cattle may be a compatibility concern.

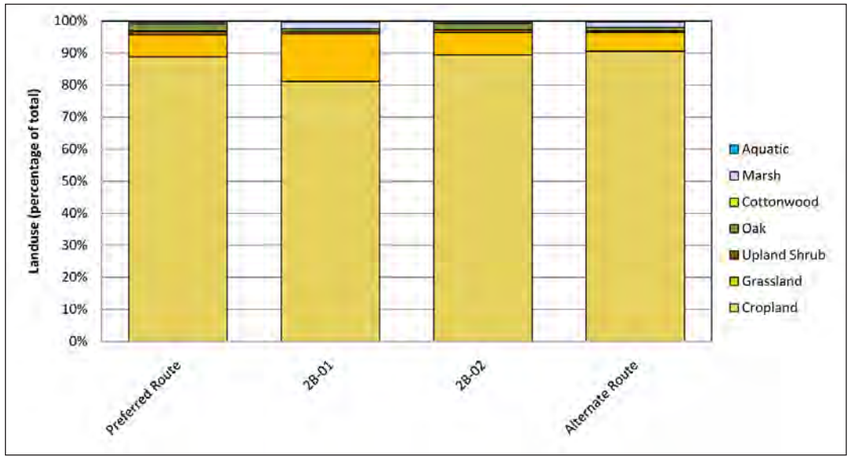
Single pole towers would be the primary tower type used for the Project and they use relatively little land compared to other tower types.

Transmission towers and lines also change the visual quality of views within the agricultural landscape, however, due to the relatively low population densities and small numbers of travelers along most route alternatives, this potential impact would not affect many people. Impacts during tower construction may include the potential for destruction of crops within the grading/construction zoning and the compacting of soils by construction equipment and activities.

The major impact on residential areas, such as the Hanley Falls and Cottonwood areas, may include changes to viewsheds for some properties and potential minor noise impacts during construction for properties in close proximity to the transmission line. Individual property values may be negatively affected depending on proximity to, and views of, the proposed transmission line.

Impact on property values varies depending on a range of other factors including current market conditions, proximity, and access to open space, commercial services, and community services such as schools. Land used for pole structures may change or reduce the current and future functionality of the property depending on its size as well as its current and future use. The height of vegetation allowed within the transmission line easement is generally limited to 25 feet which may conflict with the property owner's desire for landscaping. Maintenance activities within the easement may pose temporary periodic conflicts with use and enjoyment of the property

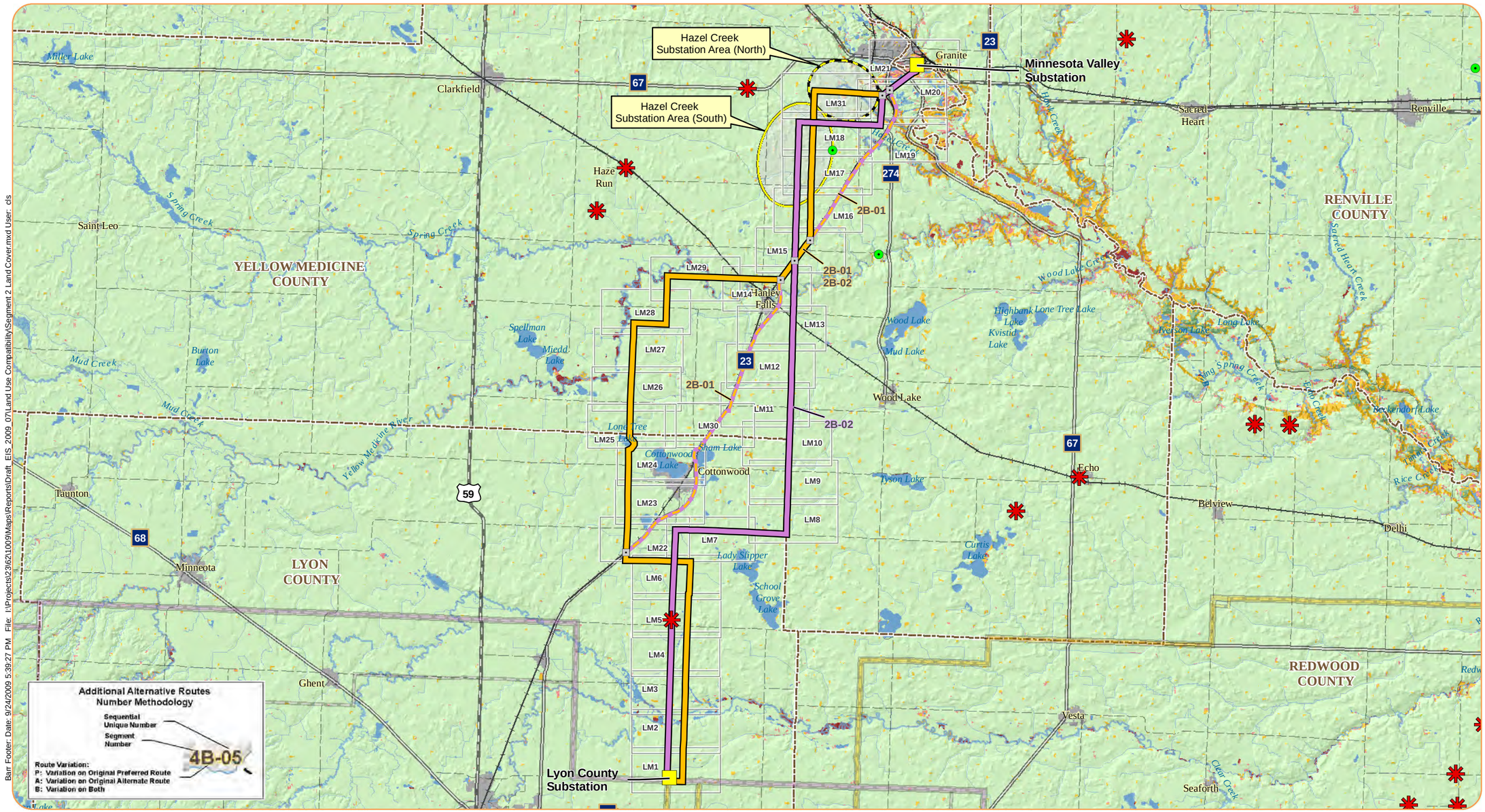
Figure 7.2.4.7-1. Land cover types along each route alternative



Source: DNR, Department of Forestry, 06/06/2002

Mitigation

General measures to minimize impacts to Land Use Compatibility are discussed in Section 6.7. Within this route segment impacts to land use compatibility would be addressed primarily through BMPs to reduce impacts to agricultural areas during construction, operation, and maintenance.



SL1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Original Alignments
- Preferred Route
- Alternate Route

Additional Alternative Routes
- Variation on Preferred Route
- Variation on Alternate Route
- Variation on Both

Project Substations

Proposed Substation Areas
- Preferred
- Alternate

County Boundaries

Organic Farms

Center Pivot Irrigation

Land Cover
- Upland Conifer Forest
- Upland Deciduous Forest
- Lowland Deciduous Forest
- Lowland Conifer Forest
- Upland Conifer-Deciduous mix
- Aquatic Environments
- Crop/Grass
- Non-Vegetated
- Shrubland

Map 7.2-07
Land Use Compatibility Map
Segment 2
Lyon County Substation to MN Valley Substation

Source: Refer to Appendix B for information on data sources

7.2.4.8 Land Based Economies—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

The primary land based economies along this route segment are agriculture based. Agricultural economies in the area may include livestock and dairy farms as well as bee-keeping. No mining or forestry operations are expected to be impacted by the Project.

