

9.0 North Rochester to Northern Hills 161 kV Transmission Line

The Applicant proposes to construct a 161 kV transmission line from the new North Rochester Substation siting area to the existing Northern Hills Substation. The 161 kV transmission line would be constructed on an 80-foot ROW. This chapter analyzes potential resource impacts associated with the Preferred and Alternative 161 kV Routes between the proposed North Rochester Substation and the Northern Hills Substation (North Rochester–Northern Hills 161 kV section), and mitigation measures that may be used to minimize potential impacts.

9.1 Description of Routes and Regional Environmental Setting

The Preferred and Alternative 161 kV Routes are located in Goodhue and Olmsted counties. The routes extend from the proposed North Rochester Substation north of Pine Island, to the existing Northern Hills Substation inside the northwest municipal boundary of Rochester. Communities located near the Preferred and Alternative 161 kV Routes include Pine Island, Oronoco, Genoa, Douglas and Rochester. Rochester is the major business and urban center in the area with a population of more than 100,000. Figure 9.1-1 shows major communities and land management jurisdictions in the North Rochester–Northern Hills 161 kV section.

Cropland and grassland dominate land cover along the Preferred and Alternative 161 kV Routes, and land use is primarily agricultural with scattered rural residences and farmsteads. Residential development is concentrated near Pine Island, Oronoco, and Rochester, with the densest residential development occurring inside or in close proximity to the Rochester municipal boundary. Both Preferred and Alternative 161 kV Routes follow portions of the Douglas Trail, a regional multiple use recreation trail managed by the MDNR.

The Preferred and Alternative 161 kV Routes lie within the Rochester Plateau subsection of the EBF Province according to the MDNR Environmental Classification System (MDNR 2009c) (Figure 9.1-2). The EBF Province covers much of the southeastern corner of Minnesota and also occurs in southwestern Wisconsin. It is a transition area between semiarid portions of the state that were historically prairie and semi-humid mixed conifer-deciduous forests to the northeast (MDNR 2009). Precipitation in the southeastern portion of the province is 35 inches annually. The Rochester Plateau subsection consists of level to gently rolling older till plains. Topography is controlled by underlying glacial till along the western edges of the subsection. Sinkholes are common in the southwestern portion of the subsection. The pre-settlement vegetation in the Rochester Plateau subsection consisted of tallgrass prairie and burr oak savanna (MDNR 2009).

The Preferred and Alternative 161 kV Routes follow portions of the Douglas Trail, which is located between Pine Island and Rochester. The Douglas Trail is a 12.5-mile trail developed along an abandoned railroad grade. The trail is used by bicyclists, hikers, inline-skaters, cross country skiers, horseback riders, and snowmobiles.

9.2 Human Settlement

9.2.1 Land Cover and Land Use

Chapter 7.2.1 provides background information on land cover/land use, and methodology used to identify potential impacts.

9.2.1.1 Existing Environment

Land cover types identified along the Preferred and Alternative 161 kV Routes include cropland, grassland, shrubland, forest, aquatic, and urban. Table 9.2-1 shows the acreage and percent of land cover for the various land cover types where the Preferred and Alternative 161 kV Routes are proposed. Land cover along the Preferred and Alternative 161 kV Routes is shown in Figure 9.2-1.

Table 9.2-1:
Preferred and Alternative 161 kV Routes: Land Cover Summary

Land Use Type	Preferred 161 kV Route	Alternative 161 kV Route
	Percent of Route	Percent of Route
Grassland	77	72
Shrubland (total)	17	22
Lowland Shrub	0	<1
Upland Shrub	0	<1
Forest (total)	0	0
Bur/White Oak	3	5
Cottonwood	1	1
Maple/Basswood	0	0
All Others	0	1
Aquatic	2	3
Open water	<1	0
Marshland	<1	0
Urban	<1	0
High Intensity Urban	3	2
Low Intensity Urban	<1	<1
Transportation	0	0
Total acreage	3	2

Source: MN GAP Data.

The Preferred and Alternative 161 kV Routes cross land that is 77 and 72 percent cropland, respectively. Farmland crossed by the routes is mostly used for row crops such as corn and soybeans. The routes also cross land used for open pasture/hay production, and livestock.

The Preferred 161 kV Route largely follows roads, while the Alternative 161 kV Route follows transmission lines, roads, property lines, and field lines. Using existing linear corridors such as transmission lines, roads, trails, property lines, and field lines, minimizes impacts to vegetation, including crops, as well as residences. Rural residential development is widely dispersed across the counties but concentrated along roads on both 161 kV routes. Residential density is approximately 3.5 residences per linear mile along the Preferred 161 kV Route, which primarily follows roads: Residential density is 1.8 residences per linear mile along the Alternative 161 kV Route, which follows a mixture of transmission lines, roads, and property lines.

The Preferred and Alternative 161 kV Routes do not cross public lands except for one area where the Preferred Route crosses the Douglas Trail, and three areas where the Alternative Route crosses the Douglas Trail. Both the Preferred and Alternative 161 kV Routes parallel the Douglas Trail for 1.3 and 3.5 miles, respectively. The Douglas Trail is a multiple use public trail managed by the MDNR and is designated as a City of Rochester open space.

Commercial and industrial land use is principally located in the urban centers of the counties, and neither route is anticipated to affect the use or operation of any commercial establishment. County-specific descriptions of zoning and current land use for the Preferred and Alternative 161 kV Routes are provided below.

Goodhue County

Goodhue County identifies the following goals in their comprehensive plan: preservation of the county's natural beauty, preservation of agricultural lands, and the importance of keeping development around the cities (Goodhue 2004). Both county comprehensive plans place heavy importance on ensuring effective coordination with cities, townships, and municipal utilities on issues such as transportation, facilities, and utilities continues.

Land use located within the Preferred and Alternative 161 kV Routes in Goodhue County is a mixture of agricultural land, rural farmsteads and residences, and rural residential development. Commercial and industrial developments are concentrated within and around Pine Island, but not along the Preferred or Alternative 161 kV Routes. Where the Preferred 161 kV Route parallels US-52, it would cross land included in the Elk Run Development, a 2,325-acre master planned mixed residential/commercial community. The Preferred 161 kV Route also crosses 0.3 mile of area planned for light industrial/office park development, and 0.6 mile of area planned for medical office and residential (Elk Run 2009). Each city in Goodhue County has zoning within the municipal boundaries; however, the county is responsible for the zoning and land use on property that is unincorporated.

The Preferred and Alternative 161 kV Routes pass through Agricultural Protection (A1) and Urban Fringe District (A3) in Goodhue County. Descriptions of these designations are provided in Chapter 7.2.1. The

Preferred 161 kV Route crosses Pine Island Township but not any municipal boundaries. The Alternative 161 kV Route passes through Pine Island Township, Pine Island, and Roscoe Township.

City of Pine Island

The Alternative 161 kV Route passes through Pine Island. The Alternative 161 kV Route is located in the Agricultural (A) and the Suburban Residential (R-1) zoning districts. The Agricultural District was established to “allow existing agricultural and conservancy areas in the outlying parts of the city that does not have central sewer services” (Pine Island 2008). The Suburban Residential District was established to “allow low-density single-family dwelling units in the developing portions of the city where city sewer and water is available” (Pine Island 2008).

Olmsted County

Olmsted County’s General Land Use Plan identifies planning principles based on key community values. Planning principles place importance on economic health, sustainable development, wise use of resources, preservation of natural and cultural resources that provide a “sense of place” for the county, and conservation and restoration of natural resources and agricultural resources (Olmsted County 1995).

Land use within the Preferred and Alternative 161 kV Routes in Olmsted County is a mixture of agricultural land, rural farmsteads and residences, rural residential development, and dense residential development. Dense residential development, commercial, and industrial developments are concentrated within the Rochester area. There is no identified commercial or industrial land use in proximity to the Preferred or Alternative 161 kV Routes in Olmsted County.

The Preferred 161 kV Route in Olmsted County crosses three areas with designated land use: a Resource Protection Area, a 25-Year Urban Service Area, and a Suburban Development Area. The Alternative 161 kV Route through Olmsted County crosses two areas with designated land use: a Resource Protection Area and a 25-Year Urban Service Area. These land use designations are described in detail in Chapter 8.2.1.

Zoning authority in Olmsted County is governed by Olmsted County Planning, municipalities, or individual townships. The Preferred 161 kV Route through Olmsted County is located in the following county-designated zoning districts:

- *Agricultural Protection District (A2)*, established to “conserve and enhance agricultural lands which are historically valuable for crop production, pasture land, and natural habitat for plant and animal life”;
- *Agricultural District (A3)*, established to “maintain and conserve agricultural investments and prime agricultural farmland, but to permit some non-farm development at low density”;
- *Agricultural-Urban Expansion District (A4)*, established to “provide for urban expansion in close proximity to existing incorporated urban centers within Olmsted County...by conserving land for farming and other open space land uses until urban services become available”;

- *Agricultural/Resource Commercial District (AgRC)*, established to “provide a suitable location for agricultural and resource uses within the Resource Protection Area of the Olmsted County Land Use Plan and in undeveloped areas in urban service areas and suburban subdivision areas with significant geologic resources”;
- *Rural Service Center District (RSD)*, was established to “provide for limited opportunities for residential, commercial, and industrial development that will not be detrimental to the character or to other uses of the rural service centers”; and
- *Highway Commercial District (HC)*. provide suitable locations for uses oriented to serving the public and uses requiring large areas of highway frontages oriented closely to urban areas and major transportation routes within the Urban Service Area” (Olmsted 2007).

The Alternative 161 kV Route through Olmsted County is located in the following zoning districts described above; Agricultural Protection District (A2), Agricultural District (A3), Agricultural-Urban Expansion District (A4), and Agricultural/Resource Commercial District (AgRC).

The Preferred 161 kV Route through Olmsted County is located in New Haven, Oronoco, Kalmar, and Cascade townships. The Alternative 161 kV Route through Olmsted County is located in New Haven, Kalmar, and Cascade townships. The townships and municipalities with zoning regulations are New Haven, Kalmar, Cascade, and the City of Rochester. Zoning regulations for Rochester, Kalmar, and Cascade townships are discussed below.⁹

City of Rochester

The Preferred and Alternative 161 kV Routes share an alignment through Rochester. The routes are located in the following city-designated zoning districts:

- *Mixed Single Family Residential (R1)*, which allows for the development of the following: Single Family Detached, Group Residential Care, Offices, Medical Facilities, Nursing and Personal Care, Funeral Homes, Substantial Land Alternation, Sand or Gravel Excavation, Agricultural Operations, Area Accessory Development, and Offender Transitional Housing; and
- *Low Density Residential (R2.)* which allows for the same development as the Mixed Single Family Residential District as well as the following: Single Family Attached Corner Lot, Duplex, Performance Residential, and Multi-Family Residential (Rochester 2009).

The Preferred and Alternative 161 kV Routes are located adjacent to two residential developments identified in the Rochester Growth Area January 2008 map; the Harvestview II project and the Ridgeview Manor project (Rochester/Olmsted 2008). The Harvestview II project has 624 units planned for development and the Ridgeview Manor project has 93 units planned for development. The areas are

⁹ The New Haven Township zoning regulations were requested from the Township, but were not received prior to the submittal of the Application.

located adjacent to the Preferred and Alternative 161 kV Routes within 1.3 miles of the Northern Hills Substation interconnection.

Kalmar Township

The Preferred and Alternative 161 kV Routes through Kalmar Township are located in the following zoning districts:

- *Agricultural Protection District (A2)*, established to “maintain, conserve, and enhance agricultural lands that are historically valuable for crop production, pastureland, and natural habitat for plant and animal life”; and
- *Agricultural-Urban Expansion District (A4)*, established to “provide for urban expansion in close proximity to existing incorporated urban centers within Kalmar Township, in accordance with the adopted Comprehensive Plan, by conserving land for farming and other open space land uses for a period of time until urban services become available” (Kalmar 1999).

Cascade Township

The Preferred and Alternative 161 kV Routes through Kalmar Township are located in the following zoning districts:

- *Agricultural-Urban Expansion District (A4)*, established to “provide for urban expansion in close proximity to existing incorporated urban centers within Kalmar Township, in accordance with the adopted Comprehensive Plan, by conserving land for farming and other open space land uses for a period of time until urban services become available” (Cascade 2002).

9.2.1.2 Impacts and Mitigation

Land use in proximity to the Preferred or Alternative 161 kV Routes is not expected to experience impacts as a result of construction and operation of the transmission line. Agriculture is the principal land use within the Preferred and Alternative 161 kV Routes, and the majority of land within or adjacent to the routes could still be used for agricultural operations following construction. Current land use plans, zoning ordinances, and public policies of the counties and cities along the routes indicate that agriculture would continue to be the predominant land use where both routes are proposed.

The Elk Run mixed-use community is not anticipated to be impacted by the construction of the transmission line on the Preferred 161 kV Route. The Preferred or Alternative 161 kV Routes are not anticipated to impact the construction of the Harvestview II and Ridgeview Manor projects in Olmsted County.

Each land cover and land use type crossed by the Preferred or Alternative 161 kV Routes would be temporarily impacted by construction and for maintenance. The Douglas Trail may be temporarily impacted if closures are required at crossing sites during construction.

Permanent impacts to land cover or land use would primarily be the result of structure placement or ROW clearing. To the extent possible, transmission structures would not be located in open farm fields to prevent interruption of agricultural operations, or heavily forested areas to avoid tree removal. Where the Preferred or Alternative 161 kV Routes do not follow existing roadways, field lines and parcel/property lines would be used to minimize impacts to agricultural lands and to minimize the need to create new access roads for maintenance. Tree clearing in the ROW along the Douglas Trail would be avoided where possible.

The Applicant would continue to maintain open communication with all counties, cities, townships, and landowners throughout the course of the permitting process to ensure that community values reflected in land use and zoning plans are considered. Chapter 7.2.1 describes additional information regarding impacts to community values and mitigation measures to be implemented.

9.2.2 Displacements and Proximity to Residences

A displacement is defined by the Applicant as any occupied structure (residence or business) located within the ROW of the proposed routes. Chapter 7.2.2 describes the background information and methodology for identifying potential displacements and impacts to residences.

9.2.2.1 Existing Environment

Table 9.2-2 lists the estimated number of residences located in proximity to the Preferred and Alternative 161 kV Route alignments. There are no other structures, such as barns, sheds, or outbuildings, located within the ROW.

Table 9.2-2:
Residences in Proximity to Preferred and Alternative 161 kV Route Alignments

Proximity (Feet)	Number of Residences in Proximity	
	Preferred 161 kV Route	Alternative 161 kV Route
0-40 (within ROW) ¹	0	0
0-75	0	0
75-150	14	5
150-300	40	28
Density (residences/linear mile)	3.5	1.8

¹ The ROW required is 80 feet, or 40 feet on either side of the centerline.

There are no residences, businesses, or other structures within 40 feet of the Preferred or Alternative 161 kV Route alignments. Residential density is greater along the Preferred 161 kV Route alignment.

There are 21 more residences located within 300 feet of the Preferred 161 kV Route alignment compared with the Alternative 161 kV Route alignment.

9.2.2.2 Impacts and Mitigation

Since no displacements are anticipated, no mitigation measures are proposed.

9.2.3 Noise

Transmission lines produce noise under certain conditions. The level of noise depends on conductor geometry, voltage level, and weather conditions. Generally, noise levels caused by transmission lines are minimal and comply with the MPCA noise standards. More information on how noise impacts were analyzed is included in Chapter 7.2.3.

9.2.3.1 Existing Environment

Noise existing along the Preferred and Alternative 161 kV Routes is generated from everyday sources such as traffic along US-52 and other local roads, farm equipment, and natural environmental sounds. Noise levels associated with common noise sources are listed in Chapter 7.2.3.

