

U.S. Fish and Wildlife Service

**Draft
Environmental Assessment**

For the

**Proposed Crossing of Service Interest
Land by the Great Northern Transmission Line
Roseau and Lake of the Woods Counties,
Minnesota**

June 2016

**Regional Director
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Acronym and Definitions

AC	alternating current
ALJ	Administrative Law Judge
Applicant	Minnesota Power, a regulated division of ALLETE, Inc.
ATVs	all-terrain vehicles
BO	Biological Opinion
BMPs	best management practices
CFR	Code of Federal Regulations
CL1	Crossing Location 1
CL2	Crossing Location 2
DOE	U.S. Department of Energy
EA	Environmental Assessment
EERA	MN DOC - Energy Environmental Review and Analysis
EIS	Environmental Impact Statement (Final)
EMF	electric and magnetic fields
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
GIS	Geographic Information System
kV	kilovolt
MBS	Minnesota Biological Survey
mi	miles
MN DNR	Minnesota Department of Natural Resources
MN DOC	Minnesota Department of Commerce
MN PUC	Minnesota Public Utilities Commission
MnDOT	Minnesota Department of Transportation
NEPA	National Environmental Policy Act
NESC	National Electric Safety Code

NHIS	Natural Heritage Information System
No Action Alternatives	Segments of Route Alternatives proposed by the USFWS during the EIS Scoping Period that avoid impacts to USFWS-owned parcels.
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PA	Programmatic Agreement
PPSA	Minnesota Power Plant Siting Act
Private Lands	Lands not owned by the county, state, or federal government.
Project	Great Northern Transmission Line
Proposed Action	The Route and anticipated centerline alignment ordered by the MN PUC on February 26, 2016.
Minimization Alternative	A centerline alignment alternative within the Proposed Action Route that minimizes the total length of crossing of USFWS-owned parcels.
PWI	Public Water Inventory
USFWS	U.S. Fish and Wildlife Service

1 Introduction

Minnesota Power, a regulated division of ALLETE, Inc. (Applicant) has made an application to the Minnesota Public Utilities Commission (MN PUC) and the U.S. Department of Energy (DOE) for a route permit and presidential permit for the Great Northern Transmission Line Project (Project). Consistent with the National Environmental Policy Act (NEPA), DOE prepared an Environmental Impact Statement (EIS) that evaluated the potential environmental effects of the Project and reasonable alternatives, including alternatives that avoided U.S. Fish and Wildlife Service (USFWS)-interest parcels. USFWS served as a cooperating agency throughout the EIS process.

Building on the analysis in the EIS, the Applicant developed this Environmental Assessment (EA) to more specifically address potential impacts the proposed alignment of the Project may have on USFWS-interest parcels. This EA is organized as follows:

Table 1-1. Organization of Environmental Assessment

Section	Topic	Focus
1	Introduction	Overview of this document and of the Project
2	Purpose and Need	Description of the Project's purpose and need as well as this EA's purpose and need, decisions that need to be made and regulatory background.
3	Alternatives	Description of alternatives considered but eliminated, alternatives carried forward, and a summary of alternatives.
4	Affected Environment	A table that describes the general affected environment of the Project.
5	Environmental Consequences	Detail of the potential impacts of the Proposed, No Action, and Minimization Alternatives to human and natural environments.
6	List of Preparers	List of preparers
7	Consultation & Coordination with the Public and Others	Information relating to the Agency and Public consultation activities for the overall Project.
8	Public Comments on Draft EA	Summary of comments and responses on this EA.
9	References	References cited.
Appendix A	Figures	Figures to accompany text in Section 5.

1.1 Project Description

The Applicant proposes to construct a 224-mile, 500-kilovolt (kV), alternating current (AC), high-voltage transmission line from the U.S./Canadian border in Roseau County, Minnesota to the proposed Iron Range 500kV Substation near Grand Rapids, Minnesota. The Applicant anticipates that the Project would begin construction in fall 2016 at the earliest and be operational by June 2020.

1.2 Sources of Information

Much of the information used in this EA is derived from the DOE and Minnesota Department of Commerce's (MN DOC) Final Environmental Impact Statement (EIS) published in October 2015. USFWS participated in the preparation of that EIS as a cooperating agency.

GIS analysis of similar data to that used in the EIS was used to calculate potential impacts and measure distances in this EA.