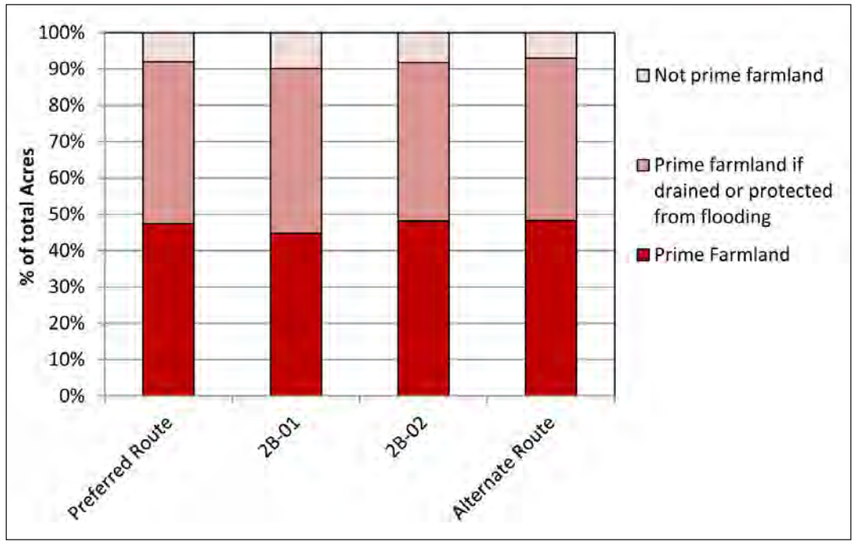
The highest yield agricultural activities include cultivation of corn, soybeans and oats as well as raising cattle. Much of the agricultural land is designated as "prime farmland," indicating land that this land is most desirable for agricultural production. The Project would result in permanent and temporary impacts to farmland. Permanent impacts would occur as a result of structure placement along the route centerline. It is estimated that the permanent impacts in agricultural fields would be 1,000-square-feet-per-pole. During construction, temporary impacts, such as soil compaction and crop damage within the ROW, are possible. Temporary impacts in agricultural fields are estimated to be one acre per pole for construction activities.

Figure 7.2.4.8-1 shows the amount of prime farmland within the ROW of each of the proposed route alternative in this segment.

The percentage of prime farmland within the ROW does not change notably from one proposed route alternative to the next along this route segment.

The locations of organic farms are shown in Map 7.2-07 and Appendix A. While certain proposed route alternatives are in closer proximity to organic farms than other proposed route alternatives, the implementation of mitigative measures described below would prevent impacts to organic farm status.

Figure 7.2.4.8-1. Farmland and non-farmland within ROW of proposed route alternatives



Source: U.S. Department of Agriculture, Natural Resources Conservation Service

Mitigation

While the presence of an HVTL near an organic agricultural area does not directly impact organic status, special procedures must be followed during the construction and maintenance activities associated with HVTLs to avoid impacts to organic farms. The applicant has worked with the MDA to develop an AIMP for this Project. The overall objective of this AIMP is to identify measures the Utilities would take to avoid, mitigate, repair, and/or provide compensation for impacts that may result from transmission line construction projects on agricultural land in Minnesota. The AIMP includes an appendix that outlines mitigation measures and procedures specific to construction and maintenance procedures near Organic Agricultural Land as described in the National Organic Program Rules, 7 CFR Parts 205.100, 205.202, and 205.101. By following the procedures outlined in the AIMP, impacts to Agricultural land based economies due to construction and maintenance of the line can be eliminated or mitigated.

7.2.4.9 Transportation and Public Services—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

Roadways, Railroads and Emergency Services

The nature of impacts to roadways, railroads and emergency services are not expected to vary notably from one route segment to the next or from one route alternative to the next. Impacts are expected to be limited to temporary impacts along roads and railroad corridors due to construction and maintenance of the line. Section 6.9 provides an overview of potential impacts to transportation and emergency services.

Airports and Landing Strips

Potential impacts to airports and landing strips are expected to vary by route depending on the proximity of the line to the airport and the particular characteristics of the airport in question. Map 7.2-08 shows the location of airports along this section of the route.

Consideration was given to a number of small airports that appear to be outside the area of concern for the proposed route alternatives.

One air landing strip, Granite Falls Municipal Airport (Lenzen-Roe Memorial Field), is located within the one-half mile of 2B-01. This is a public use air facility located 4 miles south of Granite Falls in Yellow Medicine County. The facility has one north-south paved runway (Runway 15/33) measuring 4,350 x 75 feet. The approach slopes for either end of Runway 15/33 are 34:1. The Preferred Route is located 1.2 miles north of the primary surface on the northern-most edge of the runway. Under the current approach slopes, the maximum pole structure height would be 149 feet. Proposed route alternative to 2B-01 is located notably closer to the airport. A portion of this route would be located in an area designated "Zone A" under Minnesota Rules. The construction of new above ground structures is prohibited in Zone A.

Future development plans for the Granite Falls Municipal Airport support the extension of the runway to 5,000 feet on the southern end of the runway, thereby increasing the approach slope for both ends of the runway to 50:1. Additionally, airport improvements call for the construction of a cross-wind runway for smaller planes with approach slopes on either end of 20:1. Applicants agreed to investigate the extent of the expansion in the county long-range plan.

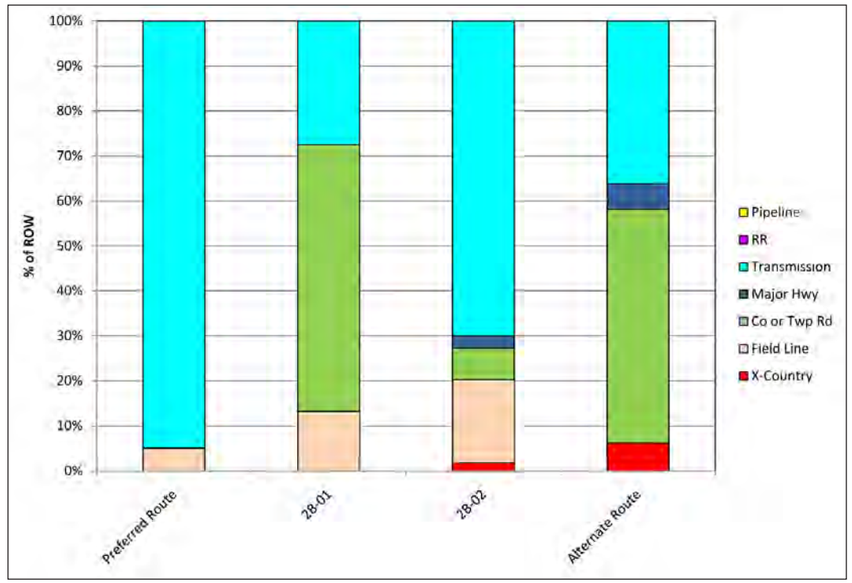
Right of Way Sharing

Sharing ROW with existing infrastructure can minimize the ROW needed for the transmission line, minimizing impacts to adjacent property. In Map 7.2-08, areas where the ROW for the proposed route alternatives would share existing transportation, transmission line or pipeline infrastructure have been identified.

Figure 7.2.4.9-1 shows the percentage of total line distance where ROW is shared with existing infrastructure under each route alternative in this segment. Areas where proposed routes follow field lines (survey lines, natural division lines and agricultural field boundaries), or cut cross-country through fields, pastures, and forests have been highlighted. In these areas there is no opportunity to minimize impacts to property by sharing existing ROW area.

The Preferred Route exclusively follows existing transmission line in this area with no portion of the line following field lines or cutting cross country. The Alternate Route has the largest portion of cross country route.