9.2.3.2 Impacts and Mitigation

Transmission line audible noise levels are not predicted to exceed the MPCA noise limits outside the ROW for all the NACs. No mitigation is proposed for the audible noise generated by the transmission lines.

Information showing the MPCA daytime and nighttime limits in A-weighted decibels for each NAC is provided in Chapter 7.2.3.

9.2.4 Aesthetics

The discussion of visual quality and aesthetics is based on a qualitative review of the natural and man-made features of the existing environment within and views toward the Project area. Chapter 7.2.4 provides general information about the methods used to assess potential impacts to aesthetic resources in the Project area, which also applies to visual assessment of the Preferred and Alternative 161 kV Routes.

9.2.4.1 Existing Environment

The existing landscape in the North Rochester-Northern Hills 161 kV section is dominated by agricultural lands, with urbanizing areas concentrated on the outskirts of Rochester. Aesthetically, the major difference between the Preferred and Alternative 161 kV Routes is the extent to which each follows existing transmission lines or the Douglas Trail. The Douglas Trail is a recreational resource valued for its scenic quality, and is described in detail in Chapter 9.2.6. Existing transmission lines have an existing

effect to the viewshed so collocating with the existing lines minimizes additional visual impacts from the Project.

The Preferred 161 kV Route does not follow high-voltage transmission lines, but the distance for which it parallels the Douglas Trail is less than the Alternative 161 kV Route at 1.3 miles. The Alternative 161 kV Route does follow a high-voltage transmission line (Prairie Island-Byron 345 kV line for approximately 5 miles from the northern North Rochester Substation siting area), but also follows the Douglas Trail for approximately 3.5 miles.

9.2.4.2 Impacts and Mitigation

General visual impacts and mitigation strategies applicable throughout the Project are identified in Chapter 7.2.4. The 161 kV transmission line would be constructed with steel single-pole structures. The height of the structures would be 70 to 105 feet and spans would be 400 to 700 feet. The ROW for the 161 kV facilities would be 80 to 100 feet.

The Preferred 161 kV Route does not follow high-voltage transmission lines for a significant length. The Alternative 161 kV Route follows existing transmission lines for a portion of its length, but would be constructed parallel to the existing transmission line rather than consolidated on the same structures. Although the Alternative 161 kV Route follows the Douglas Trail for a greater length, the Douglas Trail is a linear feature compatible with transmission lines. The Douglas Trail is lined with trees on both sides for much of its length that may reduce the visibility of the transmission line, and impacts to aesthetics would depend on the amount of tree cover that would have to be removed along the trail.

The following identifies potential visual impacts along the Preferred and Alternative 161 kV Routes, including identified areas of high viewer sensitivity.

Preferred 161 kV Route

The Preferred 161 kV Route crosses mostly agricultural lands with scattered farmsteads along local roads. Rows of crops, fence lines, and local roads create linear patterns across the rolling terrain similar to linear patterns formed by transmission lines. Other vertically oriented visual elements such as distribution lines, transmission lines, and communications towers also exist in the landscape. The Douglas Trail forms an existing linear feature between Pine Island and Rochester.

The Applicant identified the Douglas Trail as an area of high viewer sensitivity. The Preferred 161 kV Route parallels the Douglas Trail for approximately 1.3 miles. Visibility of the transmission line from the Trail may be obscured by vegetation along the Douglas Trail and the Preferred 161 kV Route. The Applicant would work with adjacent landowners and the MDNR to reduce tree clearing along the Douglas Trail where possible.

Alternative 161 kV Route

The Alternative 161 kV Route crosses mostly agricultural lands that are visually similar to those described for the Preferred 161 kV Route. The Alternative Route follows a combination of linear features, including a 345 kV transmission line, local roads, and the Douglas Trail.

The Alternative 161 kV Route crosses the Douglas Trail several times, and parallels the Douglas Trail for approximately 3.5 miles. In many areas, visibility of the transmission line from the Trail would likely be obscured by vegetation. The Applicant would work with adjacent landowners and the MDNR to reduce tree clearing along the Douglas Trail where possible.

9.2.5 Social and Economic Resources

The socioeconomic study area is defined as Goodhue and Olmsted counties for the Preferred and Alternative 161 kV Routes. Socioeconomic factors analyzed in this Application include, population, race and ethnicity, income, and leading industries. Chapter 7.2.5 provides additional background information and methodology for the socioeconomic analysis in this Application. The socioeconomic study area presented here includes the communities located in close proximity to the Preferred 161 kV Route in Minnesota. Chapter 6.3 provides a detailed description of the routes.

9.2.5.1 Existing Environment

The majority of the land use in Goodhue and Olmsted counties is agricultural and agriculture serving communities. According to the MN GAP, most of the land cover in the Preferred 161 kV Route is either cropland or grassland. The Preferred 161 kV Route also crosses land cover classified as High Intensity Urban or Low Intensity Urban (less than 1 percent) including land classified as transportation (2 percent) (MN GAP 2002). According to the MN GAP, most of the land cover in the Alternative 161 kV Route is either cropland (73 percent) or grassland (20 percent). The Alternative 161 kV Route also crosses forested area (5 percent), and land cover classified as transportation (2 percent) (MN GAP 2002).

Communities near the Preferred 161 kV Route include Pine Island in Goodhue County, and Douglas, Oronoco, and Rochester in Olmsted County (Figure 9.2-2). Communities near the Alternative 161 kV Route include Pine Island in Goodhue County, and Douglas, Genoa, Oronoco, and Rochester in Olmsted County (Figure 9.2-2). Most residences along the Preferred and Alternative 161 kV Routes occur in a rural setting and are distributed across farmsteads and agricultural lands. The City of Rochester is the most urban and densely residential community in the area, and is crossed by the Preferred and Alternative 161 kV Routes for approximately 800 feet near the Northern Hills Substation. Table 9.2-3 identifies communities in the socioeconomic study area that were identified in the *Trade Centers of the Upper Midwest 2003 Update* (Casey 2003).

Table 9.2-3:
Level of Hierarchy of Regional Trade Centers within the Socioeconomic Study Area for the Preferred and Alternative 161 kV Routes

Level	Description	Cities/County	Total Establishments
0	Major Metro Area	—	—
1	Primary Wholesale/Retail Center	Rochester/Olmsted	3,757
2	Secondary Wholesale/Retail Center	—	—
3	Complete Shopping Center	—	—
4	Partial Shopping Center	—	—
5	Full Convenience Center	Pine Island/Goodhue—	171
6	Minimum Convenience Center	—	—
7	Hamlet	—	—

Population Characteristics

Population characteristics used to analyze the social setting of the study area include the total population, estimated future population, and per capita income. Population information is included in Table 9.2-4. According to the U.S. Census Bureau 2008, the population in the socioeconomic study area has experienced a population change ranging from 1 to 42 percent (Table 9.2-4). The rate of growth in Goodhue County from 2000 to 2008 (1 percent) lagged behind Olmsted County (14 percent) and the state growth rate of 6 percent most likely due to the existing environment and size of trade centers. No large change in population growth is expected during the estimated construction schedule.

Table 9.2-4:
Population in the Socioeconomic Study Area for the Preferred and Alternative 161 kV Routes

City/County	2000 Population	2008 Population	% Change 2000-2008
Goodhue County	21,610	21,813	1
Pine Island	2,337	3,326	42
Olmsted County	124,277	141,360	14
Rochester	85,806	100,413	17
State of Minnesota	4,919,479	5,220,393	6

Source: U.S. Census Bureau (2008; 2000a, b, c).

The study area is composed of a variety of racial and ethnic groups. As shown in Table 9.2-5, the majority of persons in the study area self-identified as White/Caucasian. Standard procedures used by the U.S. Census Bureau to determine race and ethnicity are discussed in Chapter 7.2.5.

Table 9.2-5:
Race or Ethnic Heritage

Geographic Area		White or Caucasian	Black or African American	Hispanic or Latino	Asian	Two or More Races	All Other Races	Total
Preferred 161 kV Route	Number of Persons	1,769	7	10	39	5	4	1,826
	Percent	97	<1	<1	2	<1	<1	
Alternative 161 kV Route	Number of Persons	1,460	5	12	28	10	5	1,512
	Percent	97	<1	<1	2	<1	<1	
Region of Comparison	Goodhue County							
	Number of Persons	42,613	280	473	251	305	678	44,127
	Percent	96	1	1	1	1	1	
	Olmsted County							
	Number of Persons	112,255	3,330	2,959	5,305	1,881	1,506	124,277
	Percent	90	3	2	4	2	1	
State of Minnesota	Number of Persons	4,400,282	171,731	143,382	141,968	82,742	65,810	4,919,479
	Percent	89.4	3.5	2.9	2.9	1.6	1.3	

Source: U.S. Census Bureau (2000a, b, c).

Economic Characteristics

The per capita income in 2000 was approximately \$21,934 in Goodhue County, and \$24,939 in Olmsted County (U.S. Census 2000). A variety of industries make up the workforce in Goodhue and Olmsted counties including educational, health and social services; manufacturing; professional, scientific, and management; finance, insurance, and real estate; transportation and warehousing; and agriculture, forestry, fishing, hunting and mining. Education, healthcare and social service occupations are leading industries in the ROC where the Preferred and Alternative 161 kV Routes are proposed. Table 9.2-6 provides an overview of the leading industries for Goodhue and Olmsted counties.

9.2.5.2 Impacts and Mitigation

No adverse impacts to socioeconomic conditions within the socioeconomic study area are anticipated; therefore, no mitigation is proposed. Types of impacts that may be anticipated within the socioeconomic study area from the Preferred and Alternative 161 kV Routes would be the same as those identified in Chapter 7.2.5. Potential impacts to services such as police, fire, hospital/emergency service, and social services within the study area are discussed in Chapter 9.2.7.

Table 9.2-6:
Leading Industries in Socioeconomic Study Area for the Preferred and Alternative 161 kV Routes

County	Industry ¹	Percent of Workforce
Goodhue	Educational, Health, and Social Services	21.0
	Manufacturing	19.7
	Retail Trade	10.9
	Arts, Entertainment, Recreation, Accommodation, and Food Services	8.0
	Construction	6.5
	Transportation, Warehousing, and Utilities	6.3
	Agriculture, Forestry Fishing and Hunting, and Mining	5.5
	Professional, Scientific, Management, Administrative, and Waste Management	5.3
	Finance, Insurance, Real estate, Rental and Leasing	4.5
	Other Services except Public Administration	4.3
	Wholesale Trade	3.4
	Public Administration	2.7
	Information	1.5
Olmsted	Educational, Health, and Social Services	39.9
	Manufacturing	11.0
	Retail Trade	9.9
	Arts, Entertainment, recreation, accommodation, and food services	7.9
	Professional, scientific, management, administrative, and waste management	6.8
	Construction	6.0
	Finance and insurance and real estate and rental and leasing	3.8
	Other services except public administration	3.7
	Transportation and warehousing and utilities	3.5
	Information	2.3
	Public administration	2.1
	Wholesale Trade	1.9
	Agriculture, forestry fishing and hunting, and mining	1.3

Source: U.S. Census Bureau (2000a, b, c).

¹ Selected industry categories are reported in this table.

9.2.6 Recreation and Tourism

There are a variety of outdoor recreational and tourism opportunities in the Project area, where popular activities include snowmobiling, biking, hiking, canoeing, boating, fishing, camping, swimming, hunting, and nature observation. GIS data identifying recreational resources were gathered from local, state, and federal agencies. Private recreational resources, such as golf courses, were identified through aerial maps or field verification. The MDNR Recreational Compass was used to locate recreation areas, lakes, water access points, and trails. Hunting information was obtained through the MDNR website.

9.2.6.1 Existing Environment

The majority of the land along the Preferred and Alternative 161 kV Routes is private land and does not provide public recreation opportunities. Public recreation resources in the vicinity of the Preferred and Alternative 161 kV Routes include snowmobile trails, the Douglas Trail, and tributaries of the Zumbro River. Tourism opportunities along the Preferred and Alternative 161 kV Routes are associated with recreational resources described below, including the Zumbro River and the Douglas Trail. Recreation resources in proximity to the Preferred and Alternative 161 kV Routes are identified on Figure 9.2-3. The Preferred and Alternative 161 kV Routes do not cross, nor are located in proximity to any WMAs, SNAs, or any state, county, or local parks.

Zumbro River: Branches of the Zumbro River in proximity to the Preferred and Alternative 161 kV Routes are used for recreation, including canoeing and fishing. The Preferred 161 kV Route crosses tributaries of the Zumbro River in two locations. The Preferred 161 kV Route crosses the Middle Fork of the Zumbro River along Olmsted CR-31, south of US-52 between Pine Island and Zumbrota. The Preferred 161 kV Route also crosses the South Branch of the Middle Fork Zumbro River near the intersection of Olmsted CR-3 and the Douglas Trail.

The Alternative 161 kV Route crosses tributaries of the Zumbro River in three locations. The Alternative 161 kV Route crosses the North Middle Fork of the Zumbro River south of County Highway 11, northwest of Pine Island. The Alternative 161 kV Route crosses the Middle Fork of the Zumbro River between Olmsted CR-13 SW and Olmsted CR-5, southwest of Pine Island. Finally, the Alternative 161 kV Route crosses the South Branch of the Middle Fork Zumbro River near the intersection of Olmsted CR-3 and the Douglas Trail.

Snowmobile Trails: The Minnesota Snowmobile Trail system is described in Chapter 7.2.6. The Preferred and Alternative 161 kV Routes cross and/or parallel several snowmobile trails. The Douglas Trail is a designated snowmobile trail and accounts for most of the paralleled length for the Preferred and Alternative 161 kV Routes.

Douglas Trail: Managed by the MDNR, the 12.5-mile Douglas Trail is a major multiple use trail and is considered an important community resource. Valued for its “outstanding rural scenery” the dual-tread Trail offers a paved path for bikers, hikers, in-line skaters, and cross-country skiers, and a second natural surface treadway for horseback riders and snowmobilers (MDNR 2009). A portion of the Trail is paralleled by electric distribution lines. The Trail begins at Pine Island, passes through the City of Douglas (for which the trail is named) and terminates in northwest Rochester (MDNR 2009q).

The Preferred 161 kV Route crosses the Douglas Trail at 60th Avenue NW, and then follows the Douglas Trail for approximately 1.25 miles to the Northern Hills Substation. The Alternative 161 kV Route parallels the Douglas Trail at three different locations for a total of 3.5 miles, including between 125th Street NW and 117th Street NW for 1 mile, along CR-3 and 75th Street NW for approximately 1 mile, and between 65th Street and the Northern Hills Substation for 1.5 miles. It also crosses the Douglas Trail at three locations: along 125th Street NW, twice along New Haven Road, and once along 75th Street NW.

9.2.6.2 Impacts and Mitigation

Direct impacts to recreational resources and tourism would be minimized to the greatest extent feasible. The transmission line would include spans up to 700 feet across recreational resources.

The Douglas Trail may be temporarily impacted during construction along the Preferred or Alternative 161 kV Routes if temporary closures are required where the proposed transmission line would cross or parallel the Trail.

Impacts to snowmobile trails and mitigation to minimize impacts are described in Chapter 7.2.6.2.

The transmission line would likely be visible from recreation and tourism areas located directly adjacent to the Preferred and Alternative 161 kV Route, including the snowmobile trails, the Douglas Trail, and branches of the Zumbro River where the Preferred 161 kV Route cross or parallel. Some tree clearing within forested areas, including locations along the Douglas Trail and along branches of the Zumbro River would likely be necessary within the ROW of the Preferred 161 kV Route. The degree to which the transmission line would be visible would depend upon vegetative screening, terrain, and other landscape characteristics.