2 Project Purpose and Need

The Applicant is proposing to construct a 224-mile long, 500-kV overhead, single-circuit, alternating current electric transmission line known as the Great Northern Transmission Line (Project). The Project is one part of a larger transmission line that will bring clean, renewable hydropower generated in Manitoba, Canada, into Minnesota. The overall purpose of and need for this Project is discussed below, as is the specific purpose and need for a right-of-way authorization over lands controlled by the USFWS.

2.1 Purpose for USFWS Action

In October 2015, the DOE and the MN DOC jointly published a Final EIS that considered the environmental effects of various route and alignment alternatives for the Project. USFWS participated in the EIS as a cooperating agency.

The EIS states that granting a Presidential permit for the Applicant's preferred border crossing is the DOE's preferred alternative. The Applicant accordingly will soon acquire a Presidential permit from DOE that will authorize its preferred border crossing for the Project.

On January 4, 2016, an Administrative Law Judge (ALJ) reviewing the route permit application recommended that the MN grant a route permit that largely follows the Applicant's preferred route—including those portions of the route that cross property with USFWS interest. The MN PUC is expected to adopt the ALJ's recommendation. The Applicant accordingly is now seeking USFWS permission to construct the Project along the preferred route through USFWS-interest lands.

The purpose of this Environmental Assessment (EA) is to evaluate a formal Right of Way (ROW) application that has been submitted to the USFWS to cross two parcels of land that lie within the preferred route evaluated in the DOE and MN DOC FEIS. This EA will tier off of the FEIS described above and will only address the ROW application and reasonable alternatives to the requested ROW on Service interested land.

2.2 Need for USFWS Action

- There is a need to evaluate the ROW application in accordance with USFWS criteria for granting such access.
- There is a need to protect Service interest land for the purpose for which it was originally obtained.
- There is a need to ensure that any encroachment upon or loss of Service interest land is fully mitigated
- There is a need to consider the overall environmental effects of granting the requested ROW and of reasonable alternatives to the requested ROW, either on or off of Service land.

2.3 Decisions that Need to be Made

The USFWS' Regional Director will review the alternatives analyzed in detail and will determine, based on the facts and recommendations contained herein, whether to grant Minnesota Power ROW easements for the crossings of USFWS parcels.

2.4 Project Background and Applicant's Purpose and Need

2.4.1 Project Background

On April 15, 2014, the Applicant applied to the DOE for a Presidential permit to construct, operate, and maintain the Project between the Canadian Province of Manitoba and Roseau County, Minnesota. On the same date, the Applicant also applied to the MN PUC for a Route Permit under the Minnesota Power Plant Siting Act (PPSA). The proposed transmission line would run from the Applicant's proposed international border crossing in Roseau County, Minnesota to the new Iron Range 500 kV Substation near Grand Rapids, Minnesota.

As part of the DOE's Presidential permit and PUC's Route permit processes, scoping meetings were held to provide the public with the opportunity to comment on potential environmental issues and to put forth alternatives for consideration in the EIS. The MN DOC —Energy Environmental Review and Analysis (EERA) studied and evaluated any site or route the PUC "deems necessary that was proposed in a manner consistent with rules concerning the form, content, and timeliness of proposals for alternate sites and routes." On February 26, 2016, the MN PUC approved a Route for the Project and on April 11, 2016 the PUC published their final written order.

DOE is acting as federal joint lead agency with the Minnesota Department of Commerce-Energy Environmental Review and Analysis (DOC-EERA) acting as state joint lead agency per 40 Code of Federal Regulations (CFR) 1501.5(b).

2.4.2 Overall Project Need

Under Minnesota law, any entity proposing to construct a “large energy facility,” such as a high-voltage transmission line, must first obtain a certificate of need from the MN PUC. Minn. Stat. 216B.243.

The Applicant filed its certificate of need application for the Project with the MN PUC on October 22, 2013. In reviewing that application, the MN PUC considered whether there is a need for a transmission line and approved the size, type, and required end points of the Project. Following a formal contested case hearing, the ALJ issued her report on March 31, 2015, which concluded that the Applicant satisfied the certificate of need requirements and recommended the MN PUC grant a certificate of need to the Applicant for the construction of the Project and associated facilities. The MN PUC granted the certificate of need on June 30, 2015.

As part of that process, the MN PUC reviewed various non-transmission line alternatives and found that the Project is the Applicant’s best option to meet its existing and future energy demand.