Figure 7.2.4.9-1. Shared ROW types along each route alternative

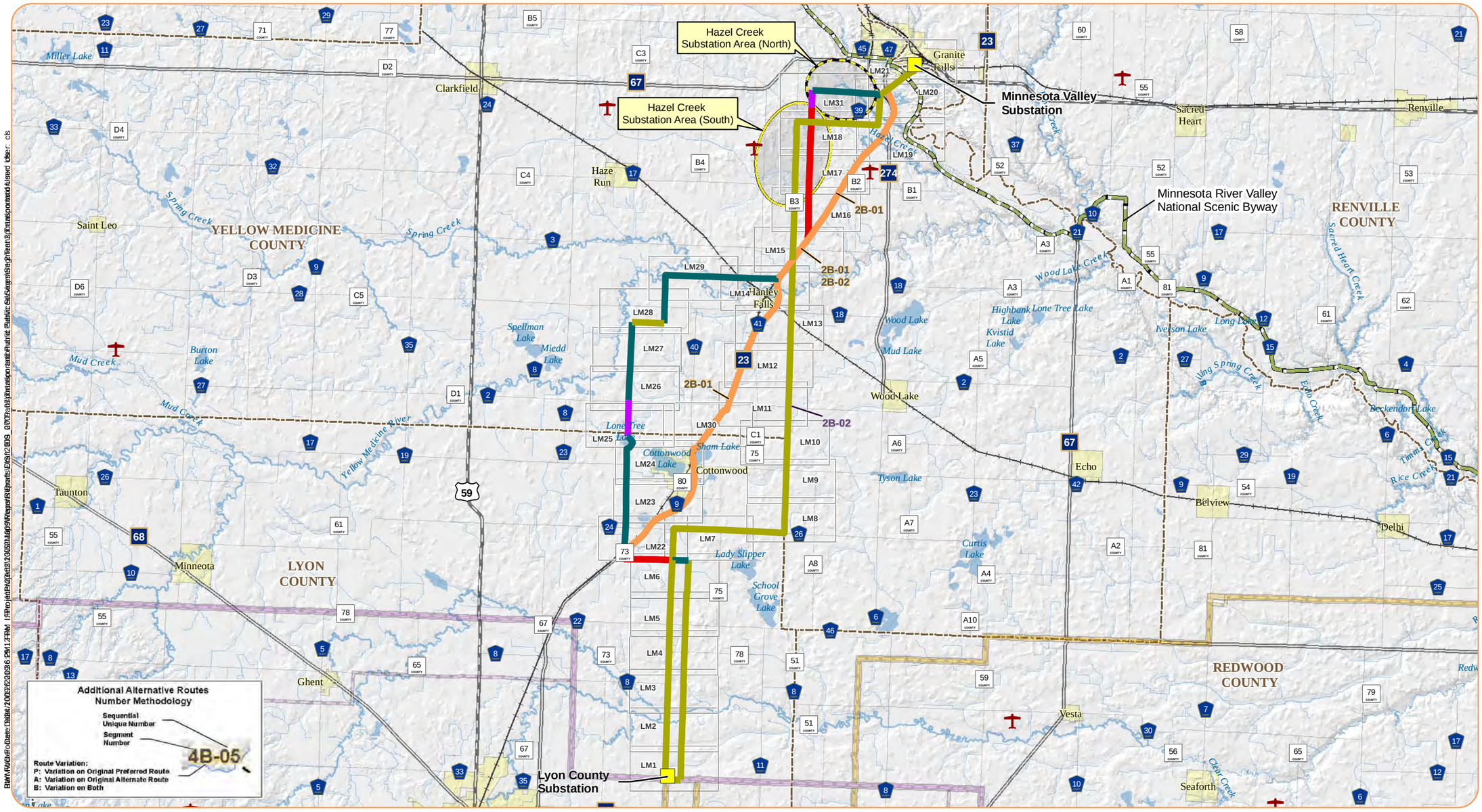


Source: Field survey observations, comments from Project public meetings and aerial photograph interpretation by HDR.12/29/08, updated by Barr 9/01/09

Mitigation

General mitigation measures to minimize impacts to Transportation and Public Services are discussed in Section 6.9. Within this route impacts to transportation are expected to be limited to airports. The only airport within this route segment where potential impacts exist is the Granite Falls Municipal Airport. The Preferred Route and route alternative 2B-01 are located near to this airport. Impacts to this airport from the Preferred Route could be avoided by using pole structures in this area with a height limited to less than 149 feet. Impacts could not be avoided under route alternative 2B-01 and the construction of new above ground structures is prohibited in the zone where this line is located.

It should also be noted that by choosing routes that maximize the amount of shared ROW with existing roads, transmission lines, pipeline or railroad can mitigate impacts to surrounding land. Within this segment the Preferred Route has the greatest amount of shared ROW.



SL1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Project Substations
Proposed Substation Areas
Preferred
Alternate
County Boundaries
Airport
Scenic Byway

ROW Sharing
Pipeline
County or Township Road
Major Highway
Municipal Street
Railroad
Transmission

Non-ROW Sharing
Field Line
Cross-Country

Map 7.2-08
Transportation Map
Segment 2
Lyon County Substation to MN Valley Substation

Source: Refer to Appendix B for information on data sources

7.2.4.10 Recreation—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

The proposed Project has the potential to impact recreational resources in areas where pole placement may result in temporary construction related disturbances or even permanent impacts. In some areas, viewshed impacts from the transmission line may affect recreators. In order to capture the range of potential impacts to recreation in the region, recreational features within various distances of the line have been evaluated.

Within this segment, no impacts to state and federal parks are expected. State and federal parks are beyond the range where any direct impacts may occur and all of these features are outside the range where viewshed effects are possible.

Blue Devil Valley SNA is located southwest of the City of Granite Falls along 540th Street and provides hiking opportunities within unique bedrock outcrop areas and provides habitat to skink lizards that hikers can see basking on the exposed bedrock. This SNA is located within one mile of the Preferred Route and associated route alternative.

In contrast with the majority of this route segment, the landscape around the Minnesota River is characterized by densely wooded areas, creating a diverse ecological setting, with high recreational and scenic value. At this location the river is designated recreational by the State of Minnesota. At the Granite Falls Minnesota River crossing, the proposed transmission lines would follow the path of an existing transmission line to connect with the Minnesota Valley Substation located adjacent to the Minnesota River near Granite Falls.

The Minnesota River Valley National Scenic Byway runs from Browns Valley to Belle Plaine and is primarily used as a visual source of recreation to view the scenery of the River Valley. The Byway takes travelers along 287 miles of the Minnesota River Valley through hardwood forests, prairie grasses, 3.8 billion year old granite outcrops, agriculture, state and local parks and historic sites. All proposed route alternatives within this segment cross the Minnesota River Valley National Scenic Byway and have the potential to cause visual impacts in this area.

Potential recreational resource impacts for each of the proposed alternatives for the route segment Lyon County Substation to Minnesota Valley Substation (shown in Map 7.2-09 and Appendix A) are summarized in Figures 7.2.4.10-1 to 7.2.4.10-3.

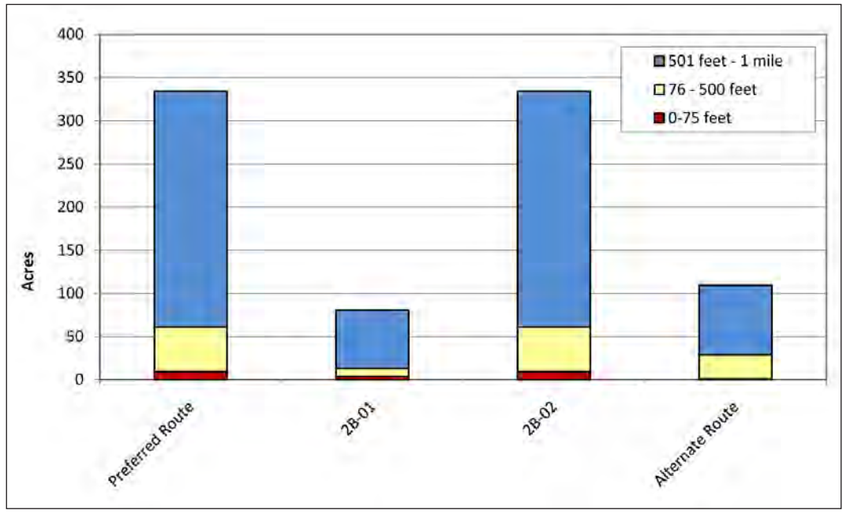
Figure 7.2.4.10-1 compares the proximity to WMAs under each route alternative in this segment. WMAs play a large role in Minnesota's outdoor recreation system as they offer opportunities for hunting.

Impacts to WMAs under the various route alternatives are discussed further in Section 7.2.4.12.

Figure 7.1.4.10-2 compares the proximity to a variety of recreational resources including local parks and recreation areas and areas used for sporting activities under each route alternative in this segment.

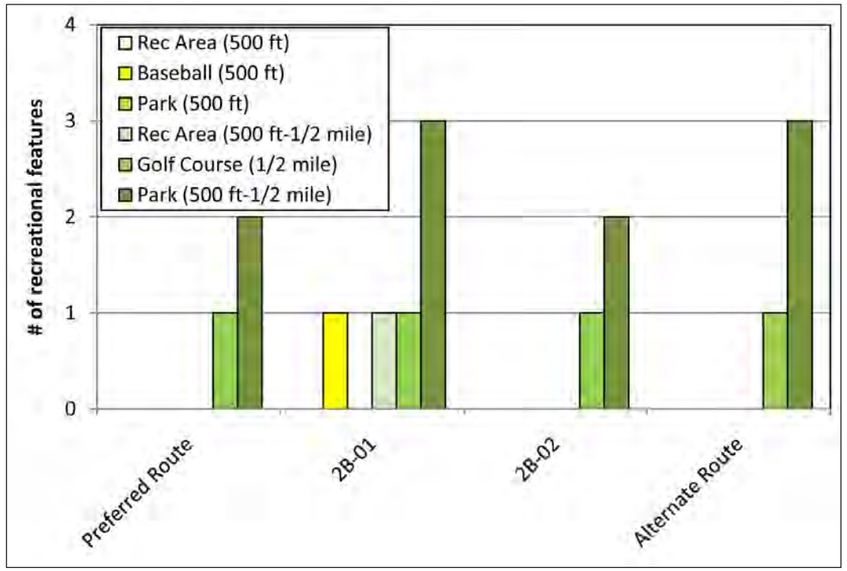
All proposed route centerlines pass within one-half mile of one golf course and within 500 feet of at least two parks. This golf course is located near Lynd, Minnesota and includes a housing development. Future development in