The Applicant will work with landowners and managing agencies to minimize impacts to recreational resources and tourism. As discussed in Chapter 9.2.4, the transmission line would be designed to minimize impacts to aesthetics.

9.2.7 Public Services, Health and Safety

Public services and facilities along the Preferred and Alternative 161 kV Routes may be generally defined as services provided by government entities, including hospitals, fire and police departments, schools, public parks, and water supply or wastewater disposal systems. Public services also include pipelines, transmission lines, and other utility infrastructure. Chapter 7.2.7 describes methodology for identifying and analyzing potential impacts to public services, health and safety.

9.2.7.1 Existing Environment

There are no municipal buildings, wastewater treatment facilities, or other public services located along the Preferred or Alternative 161 kV Routes.

Residents outside incorporated cities in southeastern Minnesota generally rely on groundwater for drinking water (MDNR 2009p). Rural residents and businesses in Goodhue and Olmsted counties typically get water from private wells and on-site septic systems provide water treatment. Electricity is typically provided by Xcel Energy and Goodhue County Cooperative Electric. Natural Gas is provided by Xcel Energy and Minnesota Energy Resources. The exception is the City of Rochester, which provides residents with water, sewer, and electric service through the Rochester Public Utilities.

Electric distribution lines, cable television, and telephone lines providing service to adjacent homes and businesses are located within the Preferred and Alternative 161 kV Routes. Figure 9.2-4 identifies high-voltage transmission lines and other utilities in proximity to the Preferred and Alternative 161 kV Routes. The Preferred 161 kV Route parallels the existing Prairie Island-Byron 345 kV transmission line for approximately 0.5 mile. The Alternative 161 kV Route parallels the existing Prairie Island-Byron 345 kV transmission line for approximately 5.8 miles. Neither Preferred nor Alternative 161 kV Routes parallel or cross any pipelines. The Preferred and Alternative 161 kV Routes are collocated with an existing distribution line that is built to accommodate a 161 kV transmission line for approximately 1 mile between the Northern Hills Substation and North Rochester Substation.

These existing utilities do not present a barrier to construction and operation of the proposed transmission line. However, it may be necessary for the Applicant to work with other public service utilities to relocate their facilities if they conflict with the construction or operation of the proposed transmission line.

9.2.7.2 Impacts and Mitigation

The Preferred and Alternative 161 kV Routes are not anticipated to directly or indirectly impact the operation of existing public services. Minimal disruptions to electric, services may take place during construction if the transmission line would cross existing utilities. Impacts to Douglas Trail, including temporary closures during construction, would be minimized to the greatest extent feasible. No pipelines are crossed or paralleled by the Preferred or Alternative 161 kV Routes. Therefore, no impacts are anticipated and no mitigation is proposed.

Chapter 7.2.7 provides a detailed discussion regarding public health and safety measures that would be implemented during construction and operation of the Project. Construction and operation of the Preferred or Alternative 161 kV Routes is not anticipated to impact public health and safety.

9.2.8 Transportation

Transportation corridors were identified along the route using available GIS data. Future transportation facilities and plans were identified through consultation with Mn/DOT and county public works and planning departments.

Public airports and aviation facilities also were analyzed for potential impacts from the Preferred and Alternative 161 kV Routes. The FAA and the Mn/DOT have each established development guidelines on the proximity of tall structures, including transmission lines, to public use airports and heliports. The FAA

also has developed guidelines for the proximity of structures to VOR systems. Chapter 7.2.8 provides detailed information about these guidelines.

9.2.8.1 Existing Environment

Roads, railroads, and public airports and aviation facilities are identified if located in proximity to the Preferred or Alternative 161 kV Routes on Figure 9.2-5.

Roads

The Preferred and Alternative 161 kV Routes parallel several types of roads, which are listed in Table 9.2-7 along with the length paralleled. Road ROWs typically associated with highways, county roads and township roads are described in Chapter 7.2.8.1.

Table 9.2-7:
Preferred and Alternative 161 kV Routes: Roads Paralleled

Road Type	Preferred 161 kV Route	Alternative 161 kV Route
Length paralleling Interstate Highways	0.0	0.0
Length Paralleling U.S. Highways	1.3	0.0
Length Paralleling State Highways	0.0	0.0
Length Paralleling County Roads	10.6	6.6
Length Paralleling Local Roads	0.0	0.0

Railroads

The Preferred and Alternative 161 kV Routes do not cross or parallel any railroads.

Airports and Airplane Safety

There are no public airports or aviation facilities in proximity to the Preferred or Alternative 161 kV Routes.

9.2.8.2 Impacts and Mitigation

Roadways

Chapter 7.2.8 discusses potential impacts along roadways and provides mitigation measures to minimize those impacts.

Railroads

There are no railroads crossed or paralleled by the Preferred or Alternative 161 kV Routes; therefore, no impacts are anticipated and no mitigation is proposed.

Airports and Airplane Safety

There are no impacts anticipated to airports or airplane safety for the Preferred or Alternative 161 kV Routes; therefore, no mitigation is proposed.

9.2.9 Electrical Interference

The Applicant assessed potential effects on radio, television, cellular phone, and GPS devices from interference between communication devices and the proposed transmission lines. More information on potential interference and mitigation measures are included in Chapter 7.2.9.

9.2.9.1 Existing Environment

Communication facilities are identified on Figure 9.2-6. No communication facilities are located within 500 feet of the Preferred or Alternative 161 kV Routes.

9.2.9.2 Impacts and Mitigation

If interference with a communication facility occurs, the Applicant would work with the owner to mitigate impacts. More information on potential interference and mitigation measures is included in Chapter 7.2.9.

9.3 Land Based Economies

9.3.1 Agriculture

Agricultural resources evaluated in this Application include areas with land cover identified as cropland, prime farmland, center pivot irrigation systems, farmland preservation easements, and organic farms. Background information and methodology are provided in Chapter 7.3.1.

9.3.1.1 Existing Environment

The Preferred 161 kV Route crosses Goodhue County for 5.2 miles, and Olmsted County for 10 miles. The Alternative 161 kV Route crosses Goodhue County for 4.8 miles, and Olmsted County for 13.1 miles. Chapter 7.3.1 provides information on agricultural resources in Goodhue County. Chapter 8.3.1 provides information on agricultural resources in Olmsted County.

Figure 9.2-1 shows land cover type in the Project area, including cropland. Approximately 1,307 acres (70 percent) of the Preferred 161 kV Route is cropland, with approximately 115 acres (77 percent) in the

ROW. Approximately 1,604 acres (72 percent) of the Alternative 161 kV Route is cropland, with approximately 125 acres (72 percent) in the ROW.

Figure 9.3-1 shows soils considered prime farmland, prime farmland when drained, and farmland of statewide importance. Approximately 128 acres (86 percent) of soils in the Preferred 161 kV Route ROW, and 156 acres (90 percent) of soils in the Alternative 161 kV Route ROW are considered prime farmland, prime farmland when drained, or farmland of statewide importance.

No center-pivot irrigation systems, farmland preservation easements, or organic farms were identified along the Preferred or Alternative 161 kV Routes.

9.3.1.2 Impacts and Mitigation

Chapter 7.3.1 provides detailed information regarding impacts to agricultural operations and potential mitigation measures. Temporary and permanent impacts in agricultural lands are calculated in Appendix P.

The Applicant estimates that the permanent impacts in agricultural fields would be 1,000 square feet per structure. Along the Preferred 161 kV Route, the Applicant estimates approximately 63,045 square feet or approximately 1.45 acres of cropland would be permanently impacted. Along the Alternative 161 kV Route, the Applicant estimates approximately 68,485 square feet or approximately 1.6 acres of cropland would be permanently impacted. During construction, temporary impacts, such as soil compaction and crop damage, are likely to occur in a small area around each structure. The Applicant estimates that the temporary impacts in agricultural fields would be 1 acre per span for construction. Along the Preferred 161 kV Route, the Applicant estimates that approximately 85 acres of agricultural land would be temporarily impacted by transmission line construction. Along the Alternative 161 kV Route, the Applicant estimates that approximately 98 acres of agricultural land would be temporarily impacted by transmission line construction.

Because the Preferred and Alternative 161 kV Routes do not cross center pivot irrigation systems, farmland preservation easements, or organic farms, no impacts to these resources are anticipated with either route.

9.3.2 Forestry

Chapter 7.3.2 provides background information regarding forestry within the Project area, and methodology for identifying potential impacts to forestry resources.

9.3.2.1 Existing Environment

For the purpose of this Application, a potential impact to economically important forestry resources would occur if the proposed routes are on the AHPs. According to the MDNR Forestry Division Fiscal Year 2010 Harvest Plans (MDNR 2009i), the Preferred and Alternative 161 kV Routes do not cross any townships that have AHPs.

Forested areas along the Preferred and Alternative 161 kV Routes mostly occur in the immediate vicinity of the Zumbro River and tributaries, near residences, along field lines, and the Douglas Trail. The Preferred 161 kV Route crosses 103 acres of forested land, with 4 acres within the ROW. The Alternative 161 kV Route crosses 109 acres of forested land, with 7 acres within the ROW.

9.3.2.2 Impacts and Mitigation

Impacts may include tree clearing within the ROW or in construction staging areas. The Alternative 161 kV Route would likely require more tree clearing, because it crosses more forested land within the ROW. No impacts to economically important forestry resources are anticipated and therefore no mitigation measures are proposed. Mitigation measures associated with tree clearing within the ROW are discussed in Chapter 9.5.3, Flora.

9.3.3 Mining

The Applicant used data collected from the Mn/DOT Aggregate Sources Interactive Map to identify aggregate resources.

9.3.3.1 Existing Environment

Goodhue and Olmsted counties were identified by MDNR as being located in a region where there are many crushed stone operations. Figure 9.3-2 identifies the approximate locations of aggregate mines in the 161 kV Section. While several mining operations were identified in proximity to the Preferred 161 kV Route, no mining operations occur within 500 feet of the Preferred 161 kV Route centerline. One aggregate mine, the Keller Mine (Quarry Number 55-1), was identified within the Alternative 161 kV Route.

Impacts and Mitigation

The transmission line is not anticipated to impact the Keller Mine along the Alternative 161 kV Route. If mining operations cannot be avoided, the Applicant would work with existing mine operators to identify the extent of current and planned mining operations and develop appropriate mitigation measures.

9.4 Archaeological and Historic Resources

9.4.1 Archaeological

Chapter 7.4.1 provides information about the methodology for identifying and analyzing potential impacts to archaeological and historic resources.

9.4.1.1 Project Area

Chapter 7.4.1 describes the methodology used to identify and evaluate potential impacts to archaeological resources.

Project Area

Two archaeological sites were documented within 1 mile of the Preferred 161 kV Route centerline during a Class I. The sites were identified as lithic scatter and one of the two is recommended to be eligible for listing on the NRHP (MVAC 2008). There were no archaeological occurrences documented within 1 mile of the Alternative 161 kV Route centerline.

9.4.1.2 Impacts and Mitigation

The sites identified in the Class I are not anticipated to be impacted by the construction of the transmission line along the Preferred 161 kV Route. Chapter 7.4.1.2 describes mitigation should any additional archaeological resources be identified during construction of the transmission line.

9.4.2 Architectural

The Class I described in Chapter 7.4.1 identified known historical resources within the Project area, including sites listed on the NRHP and architectural properties. Physical avoidance of these resources also was a consideration during the route development process.

9.4.2.1 Existing Environment

NRHP sites are shown on Figure 9.2-5. There are no NRHP sites located within 1 mile of the Preferred 161 kV Route. There were three NRHP sites identified within 1 mile of the Alternative 161 kV Route; the Jacob Bringghold House, the Opera Block House, and the Pine Island City Hall and Fire Station. All three sites are located within the municipal boundary of Pine Island.

There also are 13 architecture sites within 1 mile of the Preferred 161 kV Route, and 11 architecture sites within 1 mile of the Alternative 161 kV Route that have not yet been evaluated for eligibility on the NRHP.

9.4.2.2 Impacts and Mitigation

Chapter 7.4.3.1 describes the mitigation approach associated with the discovery of historic resources.

9.4.3 Historic Landscapes

Identification of historic landscapes typically occurs through a state's preservation planning program, thematic studies, or compliance-related surveys. The Class I described in Chapter 7.4.1 identified known cultural resources within the Project area.

9.4.3.1 Existing Environment

No designated historic landscapes located in proximity to the Preferred or Alternative 161 kV Routes were identified in the Class I (MVAC 2008).

9.4.3.2 Impacts and Mitigation

If a historic landscape were to be identified prior to construction, consultation with appropriate parties would be initiated and consideration would be given to the potential impacts from the Project.

9.5 Natural Environment

9.5.1 Air Quality

Minnesota and national air quality standards are detailed in Chapter 7.5.1.

9.5.1.1 Existing Environment

The Existing Environment information presented in Chapter 7.5.1.1 also applies to the North Rochester to Northern Hills 161 kV section.

9.5.1.2 Impacts and Mitigation

Construction of the transmission line would result in minor short-term air quality impacts from the operation of heavy-duty construction equipment and fugitive dust due to travel on unpaved roads and excavation for transmission structure foundations. Exhaust emissions from construction equipment would include oxides of nitrogen, volatile organic compounds, carbon monoxide, and PM-10. Due to the short-term nature of the construction activities, local impacts on air quality are expected to be minor. Construction of the project is not expected to have any long-term or regionally significant impacts on air quality.

Operation of the transmission line is expected to have negligible impacts on air quality. Most calculations for the production and concentration of ozone assume high humidity or rain, with no reduction in the amount of ozone due to oxidation or air movement. These calculations would therefore overestimate the amount of ozone that is produced and concentrated at ground level. Studies designed to monitor the production of ozone under transmission lines have generally been unable to detect any increase due to the transmission line facility.

Transmission line maintenance and inspection activities would include periodic aerial and ground inspections. During ground inspections, maintenance vehicles would drive along the transmission line ROW making periodic stops to inspect the structures, insulators, and conductors. Air quality impacts during maintenance and inspection activities would be negligible.

9.5.2 Water Resources

Water resources considered in this Application include streams and rivers, impaired waters, wetlands, FEMA floodplains, and BWSR easements. Chapter 7.5.2 provides information on state and federal regulations regarding water resources as well as wetland classification descriptions.

9.5.2.1 Existing Environment

Streams

All streams crossed by the 80-foot ROW of the Preferred 161 kV Route are shown in Table 9.5-1. The Preferred 161 kV Route crosses five streams, two of which are PWI streams under the regulatory jurisdiction of MDNR (MDNR 2009). The Middle Fork of the Zumbro River and the South Branch of the Middle Fork of the Zumbro River are designated PWI streams (MDNR 2009).

Table 9.5-1:
Streams Crossed by 80-foot ROW of the Preferred 161 kV Route

Waterbody Name	Number of Crossings	PWI Stream (Yes/No)
Unnamed Perennial/Intermittent Stream, Tributary to Zumbro River, Middle Fork	10	No
Zumbro River, Middle Fork	1	Yes
Unnamed Perennial/Intermittent Stream, Tributary to Zumbro River, South Branch of Middle Fork	2	No
Zumbro River, South Branch of Middle Fork	1	Yes
Unnamed Perennial/Intermittent Stream, Tributary to Zumbro River	4	No

The Preferred 161 kV Route crosses two streams that are considered impaired by MPCA. The Middle Fork of the Zumbro River is impaired due to turbidity from the headwaters to the North Branch of the Middle Fork. The South Branch of the Middle Fork of the Zumbro River also is impaired due to turbidity from the headwaters to the Middle Fork of the Zumbro River (MPCA 2008). The Applicant anticipates that all streams and surface water features along the Preferred 161 kV Route would be spanned and that no structures would be located within these waters.