The certificate of need application, ALJ recommendations, and MN PUC Order can be viewed on the MN PUC website¹.

2.4.3 Overall Project Purpose

According to the Applicant’s federal and state permit applications, the overall purpose of the Project is to efficiently provide the Applicant’s customers and the region with energy that will:

- help meet the region’s growing energy demands;
- advance Minnesota Power’s Energy Forward strategy of increasing its generation diversity and renewable portfolio;
- strengthen electric system reliability; and
- fulfill the Applicant’s obligations under its power purchase agreements with Manitoba Hydro,

all in a manner that is consistent with the Applicant’s commitment to making a positive impact on communities.

In order to avoid duplication with state environmental review procedures, DOE and DOC-EERA prepared a single EIS to comply with environmental review requirements under NEPA and the Minnesota PPSA. Additional discussion of the Regulatory Framework and Background can be found in Chapter 1 of the EIS.

¹**Route Permit Application:**

<https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showeDocketsSearch&showEdocket=true>. Docket Number 14-21.

Certificate of Need:

<https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=eDocketsResult&userType=public>

3 Alternatives

3.1 Alternatives Not Considered

The EIS included evaluation of two different routes with potential impacts to FWS parcels: the Orange Route and the Blue Route. The DOE and MPUC, through the federal EIS and state routing process, have selected the Blue Route as the permitted route. Therefore, alternatives related to the Orange Route will not be included for further discussion in this EA. See table 3-1 below. For the remaining alternatives under consideration, the Beltrami North Variation 1 and Beltrami North Central Variation 3 were both eliminated because there were other suitable No Action Alternatives that would avoid FWS parcels at the two locations under consideration.

Table 3-1. USFWS-Proposed Route Variations/Alignment Modifications Analyzed in the EIS.

Route Variation/Alignment Modification Name	Route	Location of Analysis in the EIS	Status for EA	Reasoning
Beltrami North Variation 1	Both	Chapter 6; page 316	Eliminated	Alternative impacts additional homes; Beltrami North Variation 2 provides suitable No Action Alternative
Beltrami North Variation 2	Both	Chapter 6; page 316	Included	Provides suitable No Action Alternative
Beltrami North Central Variation 1 (a combination of two of USFWS' proposed alternatives)	Both	Chapter 6; page 336	Included	Provides suitable No Action Alternative
Beltrami North Central Variation 3	Both	Chapter 6; page 336	Eliminated	Alternative still impacts FWS parcels; does not provide suitable No Action Alternative
Beltrami South Central Variation	Orange	Chapter 6; page 409	Eliminated	Route no longer under consideration
Beltrami South Variation	Orange	Chapter 6; Page 422	Eliminated	Route no longer under consideration
Northome Variation (includes one of the alignment modifications proposed by USFWS)	Orange	Chapter 6; Page 482	Eliminated	Route no longer under consideration

Route Variation/Alignment Modification Name	Route	Location of Analysis in the EIS	Status for EA	Reasoning
Silver Creek Alignment Modification²	Blue	Chapter 6; Page 643	Eliminated	Applicant re-aligned route to avoid FWS parcels, therefore a No Action Alternative is not necessary

The EIS scoping process and alternatives analysis identified a number of factors that limit the identification of additional alternatives. These factors are also relevant to this EA, and include:

- Alternatives that crossed the existing 500-kV transmission line were not considered because they have increased reliability risks related to potential outages.³
- Alternatives that directly impacted multiple residences were not considered because they would not minimize impacts to the local community.
- Alternatives that would require additional impacts to USFWS lands were not considered because they would not minimize impacts to USFWS lands.
- Alternatives that moved the centerline closer to the existing 500-kV transmission line were not considered because they have reliability risks and safety hazards for construction, operation and maintenance of the transmission line.

3.2 Alternatives Carried Forward for Detailed Analysis

For the sake of more detailed environmental impact analyses and comparisons specific to USFWS parcels, some of the alternatives studied in the EIS are included in this EA. The EA alternatives include the Applicant’s proposed alternatives and no action alternatives, which were identified by the FWS in consultation with the applicant. The no action alternatives have not been vetted by the applicant but serve to illustrate the potential impacts that would occur if FWS lands must be avoided. If the FWS does not approve an alternative that crosses FWS lands, then the Applicant would need to conduct additional engineering analysis (and federal/state permitting) to select a final alignment for the project.