Figure 7.2.4.10-1. WMAs along each route alternative



Source: DNR, Division of Fish and Wildlife 02/14/2006

Figure 7.2.4.10-2. Recreational resource areas along each route alternative



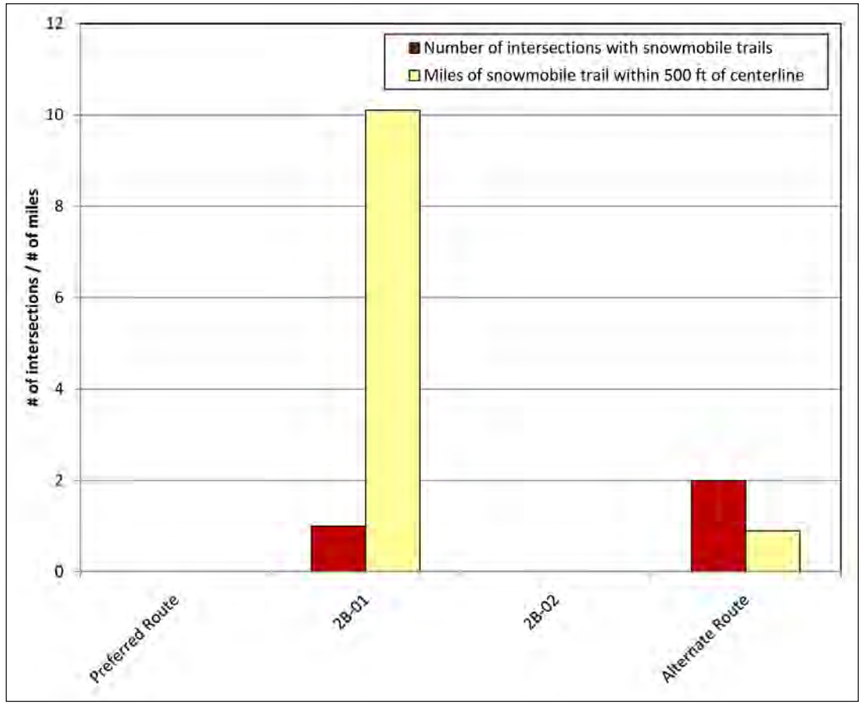
Source: Field survey observations, comments from Project public meetings and aerial photograph interpretation by HDR.12/29/08

this golf course and housing development area is expected. In addition proposed alternative 2B-01's centerline passes within 500 feet of a baseball diamond and within one mile of another recreation area.

Minnesota's state, county, and local trail systems offer recreational opportunities ranging from snowmobiling to cycling. Figure 7.2.4.10-3 compares potential snowmobile trail impacts across the various route alternatives in this route segment. Project impacts to trail systems may range from temporary construction impacts on trails immediately adjacent to the line to visual impacts for recreators in areas where the line is visible from the trail.

The Preferred Route, route alternative 2B-02, and the Alternate Route have minimal to no impacts on snowmobile trails. Proposed route alternative 2B-01 has a notably higher number of miles of snowmobile trail within 500 feet of the proposed centerline.

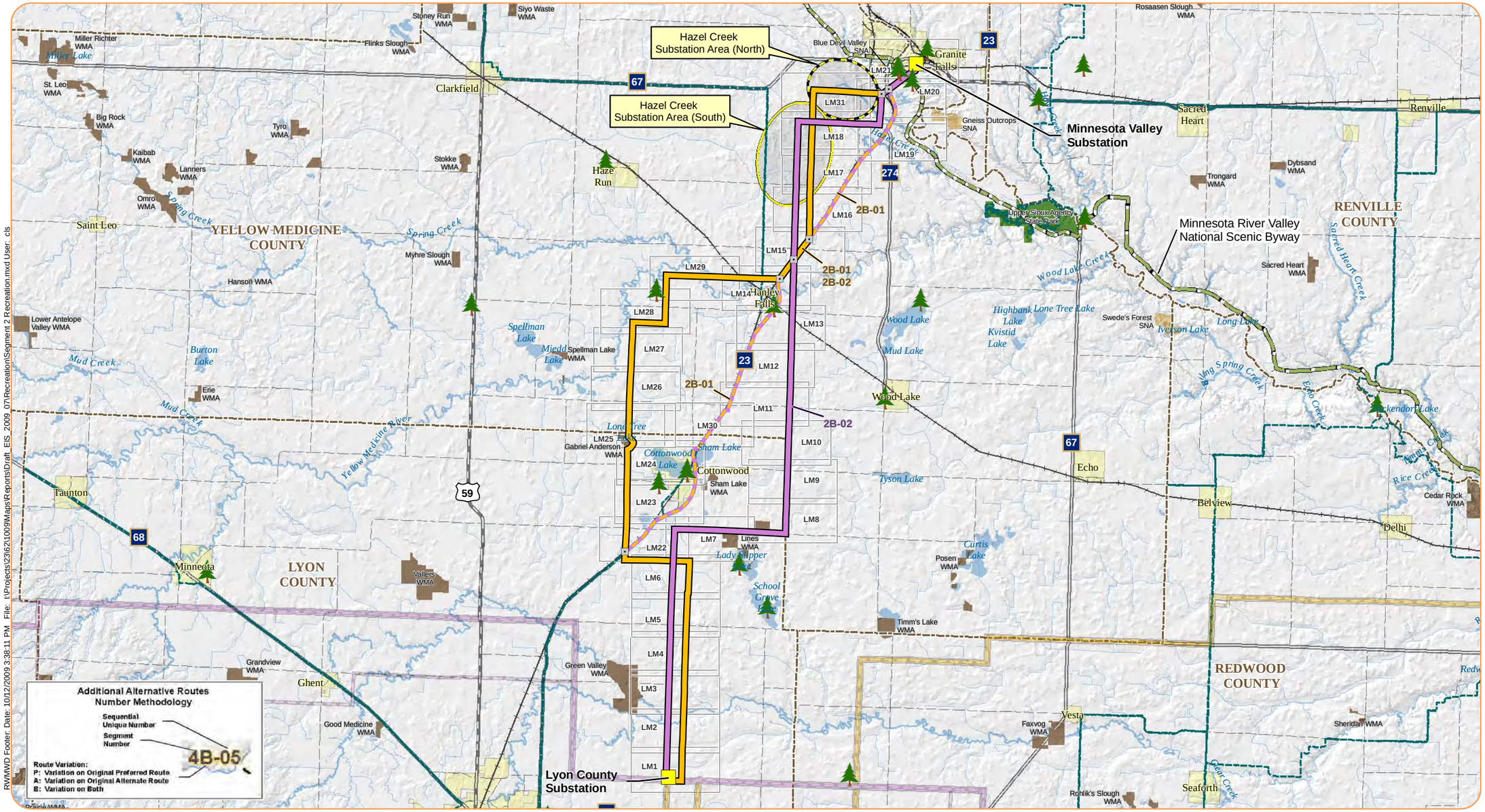
Figure 7.2.4.10-3. Snowmobile trails along each route alternative



Source: DNR, Division of Trails and Waterways 06/01/2003

Mitigation

General mitigation measures to minimize impacts to recreation are discussed in Section 6.10. Because the impacts to recreational areas are primarily visual, impacts to recreational resources can be managed through choosing a route that minimizes the proximity of the line to recreational resources. Each proposed route impacts different recreational resources to a different degree, so minimizing impacts to certain resources may involve a tradeoff that results in greater impacts to other recreational resources. Within this route segment, route alternative 2B-01 has the fewest WMA areas within the route width. It should be noted that for WMAs that are directly adjacent to the proposed routes, placing poles so that they span WMA areas can help to reduce temporary and permanent impacts related to construction and pole placement. The Preferred Route and route alternative 2B-01 have the fewest impacts to parks and sporting areas and the fewest impacts to snowmobile trails.