All streams crossed by the Alternative 161 kV Route are shown in Table 9.5-2. The Alternative 161 kV Route crosses nine streams, five of which are PWI streams under the regulatory jurisdiction of the MDNR (MDNR 2009). Dry Run Creek, the North Branch of the Middle Fork of the Zumbro River, the unnamed tributary to the North Branch of the Middle Fork of the Zumbro River, the Middle Fork of the Zumbro River, and the South Branch of the Middle Fork of the Zumbro River are classified as PWI streams (MDNR 2009).

Table 9.5-2:
Streams Crossed by 80-foot ROW of the Alternative 161 kV Route

Waterbody Name	Number of Crossings	PWI Stream (Yes/No)
Unnamed Perennial/Intermittent Stream, Tributary to Dry Run Creek	2	No
Dry Run Creek	1	Yes
Zumbro River, North Branch of Middle Fork	3	Yes
Unnamed Perennial/Intermittent Stream, Tributary to Zumbro River, North Branch of Middle Fork	1	Yes
Zumbro River, Middle Fork	1	Yes
Unnamed Perennial/Intermittent Stream, Tributary to Zumbro River, Middle Fork	3	No
Zumbro River, South Branch of Middle Fork	1	Yes
Unnamed Perennial/Intermittent Stream, Tributary to Zumbro River, South Branch of Middle Fork	4	No
Unnamed Perennial/Intermittent Stream, Tributary to Zumbro River	2	No

The Middle Fork of the Zumbro River, from the headwaters to the North Branch of the Middle Fork, is impaired due to turbidity. The South Branch of the Middle Fork of the Zumbro River, from the headwaters to the Middle Fork of the Zumbro River, also is impaired due to turbidity (MPCA 2008). The Applicant anticipates that all streams and surface water along the Alternative 161 kV Route would be spanned and that no structures would be located within these water features.

Wetlands

Chapter 7.2.5 provides a definition of palustrine, riverine, and lacustrine wetland classes, as well as a classification of PFO.

A summary of wetlands crossed by the 80-foot ROW of the Preferred 161 kV Route is shown in Table 9.5-3. The 80-foot ROW of the Preferred 161 kV Route crosses two different types of the NWI wetlands in three different locations. None are mapped as MDNR PWI wetlands. The total area of the NWI wetlands within the 80-foot ROW of the Preferred 161 kV Route 1.5 acres, or 1 percent of the total ROW acreage.

A summary of wetlands crossed by the 80-foot ROW of the Alternative 161 kV Route is shown in Table 9.5-4. The 80-foot ROW of the Alternative 161 kV Route crosses four different types of wetlands in seven different locations. None are mapped as the MDNR PWI wetlands. The total area of the NWI wetlands within the 80-foot ROW of the Alternative 161 kV Route is approximately 2.7 acres, or 1.5 percent of the total ROW acreage.

None of the wetlands crossed by either the Preferred or Alternative 161 kV Routes are longer than the typical span distance of 700 feet, requiring no structures to be placed in these wetlands.

Table 9.5-3:
NWI Wetlands Crossed by 80-foot ROW of the Preferred 161 kV Route

Wetland Type	Total NWI Wetlands			Number of MDNR PWI Wetlands Crossed
	Count	Acres in 80-foot ROW	% of 80-foot ROW	
NWI Total	3	1.53	1.0	0
PEMC	2	0.25	0.2	0
PFO1A	1	1.28	0.9	0

NWI Wetlands based on NWI data; % of route calculated as acreage within the 80-foot ROW; Source: USFWS NWI, MDNR PWI.
 PEMC—Palustrine, Emergent, Seasonally Flooded.
 PFO1A—Palustrine, Forested, Broad-leaved Deciduous, Temporarily Flooded.

Table 9.5-4:
NWI Wetlands Crossed by 80-foot ROW of the Alternative 161 kV Route

Wetland Type	Total NWI Wetlands			Number of MDNR PWI Wetlands Crossed
	Count	Acres in 80-foot ROW	% of 80-foot ROW	
NWI Total	5	2.68	1.5	0
PEM/FO1C	1	0.2	0.1	0
PEM/SS1B	1	0.53	0.3	0
PEMA	1	0.25	0.1	0
PFO1A	2	1.7	1.0	0

NWI Wetlands based on NWI data; % of route calculated as acreage within the 80-foot ROW Source: USFWS NWI, MDNR PWI.
 PEM/FO1C—Palustrine, Emergent, Forested, Broad-Leaved Deciduous, Seasonally Flooded.
 PEM/SS1B—Palustrine, Emergent, Scrub-Shrub, Broad-Leaved Deciduous, Saturated.
 PEMA—Palustrine Emergent wetlands.
 PFO 1A—Palustrine Forested wetlands.

FEMA 100-Year Floodplains

A summary of the FEMA 100-year floodplains crossed by the 80-foot ROW of the Preferred and Alternative 161 kV Routes is shown in Table 9.5-5.

Table 9.5-5
 FEMA 100-Year Floodplains Crossed by 80-foot ROW of the Preferred and Alternative 161 kV Routes

Route	Preferred 161 kV Route	Alternative 161 kV Route
Length (miles)	15.39	17.93
Acres in ROW ^{1,2}	149.21	173.86
Number of Floodplains Crossed	3	4
Floodplains within ROW (acres)	4.59	14.95
Percent of ROW that crosses Floodplains	3.1%	8.6%
Number of Floodplain Crossings over 700 feet	2	3
Lengths (feet) of Floodplains over 700 feet crossed by ROW	1,062—Zumbro River, Middle Fork; 892—Zumbro River, South Branch of Middle Fork	3,876—Zumbro River, Middle Fork; 2,292—Zumbro River, South Branch of Middle Fork; 1,121—Zumbro River, North Branch of Middle Fork

- ¹ The Applicant is requesting a 150-foot-wide ROW, 75 feet on either side of structure. Additional ROW may be required in special situations.
- ² ROW acreage was calculated based on a width of 150 feet multiplied by the length of the route centerline.
- ³ Temporary construction impacts were determined using 1 acre per span. A span is defined as the distance from a structure to a structure.

The Preferred 161 kV Route crosses the FEMA 100-year floodplains at three locations. The total area of floodplains within the 80-foot ROW is 4.59 acres. The Preferred 161 kV Route crosses two FEMA 100-year floodplains longer than the typical span distance of 700 feet. The floodplain associated with the Middle Fork of the Zumbro River (1,062 feet), and the floodplain associated with the South Branch of the Middle Fork of the Zumbro River (892 feet) would each require one structure to be placed in the respective floodplains.

The Alternative 161 kV Route crosses the FEMA 100-year floodplains at four locations. Floodplains at three of the locations are longer than the typical span distance of 700 feet. The floodplains associated with the Middle Fork of the Zumbro River, 3,876 feet, would require six structures, the South Branch of the Middle Fork of the Zumbro River, 2,292 feet would require three structures, and North Branch of the Middle Fork of the Zumbro River, 1,121 feet would require one structure to be placed within the respective floodplains.

These structures, as well as those mentioned above, would displace less than 100 cubic feet of flood storage volume each.

BWSR Easements

No BWSR easements would be crossed by the 80-foot ROW of the Preferred or Alternative 161 kV Routes.

9.5.2.2 Impacts and Mitigation

General impacts and mitigation strategies for water resources are described in detail Chapter 7.5.2. The following describes potential impacts to streams, wetlands, the FEMA floodplains, and BWSR easements associated with the Preferred and Alternative 161 kV Routes.

Streams

The Applicant anticipates that all streams and surface water features along the Preferred or Alternative 161 kV Routes would be spanned and that no structures would be located within these waters. Therefore, no permanent impacts to surface water features are anticipated. Potential temporary impacts to streams are discussed in Chapter 7.5.2. Temporary impacts to streams could potentially include turbidity, including in waters already considered impaired due to turbidity. Both the Preferred and Alternative 161 kV Routes cross the Middle Fork of the Zumbro River and the South Branch of the Middle Fork of the Zumbro River where the streams are considered impaired due to turbidity.

Wetlands

Permanent impacts to wetlands would occur if structures are placed in a wetland. None of the wetlands crossed by either the Preferred or Alternative 161 kV Route are longer than the typical span distance of 700 feet. No permanent impacts are anticipated as a result of structure placement for both the Preferred and Alternative 161 kV Routes.

Tall growing trees would be removed throughout the entire 80-foot ROW during construction of the transmission line, including trees in forested wetlands. After construction, vegetation maintenance procedures would be implemented under transmission lines to prohibit the establishment of new trees. The Applicant anticipates that tree clearing would be required in approximately 1.28 acres of forested wetlands (classified as PFO1A wetlands in Table 9.5-3) within the 80-foot ROW of the Preferred 161 kV Route, and that tree clearing in approximately 1.9 acres of forested wetlands (classified as PFO1A and PEM/FO1C wetlands in Table 9.5-4) within the 80-foot ROW of the Alternative 161 kV Route would be required.

Temporary impacts were calculated based on the total acreage of all wetland types within the 80-foot ROW along the entire length of the centerline. Actual impact acreages may change for numerous reasons including additional construction access roads or smaller a construction footprint in the ROW. The Applicant anticipates 2.51 acres of temporary impacts to wetlands, as a result of implementation the Preferred 161 kV Route. The Applicant anticipates 5.18 acres of temporary impacts to wetlands as a result of implementation the Alternative 161 kV Route.

FEMA 100-year Floodplains

Structures in the FEMA floodplains would displace permeable surface within the floodplain. The Preferred 161 kV Route would result in two structures being placed within FEMA floodplains; one in floodplains associated with the Middle Fork of the Zumbro River and one in the floodplains associated with the South Branch of the Middle Fork of the Zumbro River. The Alternative 161 kV Route would result in ten

structures being placed within the FEMA floodplains; six in the floodplains associated with the Middle Fork of the Zumbro River, three in the floodplains associated with the South Branch of the Middle Fork of the Zumbro River, and one in the floodplains associated with the North Branch of the Middle Fork of the Zumbro River. These structures, as well as those mentioned above, would displace less than 100 cubic feet of flood storage volume each. Based on this, impacts of structures within the FEMA floodplains are not anticipated to have an effect on flooding. As with structure placement in wetlands, the Applicant will coordinate with the USACE and the MDNR to identify a final appropriate structure placement in floodplains.

Minnesota Board of Soil and Water Resources Easements

No BWSR easements are anticipated to be crossed by either the Preferred or Alternative 161 kV Route 80-foot ROW therefore no impacts are anticipated.

9.5.3 Flora

Common plant communities known to occur in the Project area are described in Chapter 7.5.3. Data on vegetation that currently and historically exist in the Project area were gathered from the MDNR MCBS (MDNR 2009). This discussion also identifies noxious weeds recognized by the state of Minnesota and by counties within the Project area.

9.5.3.1 Existing Environment

Figure 9.1-2 shows ECS classifications in the North Rochester-Northern Hills 161 kV section. The Preferred and Alternative 161 kV Routes are located within the Rochester Plateau Subsection of the Paleozoic Plateau Section (MDNR 2009). MCBS surveys describe that historically, the predominant vegetation communities in the Rochester Plateau Subsection were tallgrass prairie and bur oak savanna. These communities are described in more detail in Chapter 7.5.3. Remnants of historical vegetation communities may occur in the Project area. Field surveys to identify native vegetation communities in the Project area would occur once a route is permitted and prior to construction.

Figure 9.2-1 shows current land cover in the North Rochester-Northern Hills 161 kV section. The dominant land cover types for the Preferred Route include cropland (77 percent), grassland (17 percent), and forestland (3 percent). The dominant land cover types for the Alternative 161 kV Route include cropland (72 percent); grassland (22 percent), forestland (5 percent), and urban (2 percent). The remainder is comprised of shrubland and aquatic land cover (<1 percent each).

The state of Minnesota has a total of 11 species of noxious weeds on their primary list, as identified in Chapter 7.5.3 (Table 6.2-11). Goodhue and Olmsted counties do not have secondary noxious weeds listed.

9.5.3.2 Impacts and Mitigation

Impacts to vegetation and proposed mitigation are discussed in detail within Chapter 7.5.3. The Applicant will continue to work with the MDNR and USFWS to avoid and reduce the potential for impacts to sensitive flora along the Preferred and Alternative 161 kV Routes. Construction equipment can spread noxious weed propagating material to new locations. The Applicant will comply with Minnesota noxious weed laws as described in the Minn. R. ch. 1505.

9.5.4 Fauna

This chapter evaluates designated wildlife habitat and conservation areas that occur within 1 mile of the Preferred and Alternative Route centerlines of the North Rochester to Northern Hills 161 kV section. Potential habitat and conservation areas reviewed include NWRs, USFWS WPAs, GBCAs, MDNR WMAs, MDNR AMAs, MDNR designated trout streams, MDNR SNAs, MDNR MCBS areas of biodiversity significance, and conservation easement lands (e.g., CRP, CREP, RIM, and WRP). Areas along each route were evaluated following the methods described in Chapter 7.5.4, and the following sections summarize the results of the evaluation for the Preferred and Alternative Routes.

9.5.4.1 Existing Environment

A general discussion of wildlife species within the Project area is provided in Chapter 7.5.4, and a complete list of common mammals, birds, reptiles, amphibians, and fish known to occur in this region of Minnesota is included in Appendix R. In addition, Figure 9.5-2 shows conservation easements and designated wildlife areas near the Preferred and Alternative Routes of this section.

Preferred 161 kV Route

Designated wildlife habitat and conservation areas along the Preferred Route are limited to one GBCA and several easement lands within 1 mile of the route. The GBCA is categorized as a Type 3 area (described in Chapter 7.5.4.1) and is located south of Pine Island. It is less than 1 mile to the southwest of the Preferred 161 kV Route, but is not crossed by the Preferred 161 kV Route. Conservation land easements along the route include 88 CRP lands within 1 mile, of which four are within the Preferred 161 kV Route (i.e., within 500 feet of the centerline). No NWRs, federally designated WPAs, MDNR WMAs, MDNR SNAs, MDNR designated trout streams, or IBAs occur within 1 mile of the Preferred 161 kV Route. Similarly, no CREP or WRP land easements occur within 1 mile of the Preferred 161 kV Route.

Alternative 161 kV Route

Designated wildlife habitat and conservation areas along the Alternative Route include two GBCAs and several conservation land easements within 1 mile. Both GBCAs are categorized as Type 3 areas (described in Chapter 7.5.4.1), and only one of them is crossed by the Alternative Route for a distance of 2.6 miles. Conservation land easements along the Alternative Route include 85 CRP lands within 1 mile. Of these, only two are within the route (i.e., within 500 feet of the centerline). No NWRs, federally

designated WPAs, MDNR WMAs, MDNR SNAs, MDNR designated trout streams, or IBAs occur within 1 mile of the Alternative 161 kV Route. Similarly, no CREP or WRP land easements occur within 1 mile of the Alternative 161 kV Route.

9.5.4.2 Impacts and Mitigation

Chapter 7.5.4 identifies and discusses potential temporary and permanent impacts to fauna, as well as avian specific impacts that may occur in the Project area as a result of transmission line construction. Impacts beyond those discussed generally in Chapter 7.5.4 are not anticipated along the Preferred or Alternative 161 kV Routes. Avoidance and mitigation measures also would be similar to those discussed in Chapter 7.5.4.

9.5.5 Rare and Unique Resources

Chapter 7.5.5 discusses the methodology used to identify potential impacts to rare and unique resources in the Project area, as well as the legal frameworks that govern them. The following sections summarize the results of the rare and unique resources evaluation for the Preferred and Alternative Routes of the North Rochester–Northern Hills 161 kV section.