SL1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Original Alignments
- Preferred Route
- Alternate Route

Additional Alternative Routes
- Variation on Preferred Route
- Variation on Alternate Route
- Variation on Both

Project Substations

Proposed Substation Areas
- Preferred
- Alternate

County Boundaries

Recreation Area

- Regional Existing Trail
- Regional Planned Trail
- Regional Proposed Trail
- State Existing Trail
- Snowmobile Trail
- Scenic Byway

- Regional Park
- Scientific and Natural Area
- State Park
- State Recreation Area
- State Wayside
- Wildlife Management Area
- Wildlife Refuge

Map 7.2-09
Recreation Map
Segment 2
Lyon County Substation to MN Valley Substation

Source: Refer to Appendix B for information on data sources

7.2.4.11 Water Resources—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

A variety of data sources (see Appendix B) were used to identify water resources within the 150-foot ROW and 1,000-foot route width of each route alternative within the Lyon County Substation to Minnesota Valley Substation segment. Map 7.2-10 and Appendix A identify the water resources within the vicinity of each route alternative; see Map 7.2-11 for wetlands present beyond the 150-foot ROW of each route alternative. Several rivers, streams, and ditches (collectively referred to "watercourses" below) would be crossed by the route alternatives within this segment. The major rivers running through this segment include the Redwood River, the Yellow Medicine River, and the Minnesota River; these rivers cross each of the four route alternatives within this segment (Map 7.2-10). The portion of the Minnesota River located within this segment is classified as a Wild and Scenic River (Map 7.2-10).

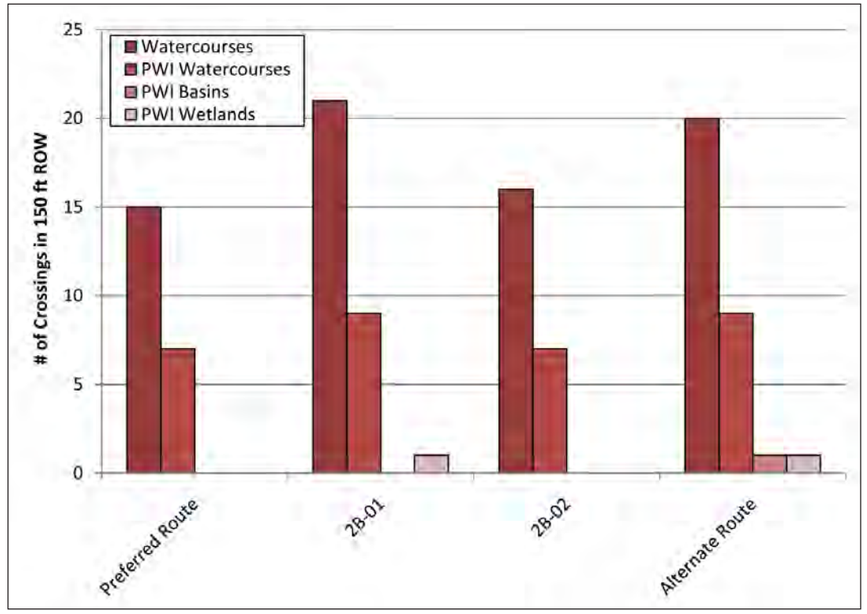
Each of the four route alternatives within this segment would cross the Minnesota River near Granite Falls (Map 7.2-10 and Appendix A). At this Minnesota River crossing, the proposed transmission lines would follow the path of an existing transmission line to connect with the Minnesota Valley Substation. Because this river crossing follows an existing ROW, new impacts to resources, such as woodland areas, would be limited. In addition, the designated 100-year floodplain at this crossing is less than 1,000 wide; therefore no transmission structures would have be placed within the 100-year floodplain associated with this Minnesota River crossing. See Appendix I of the RPA for additional information on the Granite Falls Crossing.

Figure 7.2.4.11-1 summarizes the number of watercourse and PWI crossings that would occur within each route alternative in this segment. The segment 2 Preferred Route and the 2B-02 route alternative have fewer watercourse and PWI watercourse crossings in their 150-foot ROW than the other route alternatives within this segment (Figure 7.2.4.11-1). In addition, these two route alternatives do not have any PWI basins or wetlands located within their 150-foot ROW, while the other two route alternatives do (Figure 7.2.4.11-1). There are no designated trout streams located within the 150-foot ROW or the 1,000-foot route width of any of the route alternatives within this segment.

Watercourse data includes all rivers, streams, ditches, and other linear water. On maps PWI basins and PWI wetlands are referred to collectively as PWI Basins.

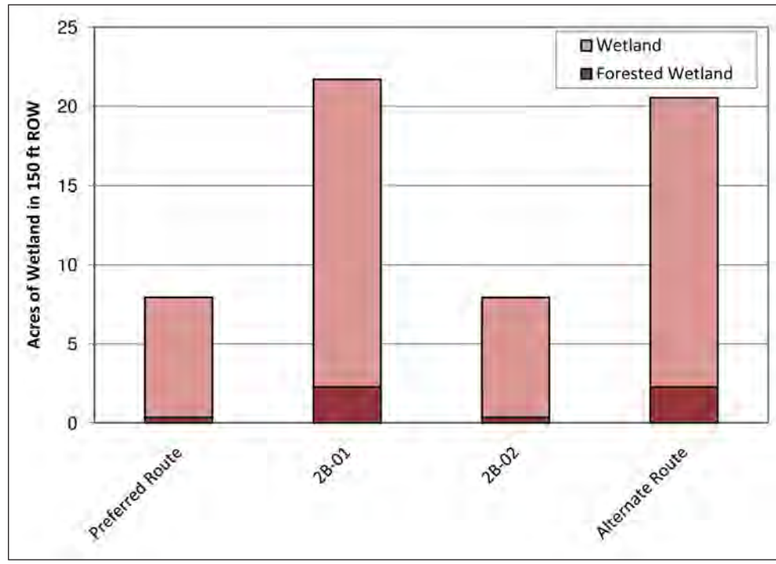
Wetlands within the vicinity of the route alternatives within this segment consist mostly of small scattered freshwater emergent wetlands, with a few freshwater ponds, riverine wetlands, and forested and shrub dominated wetlands also present. Figure 7.2.4.11-2 summarizes the total acres of wetland and forested wetland that are located within the 150-foot ROW of each route alternative within this segment. The segment 2 Preferred Route and the 2B-02 route alternative have substantially fewer total acres of wetland and forested wetland within their 150-foot ROW relative to the segment 2 Alternate Route and the 2B-01 route alternative (Figure 7.2.4.11-2). Similarly, these two route alternatives also have the fewest acres of wetland within their 1,000-foot route width.

Figure 7.2.4.11-1. Number of watercourse and PWI crossings within the proposed 150-foot ROW of each route alternative



Source: DNR, Division of Waters 07/31/2008

Figure 7.2.4.11-2. Acres of wetland and forested wetland within the proposed 150-foot ROW of each route alternative



Route Alternative	Acres of Wetland in 1,000-foot Route Width
Preferred Route	86
2B-01	155
2B-02	87
Alternate Route	152

Table 7.2.4.11-1. Acres of wetland within the entire proposed 1,000-foot route width of each route alternative

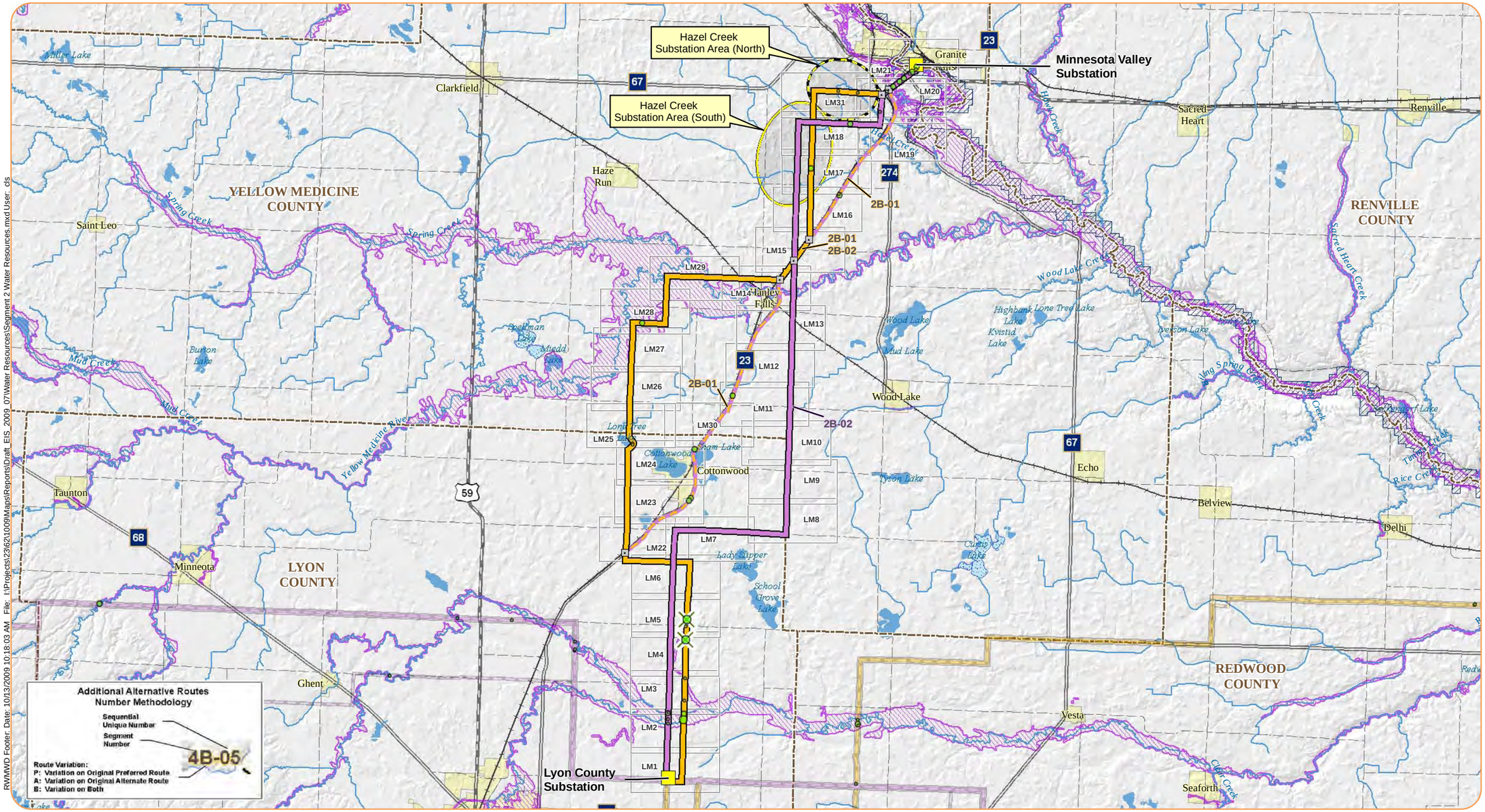
Source: U.S. Fish and Wildlife Service, Division of Habitat and Resource Conservation

Although wetlands would be spanned to the extent possible, there are two wetlands within each the segment 2 Alternate Route and the 2B-01 route alternative that are wider than 1,000 and may require placement of one or more poles within them. However, following detailed route planning, it is possible that some of these wetlands could be spanned or avoided.

Mitigation

General mitigation measures that would be employed to minimize impacts to water resources are discussed in Section 6.11. Within this route segment, impacts to water resources can be managed by choosing a route alternative that minimizes the proximity of the line to watercourses, lakes, and wetlands. Because all watercourses and lakes would be spanned, no structures would be placed within these features and no direct impacts to watercourses and lakes are anticipated. Potential indirect impacts to these resources, such as increases in turbidity, may be minimized through use of BMPs and by choosing the Preferred Route or route alternative 2B-02, which have the fewest number of watercourse and PWI crossings.

Temporary impacts to wetlands may occur if they need to be crossed during construction. Utilizing BMPs and choosing the Preferred Route or route alternative 2B-02, which have the least acres of wetland within the 150-foot ROW and 1,000-foot route width would minimize temporary impacts to wetlands. Permanent impacts to wetlands may occur if structures need to be placed within wetland boundaries; choosing the Preferred Route or route alternative 2B-02, neither of which have wetlands wider than 1,000 feet within the 150-foot ROW, would minimize these impacts. Permanent impacts to wetlands may also occur if the wetlands within the 150-foot ROW are currently forested. Forested wetlands may undergo a conversion to non-forested wetlands because vegetation maintenance procedures under transmission lines may prohibit trees from establishing. Choosing the Preferred Route or route alternative 2B-02, which have the fewest acres of forested wetland within the 150-foot ROW, would minimize these impacts.



RWMWD Footer: Date: 10/13/2009 10:18:03 AM File: I:\Projects\23\62110109\Maps\Reports\Draft EIS_2009_07\Water Resources\Segment 2 Water Resources.mxd User: cds

Map 7.2-10
Water Resources Map
Segment 2
Lyon County Substation to MN Valley Substation

Source: Refer to Appendix B for information on data sources

7.2.4.12 Flora and Fauna—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

Flora

Vegetation communities on this segment were evaluated using GAP Level 3 data and DNR NHIS data (Maps 7.2-07 and 7.2-12 and Appendix A). The GAP database provides information on general vegetative cover; details on GAP data are provided in Section 6.12. The NHIS database identifies unique and/or native plant community types. Native plant community types are discussed in detail in Section 6.13.

Figure 7.2.4.12-1 and Map 7.2-07 summarize the GAP vegetation data within the 150-foot ROW of each route alternative in this segment. There is little variation in vegetation cover between the route alternatives. Cropland is the dominant vegetation type across all of the route alternatives within this segment, covering at least 80 percent of the 150-foot ROW for all alternatives in this segment. Grasslands comprise most of the remaining vegetation cover within each route alternative. Other types present include upland shrublands, oak and cottonwood woods, marshes, and wet forested areas.

Several DNR-designated unique native plant community types are located within the route alternatives within this segment; these include southern dry hill prairies, southern dry prairies, southern mesic prairies, and southern bedrock outcrops. These native plant community types occur in all route alternatives in this segment See Appendix D for details on the number of occurrences of these communities within one mile of the centerline and within the 150-foot ROW of each route alternative.

Fauna

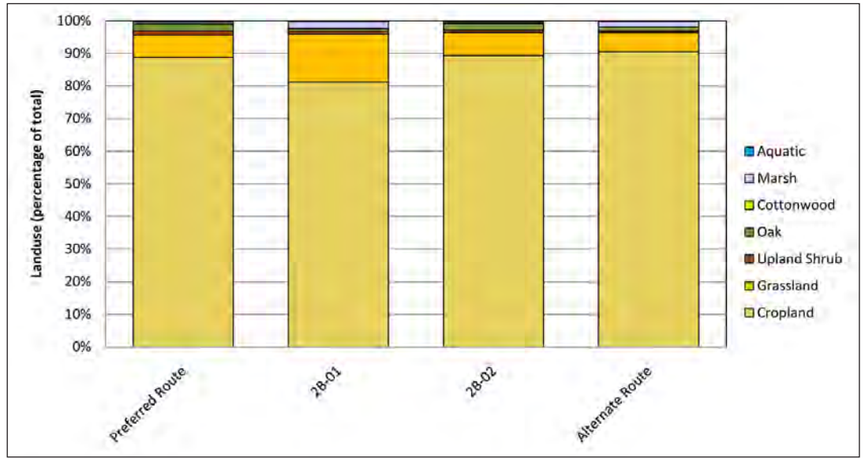
The presence of wildlife species and wildlife habitat on this segment was evaluated using GAP Level 3 data and information on WMAs, WPAs, USFWS National Wildlife Refuges, and SNAs (Map 7.2-11 and Appendix A). GAP information provides an overview of the vegetation communities along the segment, and hence the availability of forage, cover and reproductive habitats for various wildlife species (see Section 6.12 for further details on GAP data). WMA, WPA and SNA data pinpoint locations where wildlife species may be more prevalent and/or diverse. WMAs, WPAs, and wildlife refuges within the 150-foot ROW, the 1,000-foot route width and within one mile of the routes in this segment were included in the evaluation. There is also an SNA, Blue Devil Valley SNA, within one mile of the ROW, but outside of the 150-foot ROW. WMAs within or adjacent to the ROW are discussed in Section 7.2.4.10.

The Alternate Route is the only route alternative in this segment with WPA within one mile of the route. Therefore, in this segment, the Alternate Route has higher potential impacts to wildlife habitat than other route alternatives. No wildlife refuges are located within one mile of any route alternative within this segment.