9.5.5.1 Existing Environment

Preferred 161 kV Route

The MDNR NHIS database lists occurrence records for 11 state listed species within 1 mile of the Preferred 161 kV Route centerline. No federally listed species or MDNR Rare Native Plant Communities records occur within 1 mile of the Preferred 161 kV Route centerline. Table 9.5-6 summarizes the results of the MDNR NHIS database review. In addition, a review of the MDNR MCBS data revealed that four MCBS areas of biodiversity significance occur within 1 mile of the Preferred 161 kV Route centerline (Figure 9.5-3); however, none are crossed by it.

Alternative 161 kV Route

The MDNR NHIS database lists occurrence records for eight state listed species and three MDNR Rare Native Plant Communities within 1 mile of the Alternative 161 kV Route centerline. No federally listed species records occur within 1 mile of the Alternative 161 kV Route centerline. Tables 9.5-7 and 9.5-8 summarize the results of the MDNR NHIS database review.

Sixteen MCBS sites occur within 1 mile of the Alternative 161 kV Route. However, only two of these are crossed by the Alternative Route (Figure 9.5-3). Both areas crossed are designated as having high biodiversity significance and both occur along the portion of the Alternative 161 kV Route that parallels the existing Prairie Island-Byron 345 kV transmission line west of Pine Island. Both areas are comprised of Elm-Ash-Basswood Terrace Forest. MDNR NHIS data indicate several rare and unique resources associated with this site. A state threatened plant species occurs just east of the route and two mussel

species, one state threatened and the other state special concern, are known to occur within the North Branch of the Middle Fork of the Zumbro River near this location.

Table 9.5-6:
Preferred 161 kV Route: Rare and Unique Species

Common Name	Scientific Name	Status
Wildlife Species		
Mollusks		
Creek heelsplitter	<i>Lasmigona compressa</i>	SC
Elktoe*	<i>Alasmidonta marginata</i>	ST
Ellipse*	<i>Venustaconcha ellipsiformis</i>	ST
Fluted-shell*	<i>Lasmigona costata</i>	SC
Reptiles		
Blanding's turtle	<i>Emydoidea blandingii</i>	ST
Timber rattlesnake	<i>Crotalus horridus</i>	ST
Wood turtle	<i>Clemmys insculpta</i>	ST
Fish		
American brook lamprey	<i>Lampetra appendix</i>	Not Listed
Black redhorse	<i>Moxostoma duquesnei</i>	Not Listed
Ozark minnow	<i>Notropis nubilus</i>	SC
Plant Species		
Herbaceous Plants		
American ginseng	<i>Panax quinquefolius</i>	SC
Glade mallow	<i>Napaea dioica</i>	ST
Tuberous Indian-plantain	<i>Arnoglossum plantagineum</i>	ST

ST State Threatened SC Species of Concern *indicates the observation is of a deceased element

Source: MDNR NHI GIS Shapefile 2009.

Table 9.5-7:
Alternative 161 kV Route: Rare and Unique Species

Common Name	Scientific Name	Status
Wildlife Species		
Mollusks		
Creek heelsplitter	Lasmigona compressa	SC
Elktoe*	Alasmidonta marginata	ST
Ellipse*	Venustaconcha ellipsiformis	ST
Fluted-shell*	Lasmigona costata	SC
Reptiles		
Timber rattlesnake	Crotalus horridus	ST
Wood turtle	Clemmys insculpta	ST
Fish		
American brook lamprey	Lampetra appendix	Not Listed
Black redhorse	Moxostoma duquesnei	Not Listed
Plant Species		
Herbaceous Plants		
Glade mallow	Napaea dioica	ST
Tuberous Indian-plantain	Arnoglossum plantagineum	ST

ST State Threatened SC Species of Concern

Source: MDNR NHI GIS Shapefile 2009 (*indicates the observation is of a deceased element).

Table 9.5-8:
Alternative 161 kV Route: Rare Native Communities

Community Type	Notes
Native Plant Community, Undetermined Class	Few Exotics, includes small areas of maple-basswood forest on moderate slopes and valley sides.
Red Oak-Sugar Maple-Basswood-(Bitternut Hickory) Forest Type	High complete canopy, patchy subcanopy, and shrub layers. High diversity of herbaceous species. Ungrazed, among the top stands in the county.
Sugar Maple-Basswood-(Bitternut Hickory) Forest Type	Large trees cut out, current and historic selective logging. Long history of grazing.

9.5.5.2 Impacts and Mitigation

MCBS areas of biodiversity significance and MDNR-listed native plant communities are known to support rare and unique species. Additionally, wetlands, streams, and river systems may provide habitat for special status species. As summarized in Chapter 7.5.5.2, such areas will be avoided where practicable. Similarly, other mitigation measures as described in Chapter 7.5.5.2 would be used to avoid and minimize impacts to rare and unique species and other protected resources. Upon a route being permitted the Applicant will coordinate with the appropriate agencies (e.g., USFWS, USACE, and MDNR) to determine species-specific survey and wetland delineation needs, as well as additional avoidance and mitigation measures. Surveys for state listed endangered and threatened species would be conducted in suitable habitat within the permitted route corridor as warranted.

9.6 Summary of Potential Impacts

Table 9.6-1 presents a summary comparison of environmental resource impacts for the Preferred and Alternative 161 kV Routes based on analysis required by Minnesota Routing Guidance. Using this comparison, the Applicant concluded that the Preferred 161 kV Route best conserves natural resources, minimizes potential environmental and human settlement impacts as well as minimizing other land use conflicts.

Table 9.6-1:
Summary Comparison of Impacts for Preferred and Alternative 161 kV Routes

Resource Category	Preferred 161 kV Route	Alternative 161 kV Route
Residences		
Number of Residences 0-40 feet (within ROW) from route centerline	0	0
Number of Residences 0-75 feet from route centerline	0	0
Number of Residences 75-150 feet from route centerline	14	5
Number of Residences 150-300 feet from route centerline	40	28
Density (residences/linear mile within 300 feet of route centerline)	3.5	1.8
Recreation and Tourism		
No impacts to recreation and tourism are anticipated		
Effects on Land-Based Economics		
Agriculture		
Permanent Impact	2.4 acres	2.6 acres
Temporary Impact	139 acres	161 acres
Forestry	No impacts to economically important forestry areas are anticipated.	
Mining	No impacts to aggregate mines are anticipated.	

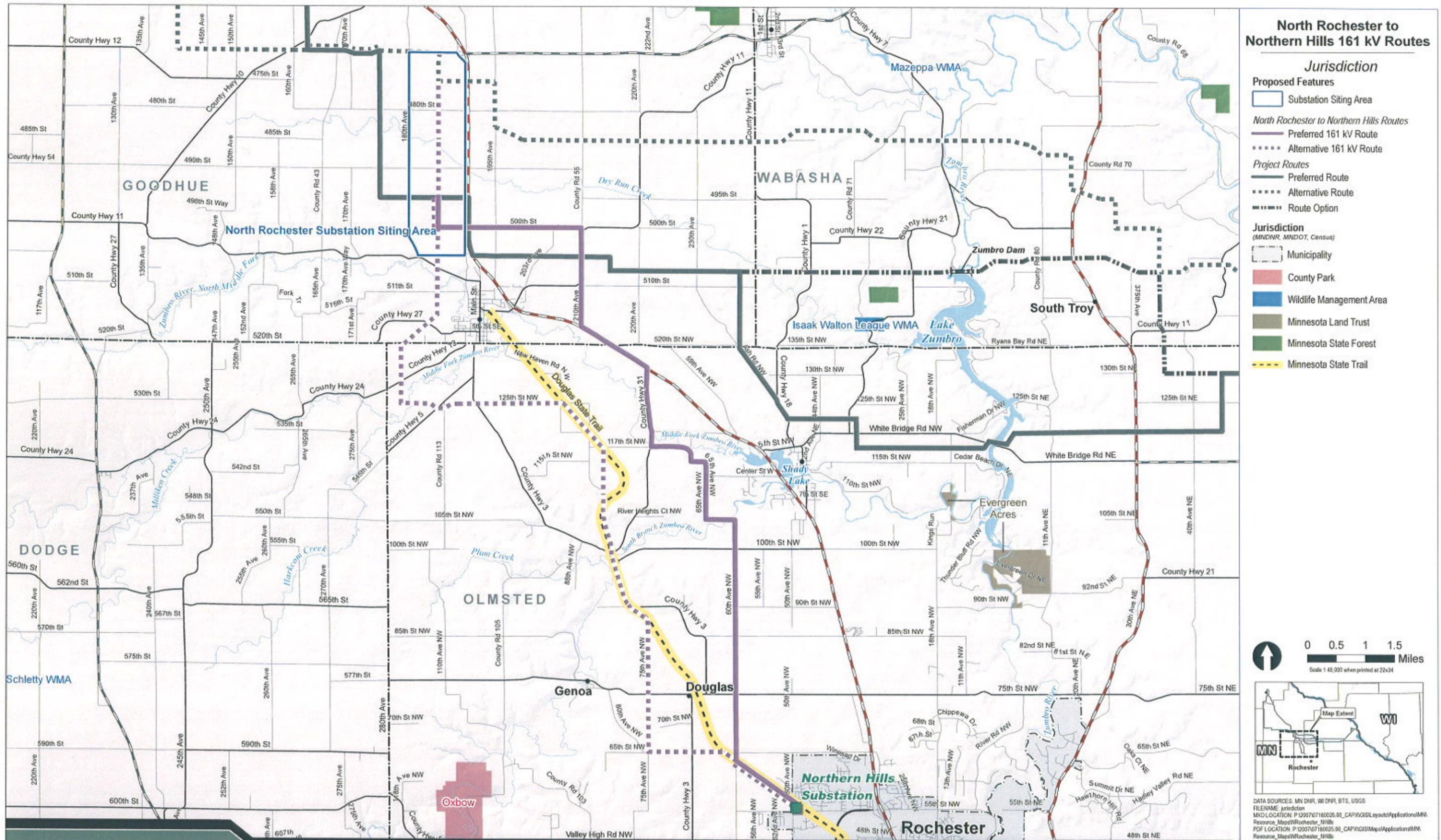
Table 9.6-1:
Summary Comparison of Impacts for Preferred and Alternative 161 kV Routes

Resource Category	Preferred 161 kV Route	Alternative 161 kV Route
Archaeological and Historic Resources Sites Within 1 mile of Route Centerline		
Archaeological	14	0
Architectural		
National Register of Historic Places (NRHP)	0	3
Architectural	13	11
Natural Environment		
Water Resources		
Permanent Wetlands Impacts	<1 acre	<1 acre
Temporary Wetlands Impacts	2 acres	3 acres
Potential Tree Clearing in Wetlands	1.3 acres	1.9 acres
Stream Crossings	5	18
Permanent Impacts to Floodplains	<1 acre	<1 acre
Flora		
Percent Cropland	77	72
Percent Grassland	17	22
Percent Shrubland	0	<1
Percent Forested Land	3	5
Percent Aquatic	<1	0
Fauna		
Conservation Reserve Program Lands Crossed	4	2
Conservation Reserve Enhancement Program Lands Crossed	0	0
Length of Important Bird Areas Crossed	0 mile	0 mile
Length of Grassland Bird Conservation Areas Crossed	0 mile	2.6 miles
Number of Federal Rare and Unique Species Known to Occur Within 1 mile of Route Centerline		
Threatened	0	0
Endangered	0	0
Candidate	0	0
Number of State Rare and Unique Species Known to Occur Within 1 mile of Route Centerline		
Threatened	6	6
Endangered	0	0
Species of Concern	4	2
DNR Rare Native Communities	35	70
Length of Outstanding Biodiversity Sites Crossed	0	0
Length of High Biodiversity Sites Crossed	0	0.7 mile
Length of Moderate Biodiversity Sites Crossed	0	0

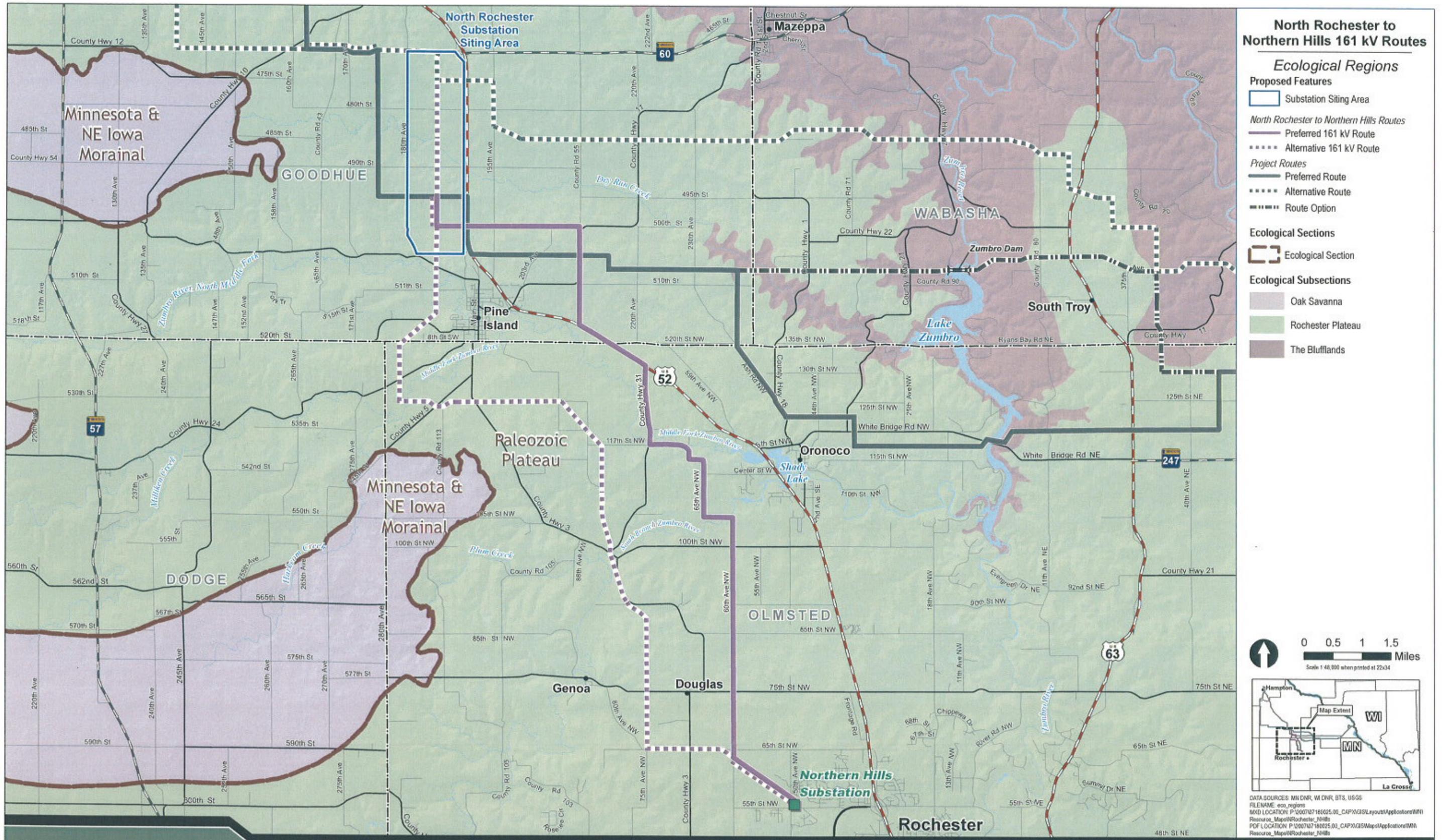
Table 9.6-1:
Summary Comparison of Impacts for Preferred and Alternative 161 kV Routes