Mitigation

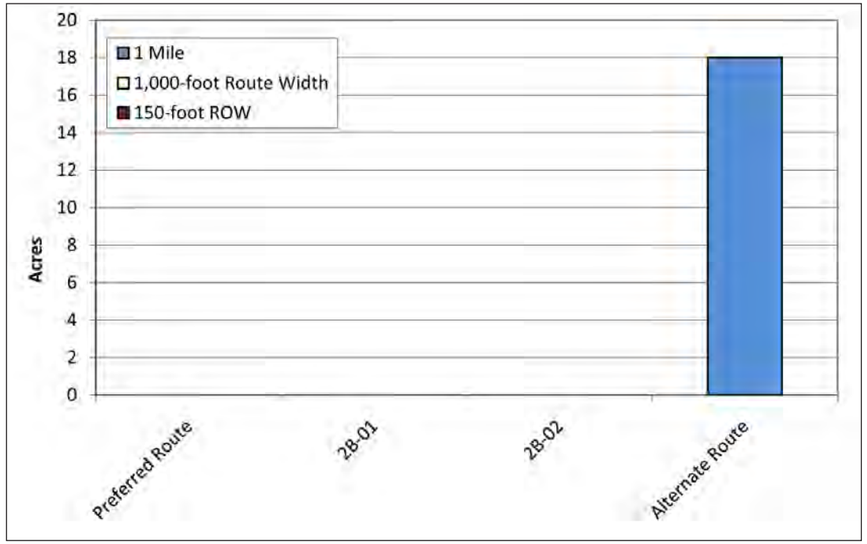
General temporary and permanent impacts to vegetation and wildlife resources for this segment are described in Section 6.12. Habitats where native prairie remnants, other unique plant communities, and rock outcrops have been recorded or are likely to occur would be spanned as feasible.

Figure 7.2.4.12-1. Summary of GAP vegetation data within 150-foot ROW for each route alternative



Source: DNR, Department of Forestry 06/06/2002

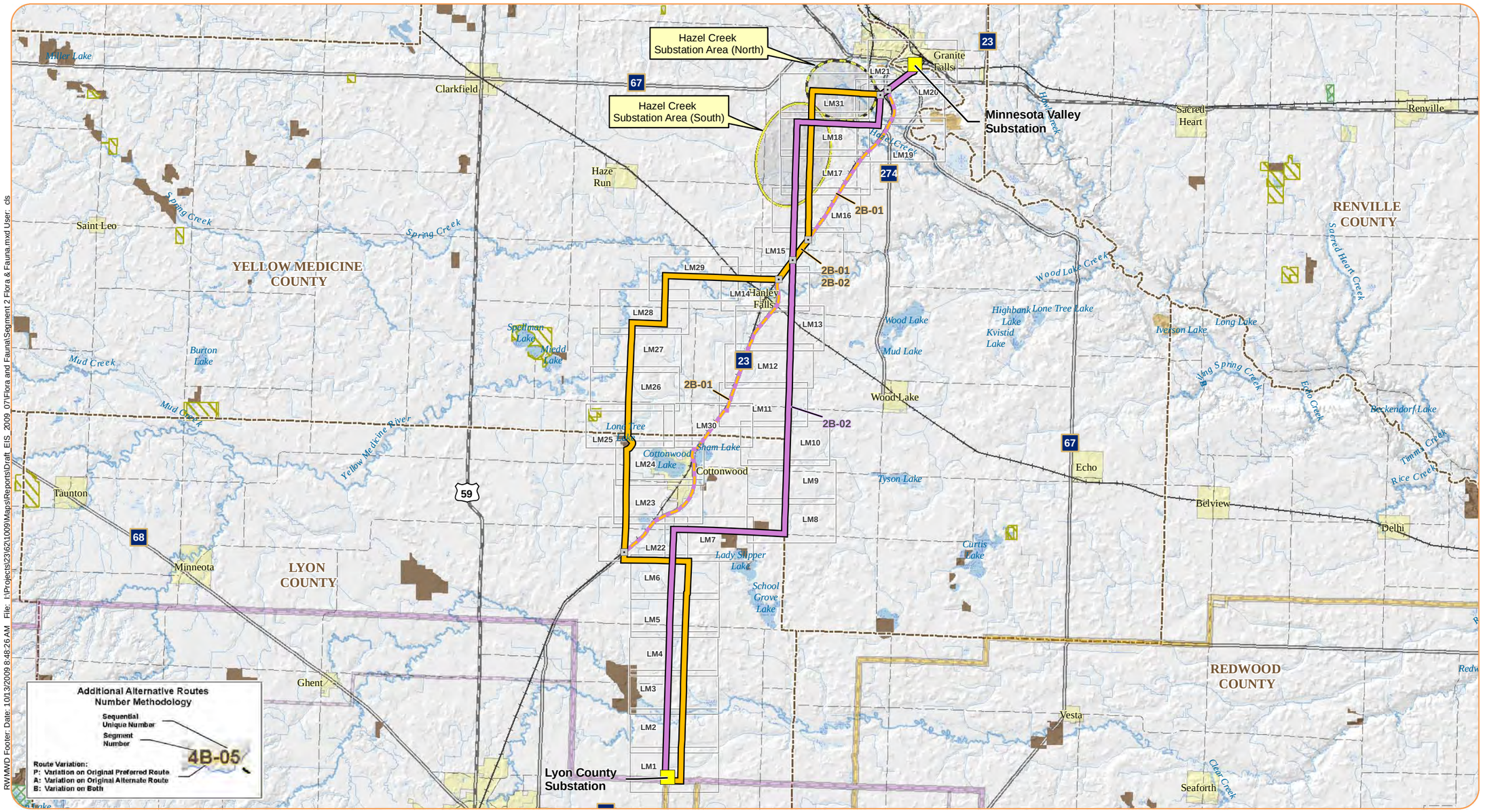
Figure 7.2.4.12-2. Acres of WPAs within one mile and within 150-foot ROW of each route alternative



Source: United States Fish and Wildlife Service 05/11/2009

Construction impacts to most vegetation cover types would be mitigated with seeding of disturbed areas with native plant species, unless the area is to be returned to agricultural use. Removal of trees would be minimized; however, in order to safely operate the transmission line, trees removed from beneath or immediately adjacent to the line cannot be replaced.

Avian collisions with the transmission line may also occur in this segment. The applicant would work with DNR and USFWS to identify areas that may require marking transmission line shield wires, bird flight diverters, or using alternate structures to reduce the likelihood of collisions.



SL1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Original Alignments
Preferred Route
Alternate Route
Additional Alternative Routes
Variation on Preferred Route
Variation on Alternate Route
Variation on Both

Project Substations
Proposed Substation Areas
Preferred
Alternate
County Boundaries

Fish Technology Center
Fisheries Research Station
National Fish Hatchery
National Wildlife Refuge
Waterfowl Production Area

Scientific and Natural Area
Wildlife Management Area
Wildlife Refuge
Wetland (NWI)

Map 7.2-11
Flora & Fauna Map
Segment 2
Lyon County Substation to MN Valley Substation

Source: Refer to Appendix B for information on data sources

7.2.4.13 Rare and Unique Resources—Analysis of Segment Alternatives for the Lyon County Substation to Minnesota Valley Substation

Rare and unique resources were identified within one mile of each route alternative within the Lyon County Substation to Minnesota Valley Substation segment using the DNR NHIS, and DNR state-designated railroad prairies, and MCBS databases (see Appendix B). The following discussions focus on federal and state protected species and rare and unique communities located within one mile of each route alternative. Data on rare communities, animal assemblages, and MCBS sites are summarized in this section; however, complete data sets for each route alternative are available in Appendix D. There is no legal protection for state special concern and non-status species within the State of Minnesota. These data are outside the focus of this discussion and are available in Appendix D. In addition, waterbodies and watercourses would be spanned; therefore it is anticipated that impacts to threatened and endangered aquatic species would be avoided. Because of this, aquatic species are mentioned but are not the focus of discussion.

Table 7.2.4.13-1 and Map 7.2-12 summarize the rare and unique resources documented within one mile of the route alternatives within this segment (see Appendix A for more detailed maps). However, in order to protect rare resources from exploitation or destruction, Map 7.2-12 and Appendix A do not indicate the names of species or communities identified within the NHIS database. The majority of these documented rare and unique resources are located within the vicinity of the Minnesota River (Map 7.2-12).

Table 7.2.4.13-1. Summary of rare and unique resources within one mile of each route alternative

					Route Alternatives			
Common Name	Scientific Name	Type	MN Status	U.S. Status	Preferred	2B-01	2B-02	Alternate
A Species of Lichen	*Buellia nigra*	Botanical	END	NONE	X	X	X	X
Mucket	*Actinonaias ligamentina*	Zoological	THR	NONE	X	X	X	X
Round Pigtoe	*Pleurobema coccineum*	Zoological	THR	NONE	X	X	X	X
Ellipse	*Venustaconcha ellipsiformis*	Zoological	THR	NONE	X	X	X	X
Paddlefish	*Polyodon spathula*	Zoological	THR	NONE		X		
Rare Communities			na	na	4/9	4/9	4/10	4/10
Animal Assemblages			na	na	1/2	2	1/2	2
State-Designated Railroad Prairies			na	na	3	1/5	3	1/4
MCBS Sites			na	na	2/7	2/9	2/8	2/8

Source: Natural Heritage Information System Rare Features Data Copyright 2009 State of Minnesota, Department of Natural Resources

An "X" indicates the presence of that particular species within 1 mile of centerline, while a blank cell indicates that a particular species, community, or site is not within 1 mile of the centerline.
Rows in tan indicate non-aquatic state and/or federally-threatened or endangered species and rows in blue indicate aquatic state and/or federally-threatened or endangered species.
Cells in red indicate if and how many of the sites are located within the 150-foot ROW (e.g. 1/2 means that one of two total sites is located in the ROW).
"MCBS" = Minnesota County Biological Survey - data includes sites classified as outstanding, high, and moderate biodiversity significance.
Animal Assemblages includes colonial waterbird nesting sites and/or mussel sampling sites.
"END" = Endangered, "THR" = threatened, "None" = no federal status, "na" = not applicable.

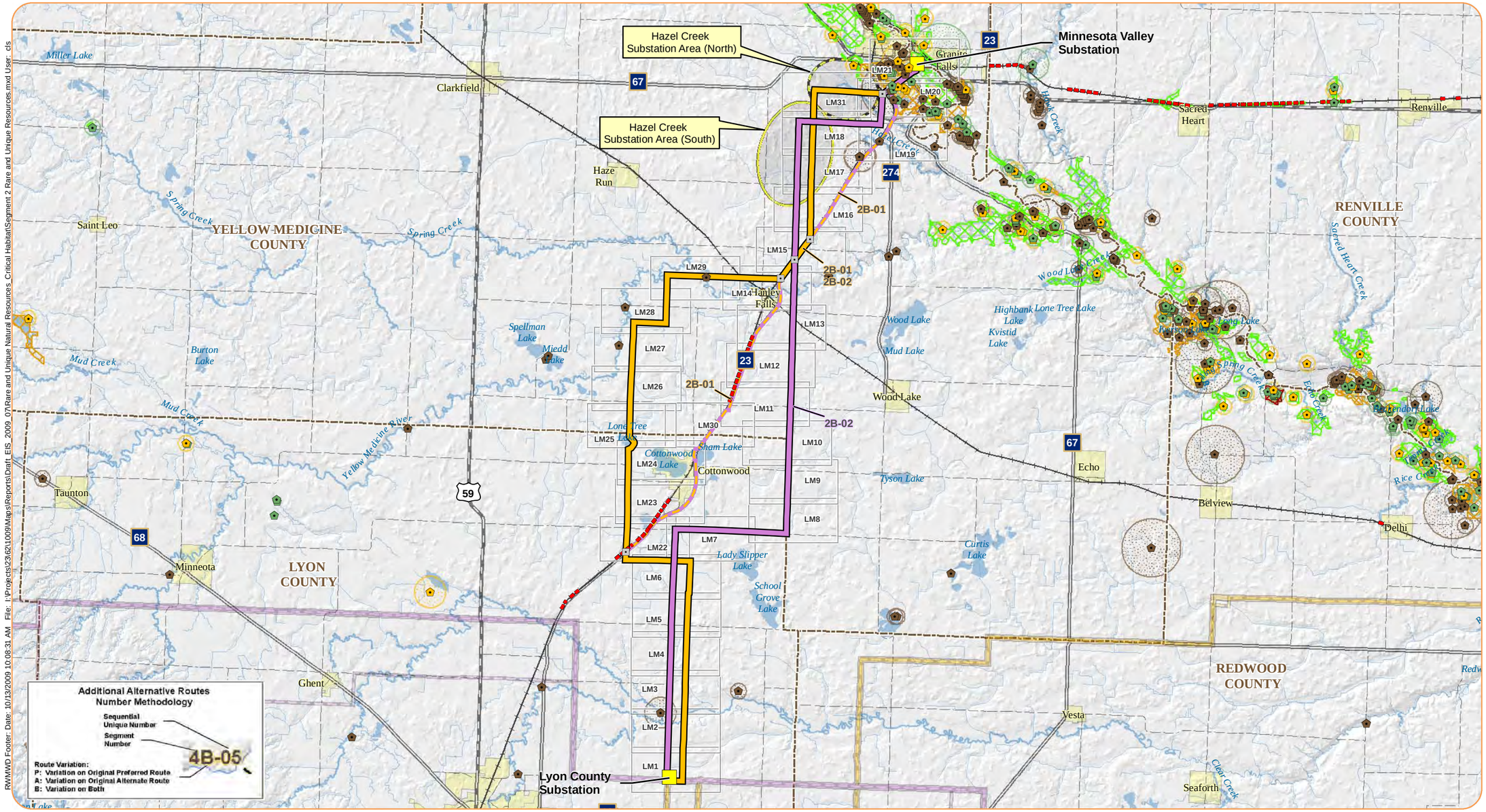
One state-endangered species and four state-threatened species have been documented within one mile of various route alternatives within this segment; these include the state-endangered lichen, *Buellia nigra*; three state-threatened mussles, the mucket (*Actinonaias ligamentina*), the round pigtoe (*Pleurobema coccineum*), and the ellipse (*Venustaconcha ellipsiformis*); and one state-threatened fish, the paddlefish (*Polyodon spathula*) (Table 7.2.4.13-1). With the exception of the paddlefish, which was only documented within one mile of the 2B-01 route alternative, these state-threatened and endangered species have been documented within one mile of each route alternative within this segment. However, the only non-aquatic listed species present within one mile of the route alternatives within this segment is the lichen, *Buellia nigra*. The preferred habitat of *Buellia nigra* is on non-calcareous rock in exposed sunny areas, occasionally near the edge of hardwood forests (DNR 2009).

Rare communities have been documented within one mile of all route alternatives within this segment (see Appendix D for community types), and with a few exceptions, the data are generally similar across all route alternatives (Table 7.2.4.13-1, Map 7.2-12). While there is a colonial waterbird nesting site associated with the Redwood River that is located within one mile of each route alternative, this nesting site is located within the 150-foot ROW of the segment 2 Preferred Route and the 2B-02 route alternative. There are state-designated railroad prairies within one mile of each route alternative within this segment; however, only the segment 2 Alternate Route and the 2B-01 route alternative have railroad prairies within their 150-foot ROW. There are several MCBS sites located within one mile of each route alternative in this segment, with two MCBS sites located within the 150-foot ROW of each route alternative (Table 7.2.4.13-1).

Mitigation

General mitigation measures that would be employed to minimize impacts to rare and unique resources are discussed in Section 6.13. See Section 6.12 for a discussion of the measures that would be utilized to minimize the impacts of avian collisions with transmission lines. Within this route segment, threatened and endangered species are found within one mile of each route alternative. As previously stated, waterbodies and watercourses would be spanned and BMPs would be employed to minimize erosion and sedimentation. Because of this, impacts to the three mussel species and the paddlefish are not anticipated. Impacts to *Buellia nigra* would be minimized by spanning all calcareous rock outcrops. If the rare species is unavoidable, a takings permit from the DNR may be required along with other conditions.

There are MCBS sites and DNR-listed rare natural communities within one mile of each route alternative within this segment. In addition, there are MCBS sites and rare communities within the 150-foot ROW of each route alternative within this segment. The placement of structures within MCBS and DNR-listed rare natural communities would be avoided or minimized by spanning them to the extent possible. Where structure placement cannot be avoided in these sensitive communities, rare species associated with these habitats could be affected.



SL1 Appendix A Map Index

0 1.5 3 6 Miles

0 2.5 5 10 Kilometers

For detailed maps refer to Appendix A.
Refer to Appendix B for information on data sources.

Original Alignments
- Preferred Route
- Alternate Route

Additional Alternative Routes
- Variation on Preferred Route
- Variation on Alternate Route
- Variation on Both

Project Substations

Proposed Substation Areas
- Preferred
- Alternate

County Boundaries

MN DNR Natural Heritage
- Botanical
- Ecological
- Zoological
- Botanical
- Ecological
- Zoological

State-Designated RR Prairie

MCBS Biodiversity Significance
- Moderate Significance
- High Significance
- Outstanding Significance

Map 7.2-12
Rare & Unique Resources/Critical Habitat Map
Segment 2
Lyon County Substation to MN Valley Substation

Source: Refer to Appendix B for information on data sources