Resource Category	Preferred 161 kV Route	Alternative 161 kV Route
Use or Paralleling of existing ROW (transportation, pipeline, and electrical transmission systems) and property lines		
Total length of route (miles)	15.4	18.0
Length following Transmission Line (miles)	0.5	5.8
Percentage of route following Transmission Line	3%	32%
Length following road but not Transmission Line (miles)	13.3	8.1
Percentage of route following road but not Transmission Line	86%	45%
Length following property line but not transmission line or roads (miles)	1.6	2.2
Percentage of route following property line but not transmission line or roads	10%	12%
Total length following transmission line, roads, or property lines (miles)	15.3	16.1
Percentage of route following transmission line, roads, or property lines	100%	89%
Length not following transmission line, roads, or property lines (miles)	0.1	1.9
Percentage of route not following transmission line, roads, or property lines	1%	11%
Estimated Costs (millions)		
Cost	\$16	\$17

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9.1-1: North Rochester - Northern Hills 161 kV Route Overview



North Rochester to Northern Hills 161 kV Routes

Ecological Regions

Proposed Features

- Substation Siting Area

North Rochester to Northern Hills Routes

- Preferred 161 kV Route
- Alternative 161 kV Route

Project Routes

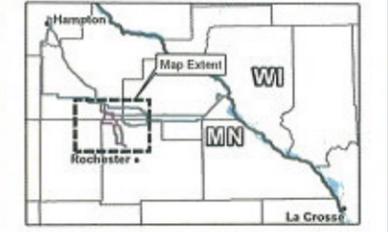
- Preferred Route
- Alternative Route
- Route Option

Ecological Sections

- Ecological Section

Ecological Subsections

- Oak Savanna
- Rochester Plateau
- The Blufflands



DATA SOURCES: MN DNR, WI DNR, BTS, USGS
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Ecological Regions Resource Map
 MN Route Permit Application

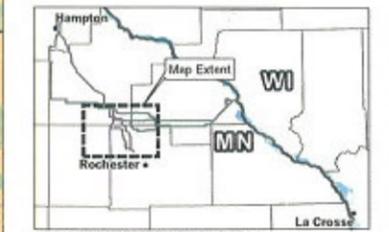
9.1-2: MN DNR Environmental Classification System Provinces and Subsections

North Rochester to Northern Hills 161 kV Routes

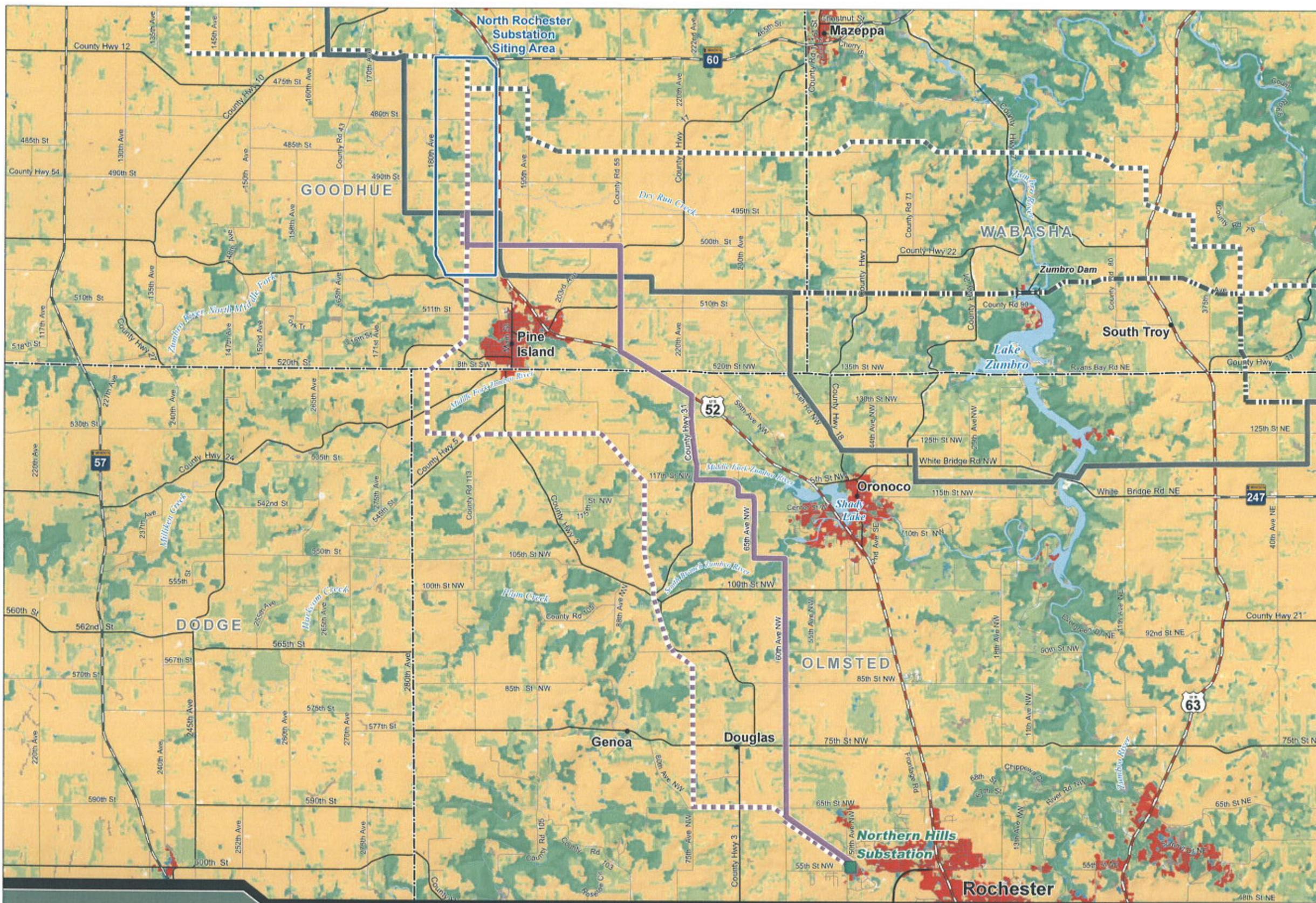
Land Cover

- Proposed Features**
- Substation Siting Area
 - North Rochester to Northern Hills Routes
 - Preferred 161 kV Route
 - Alternative 161 kV Route
 - Project Routes
 - Preferred Route
 - Alternative Route
 - Route Option

- Land Cover (MN GAP)**
- Aquatic
 - Urban
 - Forest
 - Grassland
 - Cropland
 - Shrubland



DATA SOURCES: MN DNR, WI DNR, BLS, USGS
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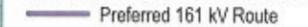
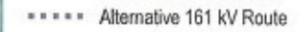
Land Cover Resource Map
 MN Route Permit Application

North Rochester to Northern Hills 161 kV Routes

Population Density

Proposed Features
 Substation Siting Area

North Rochester to Northern Hills Routes

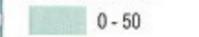
 Preferred 161 kV Route
 Alternative 161 kV Route

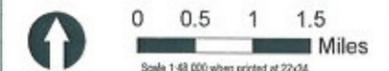
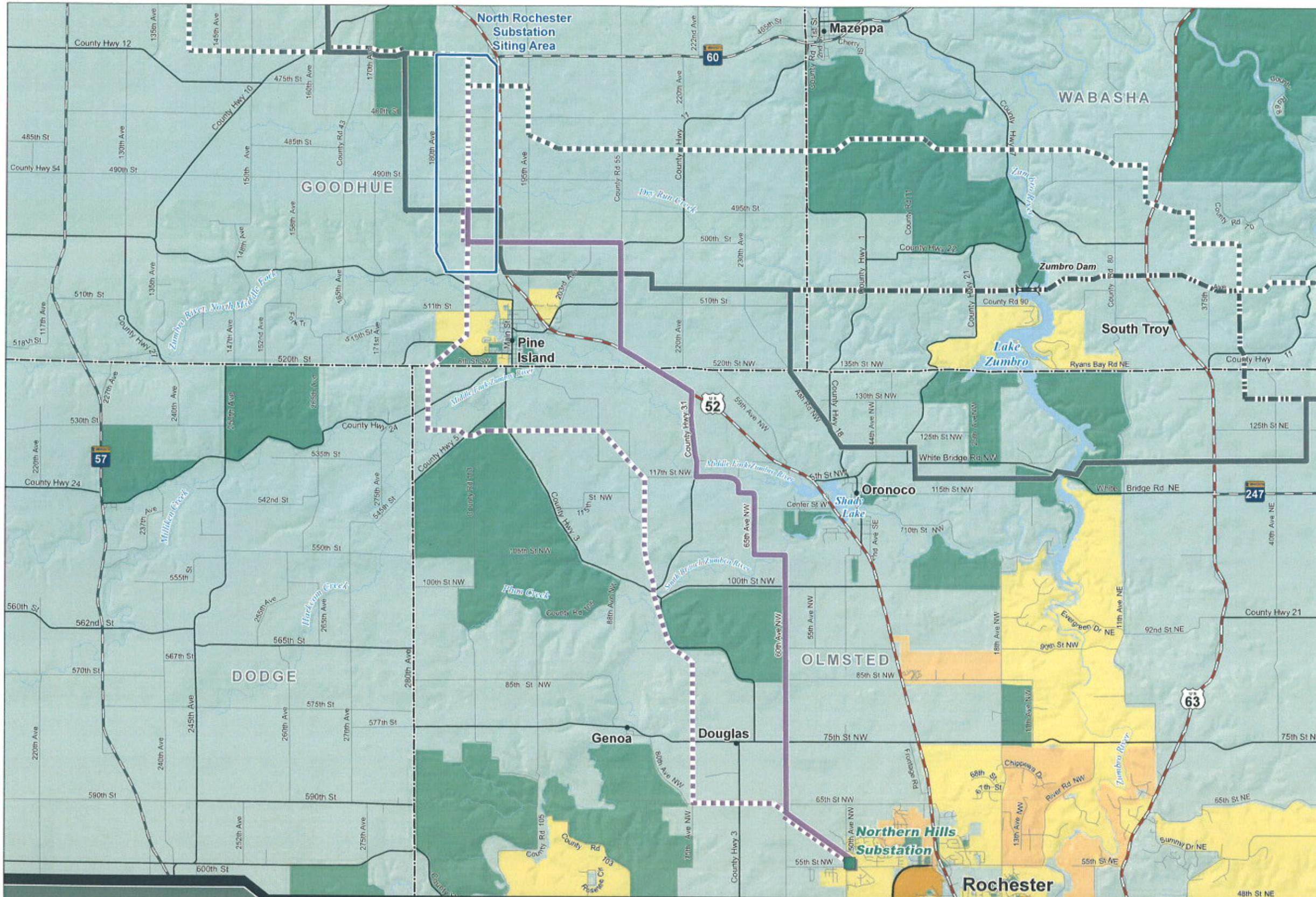
Project Routes

 Preferred Route
 Alternative Route
 Route Option

Population Density

(People/Block Group)

-  0 - 50
-  51 - 100
-  101 - 500
-  501 - 1000
-  1001 - 1500

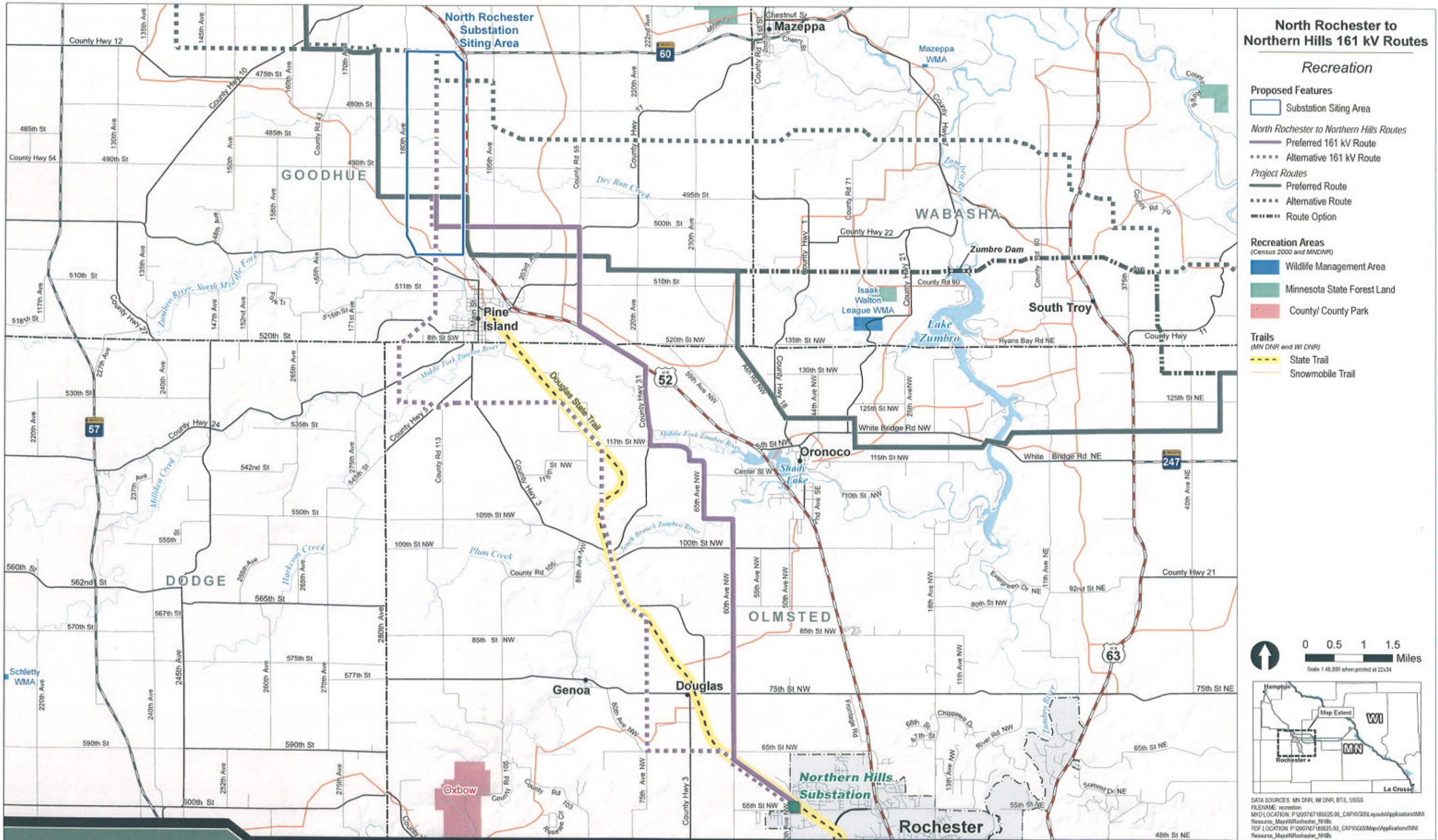


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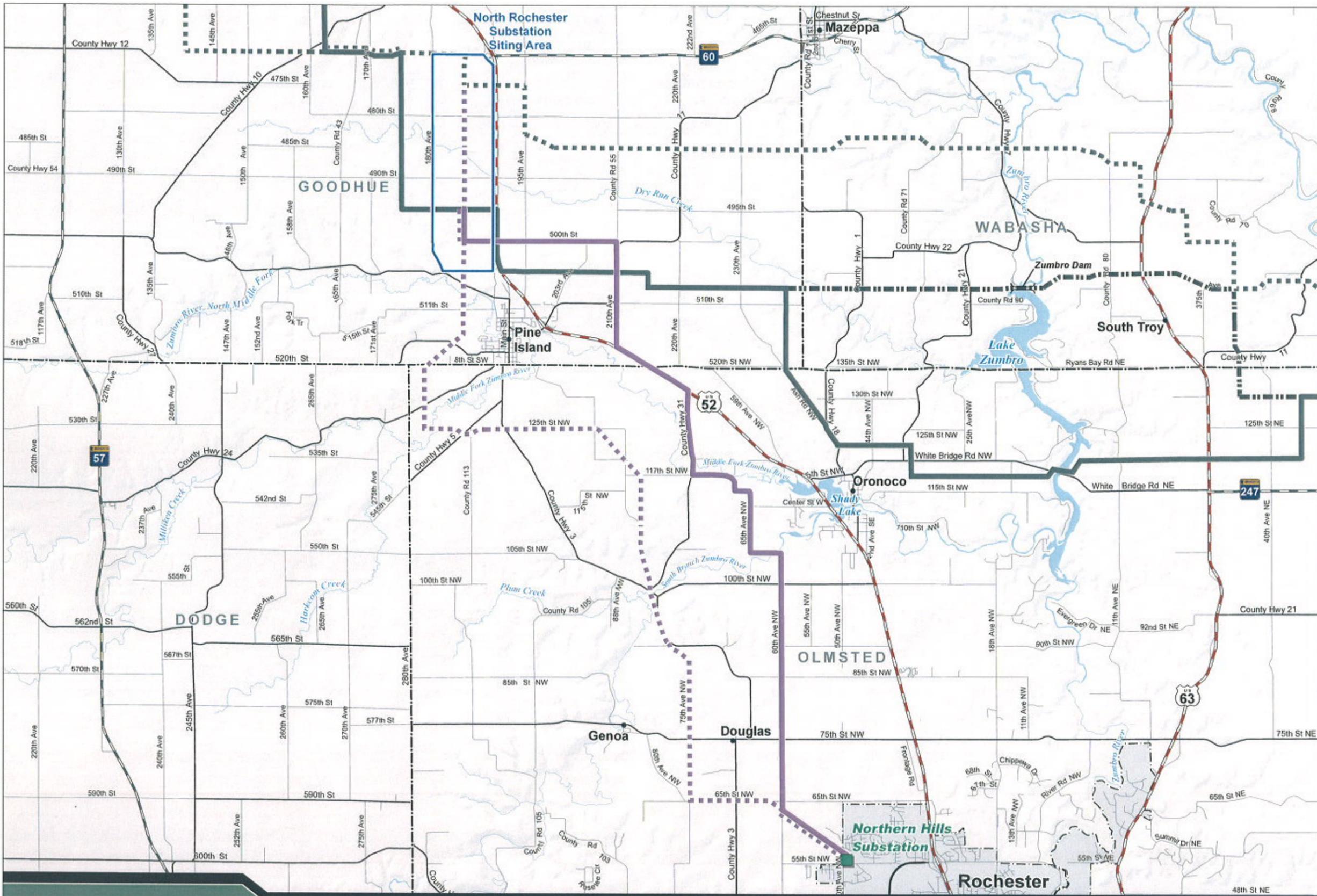
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**Population Density
 Resource Map
 MN Route Permit Application**

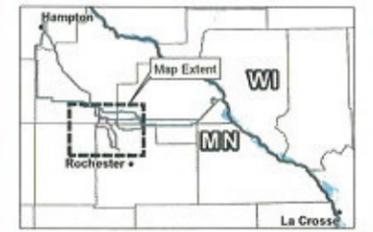
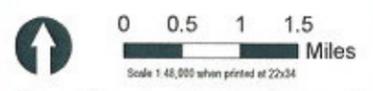


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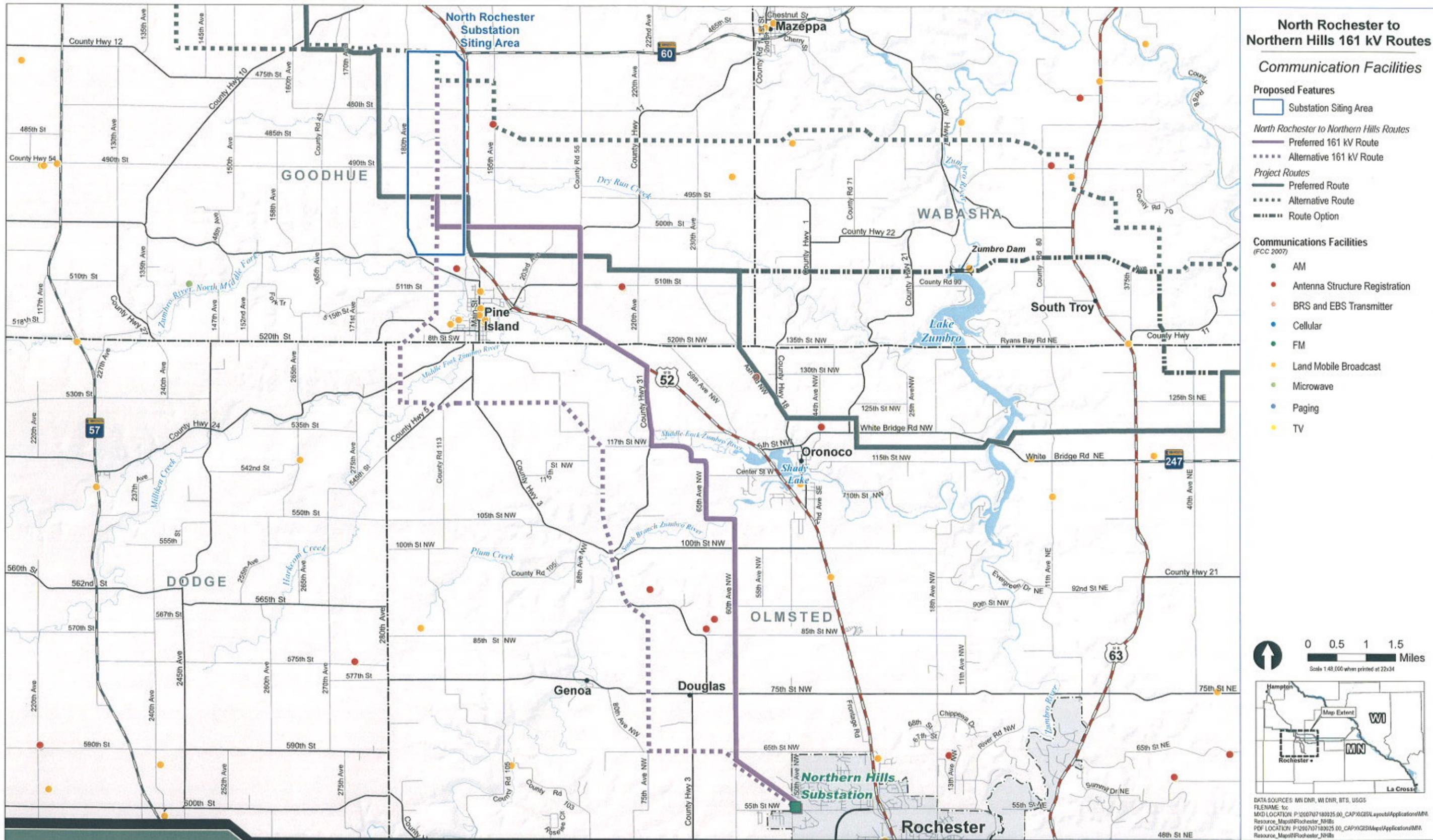


North Rochester to Northern Hills 161 kV Routes

- Transportation**
- Proposed Features**
- Substation Siting Area
 - North Rochester to Northern Hills Routes**
 - Preferred 161 kV Route
 - Alternative 161 kV Route - Project Routes**
 - Preferred Route
 - Alternative Route
 - Route Option
- Transportation**
(Bureau of Transportation Statistics, Census)
- Interstate Highway
 - US Highway
 - State Highway
 - Major Road
 - Local Road
 - Railroad



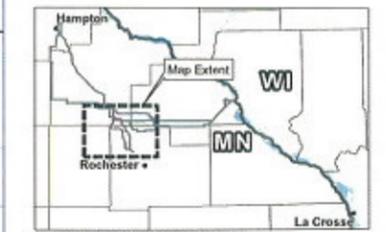
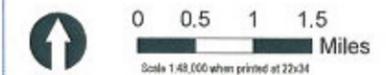
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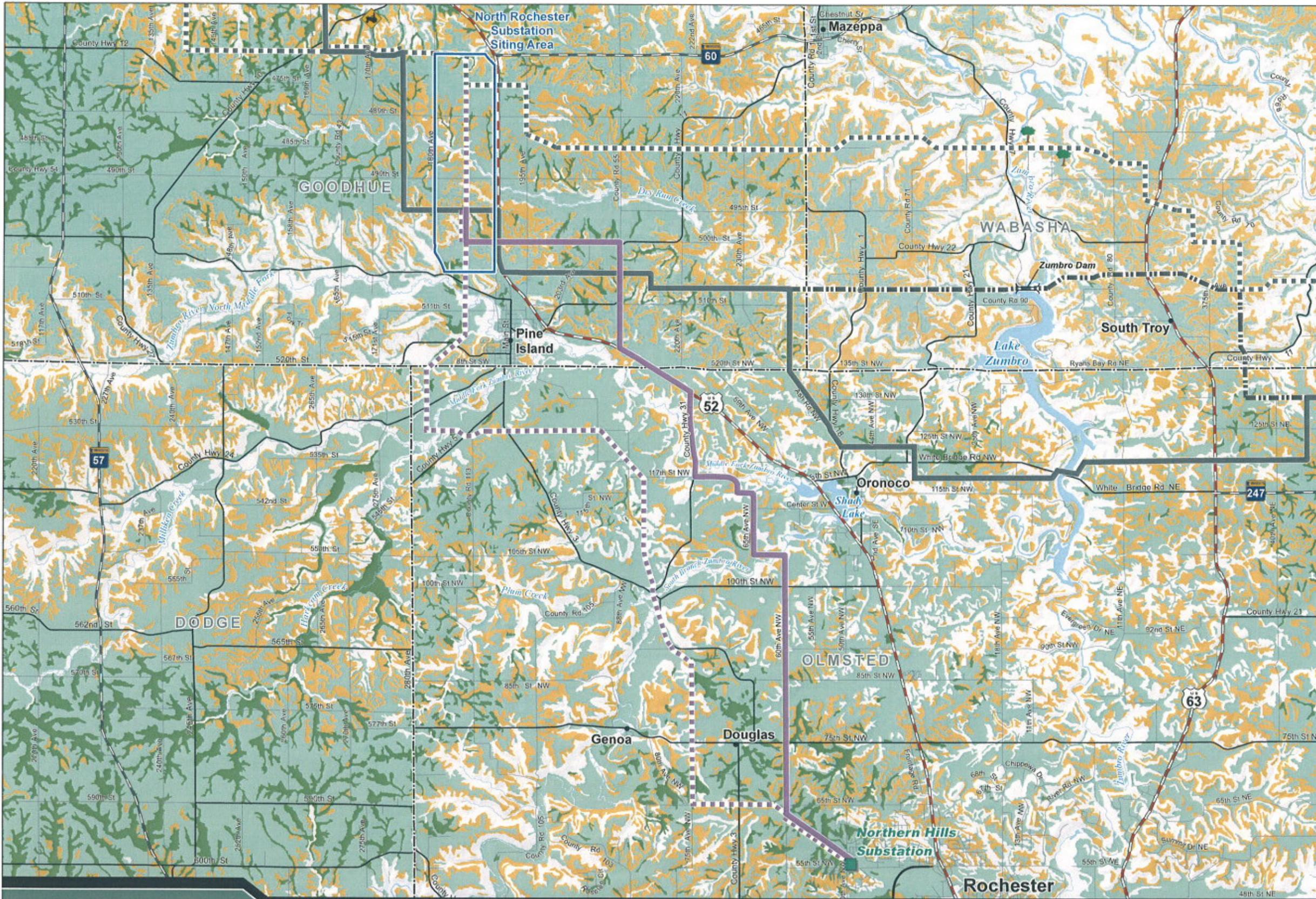
North Rochester to Northern Hills 161 kV Routes

Communication Facilities

- Proposed Features**
- Substation Siting Area
- North Rochester to Northern Hills Routes**
- Preferred 161 kV Route
 - Alternative 161 kV Route
- Project Routes**
- Preferred Route
 - Alternative Route
 - Route Option
- Communications Facilities (FCC 2007)**
- AM
 - Antenna Structure Registration
 - BRS and EBS Transmitter
 - Cellular
 - FM
 - Land Mobile Broadcast
 - Microwave
 - Paging
 - TV



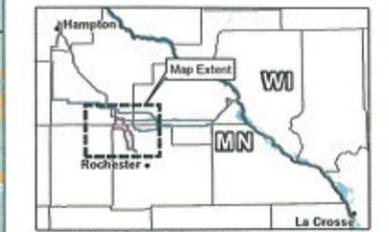
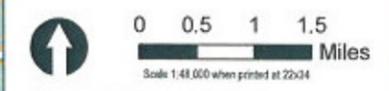
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North Rochester to Northern Hills 161 kV Routes

Prime Farmland and Agriculture

- Proposed Features**
- Substation Siting Area
- North Rochester to Northern Hills Routes**
- Preferred 161 kV Route
 - Alternative 161 kV Route
- Project Routes**
- Preferred Route
 - Alternative Route
 - Route Option
- Prime Farmland (NRCS SSURGO)**
- Prime Farmland
 - Prime farmland if drained
 - Farmland of statewide importance
- Agricultural Features**
- Organic Farm
 - Tree Farm (identified by public comment)

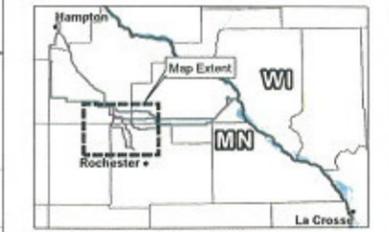
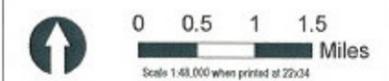
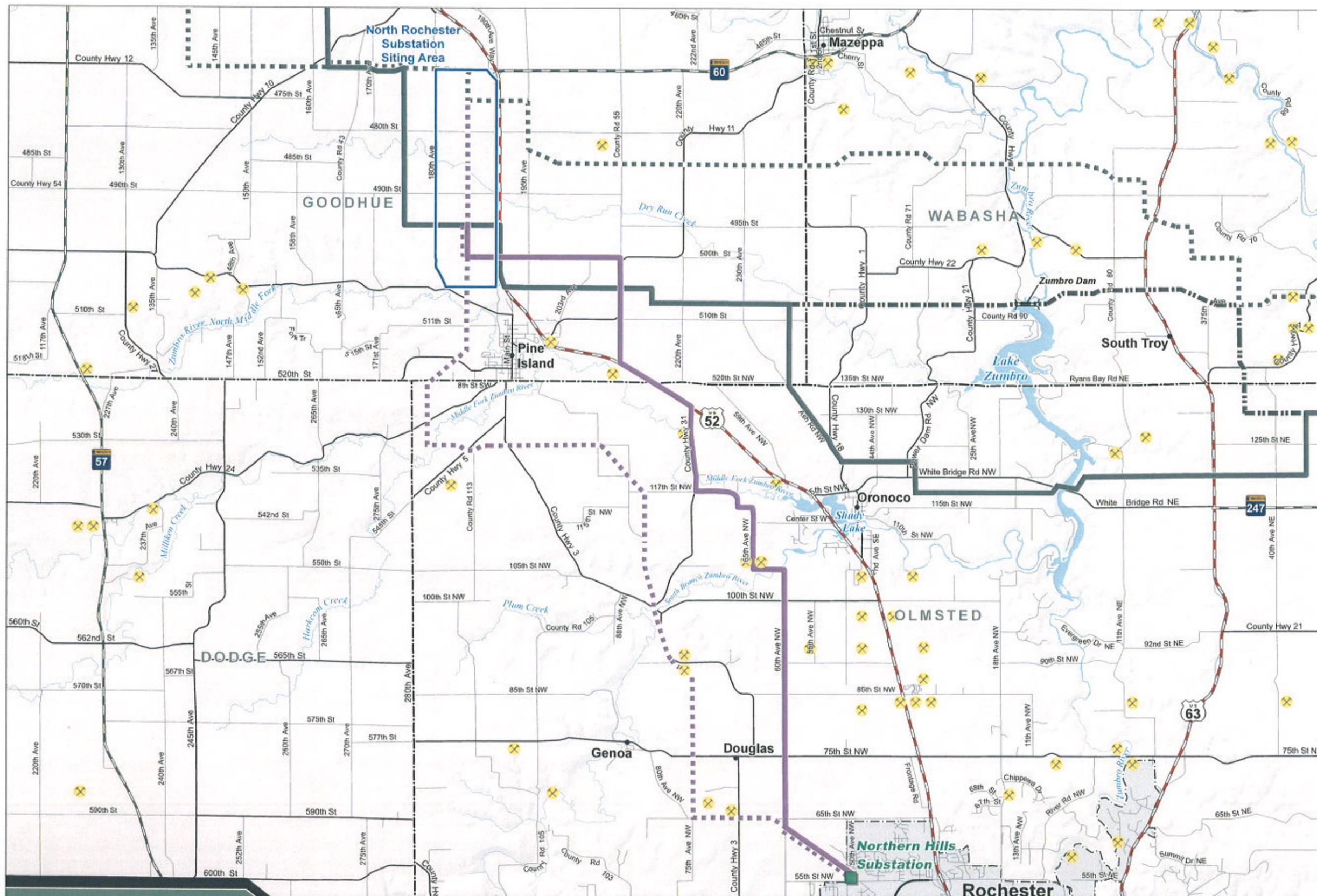


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North Rochester to Northern Hills 161 kV Routes

Mining

- Proposed Features**
- Substation Siting Area
 - North Rochester to Northern Hills Routes**
 - Preferred 161 kV Route
 - Alternative 161 kV Route
 - Project Routes**
 - Preferred Route
 - Alternative Route
 - Route Option
 - Gravel Pits**
 - ✕ Gravel Pit



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**Mining Resource Map
 MN Route Permit Application**

North Rochester to Northern Hills 161 kV Routes

Historic Places

Proposed Features

Substation Siting Area

North Rochester to Northern Hills Routes

Preferred 161 kV Route
Alternative 161 kV Route

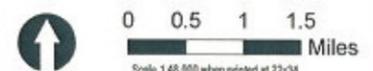
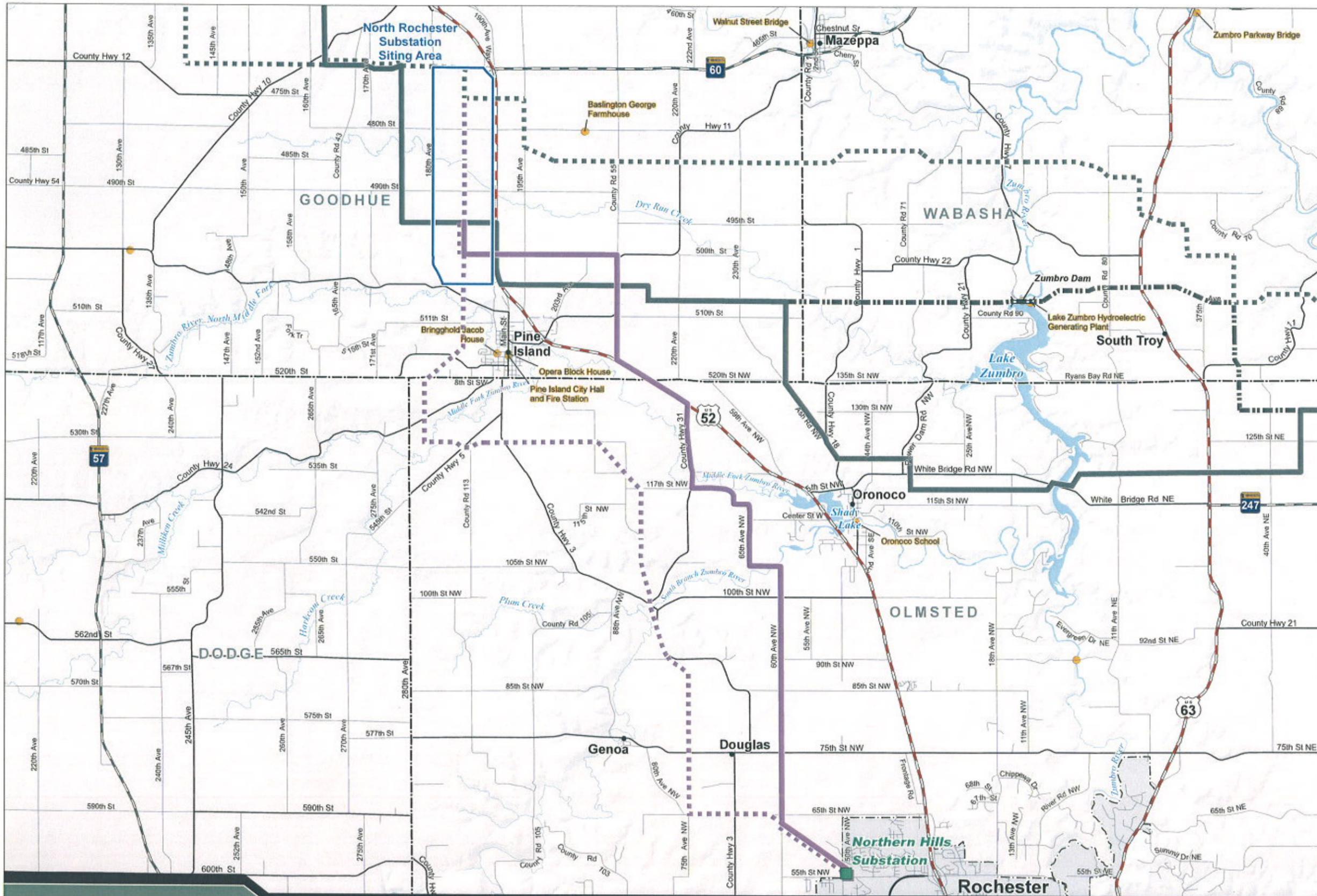
Project Routes

Preferred Route
Alternative Route
Route Option

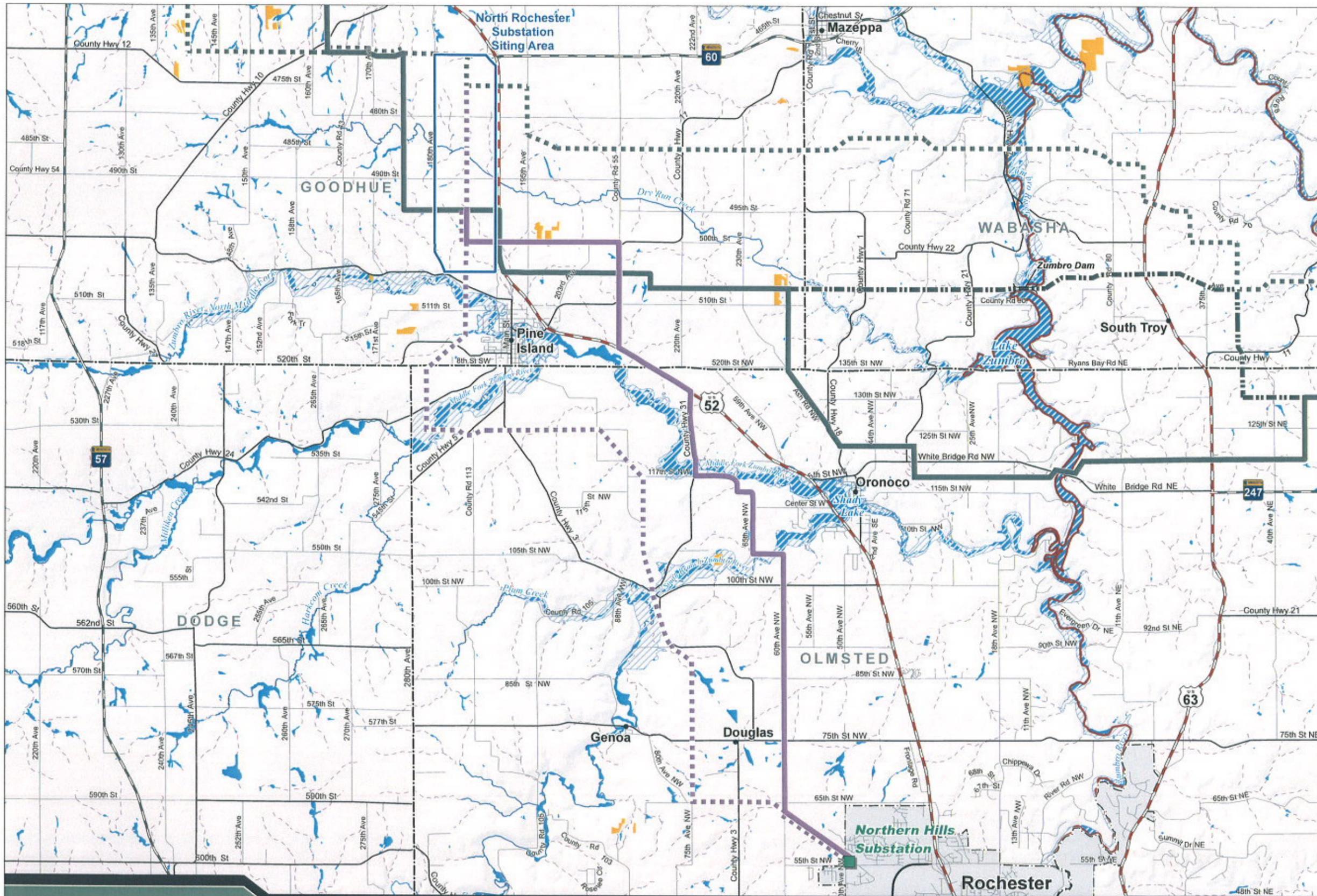
Historic Places

(National Register of Historic Places)

Historic Place



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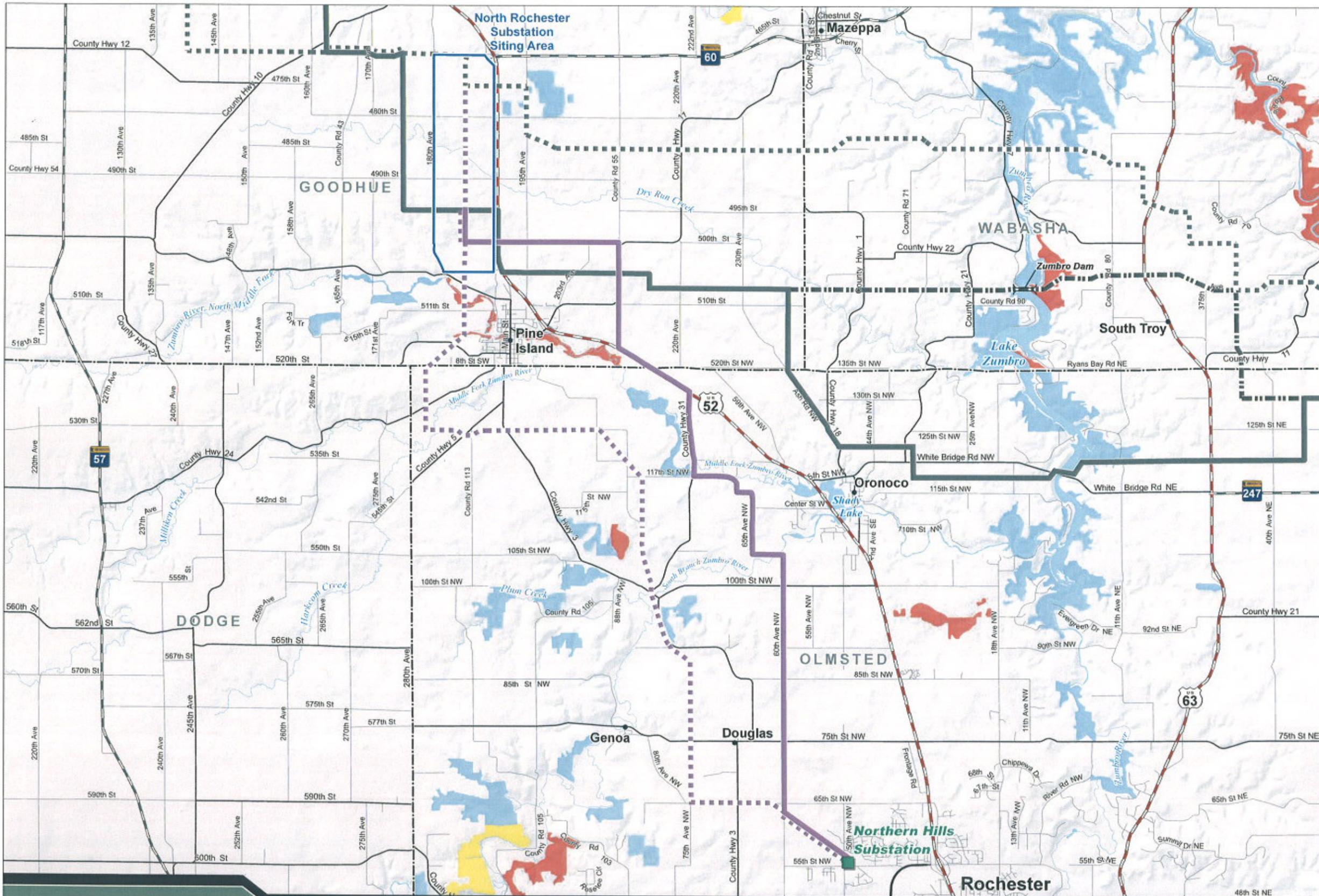


North Rochester to Northern Hills 161 kV Routes

- Water Resources**
- Proposed Features**
- Substation Siting Area
 - North Rochester to Northern Hills Routes
 - Preferred 161 kV Route
 - Alternative 161 kV Route
 - Project Routes**
 - Preferred Route
 - Alternative Route
 - Route Option
 - Surface Water**
(MNDOT, WIDNR and EPA)
 - Perennial Stream/Drainage Ditch
 - Intermittent Stream/Drainage Ditch
 - Perennial Waterbody
 - Impaired Water
 - Wetlands**
(National/Wisconsin Wetland Inventories)
 - Wetland
 - Floodplains**
(FEMA Q3)
 - 100-Year Floodplain
 - Board of Water and Soil Resources (BWSR)**
 - Easement



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North Rochester to Northern Hills 161 kV Routes

Biodiversity

Proposed Features

- Substation Siting Area
- North Rochester to Northern Hills Routes
 - Preferred 161 kV Route
 - Alternative 161 kV Route
- Project Routes
 - Preferred Route
 - Alternative Route
 - Route Option

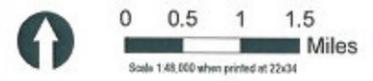
Biodiversity (MNDNR)

- Outstanding
- High
- Moderate

Outstanding = sites containing the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most intact functional landscapes present in the state

High = sites containing very good quality occurrences of the rarest species, high quality examples of the rarest native plant communities, and/or important functional landscapes

Moderate = sites containing significant occurrences of rare species, and/or moderately disturbed native plant communities and landscapes that have a strong potential for recovery



DATA SOURCES: MNDNR, WI DNR, BLS, USGS
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