The Alternatives being reviewed include segments of Routes analyzed in the EIS and centerline (or alignment) modifications within the EIS Route. The centerline is the 200 – 250 foot right-of-way (ROW) within which the transmission line will be built.

²The EIS reflects the proposed Blue Route/MN PUC-approved Route anticipated centerline crossing the Silver Lake Wildlife Management Area (WMA) parcel, owned by the USFWS. Since the publication of the EIS (October 30, 2015), substantial engineering has been performed on the preferred centerline so that it avoids crossing the Silver Lake WMA parcel.

³ For more information on reliability, see Christian Winter’s Direct Testimony, MN PUC Docket Records: 20153-108298-08 and 20157-112937-02.

3.2.1 Proposed Action

The MN PUC-approved Route (February 26, 2016; final written order April 11, 2016) includes the Applicant's preferred centerline and is the Proposed Action. The MN PUC-approved Route and preferred centerline crosses a total of three USFWS parcels in two locations:

Table 3-2. Proposed Action: Townships, Ranges, and Sections in Crossing Location 1

Township	Range	Sections
161	35	18
161	36	13-17, 19, 20

Table 3-3. Proposed Action: Townships, Ranges, and Sections in Crossing Location 2

Township	Range	Sections
Proposed Action 1		
160	33	18-20, 29, 32, 33
160	34	2, 3, 11-13
161	34	34
Proposed Action 2		
160	33	18
160	34	12-13

3.2.2 No Action Alternatives

The USFWS will consider the proposed crossings of USFWS lands, but it may conclude that granting an easement for crossing is not allowable or in the best interest of Service objectives. In that event, the Project must be built using Alternative Routes that avoid USFWS lands. For the purposes of comparison and to provide a No Action Alternative for each of the two crossing areas listed above, segments of previously analyzed Route Alternatives will be reviewed in this EA.

A segment of the EIS's Beltrami North Variation 2 will be analyzed as the No Action Alternative within Crossing Location 1 (**Error! Reference source not found.**).

Table 3-4. No Action Alternative: Township, Ranges and Sections in Crossing Location 1

Township	Range	Sections
161	35	18-19
161	36	19, 20, 24, 25, 28, 29, 33-36

A segment of the EIS's Beltrami North Central Variation 1 will be analyzed as the No Action Alternative within Crossing Location 2 (**Error! Reference source not found.**).

Table 3-5. No Action Alternative: Townships, Ranges and Sections in Crossing Location 2

Township	Range	Sections
160	33	6, 7, 18-20, 29, 32, 33
161	33	31
161	34	34-36

3.2.3 Alternative Actions

3.2.3.1 CROSSING LOCATION 1

Only the Proposed Action and the No Action Alternative are reviewed and analyzed in Crossing Location 1 (Figure 1). Additional discussion of why no new Alternatives are being considered can be found in Section 3.1.

3.2.3.2 CROSSING LOCATION 2

In addition to the Proposed Action and No Action Alternatives, one minimization alternative is reviewed and analyzed in Crossing Location 2. The Minimization Alternative reduces the total distance of USFWS parcel crossings. Because these two alternatives could not both be implemented at the same time, they must be compared to the proposed action separately. First, the No Action Alternative, which would entirely avoid USFWS-interest parcels, is compared with the entire length of the proposed action through those parcels. This comparison is No Action versus Proposed Action 1. Second, the Minimization Alternative, which reduces the length of the ROW on one USFWS-interest parcel, is compared endpoint-to-endpoint with that portion of the proposed action that it would modify. This comparison is Minimization Alternative versus Proposed Action 2.

In total, two sets of Alternatives are analyzed in the Crossing Location 2 Area: No Action & Proposed Action 1 Alternatives (both Alternatives share common start and end points [Figure 2]) and Proposed Action 2 (a smaller section within Proposed Action 1) and the Minimization Alternative which also share common start and end points.

Proposed Action 2 is a smaller segment within Proposed Action 1; however, it shares common start and end points to the Minimization Alternative and thus is compared separately (Figure 2). The Minimization Alternative is located in the following townships, ranges, and sections:

Table 3-6. Minimization Alternative: Township, Ranges and Sections in Crossing Location 2

Township	Range	Sections
160	33	18
160	34	12, 13

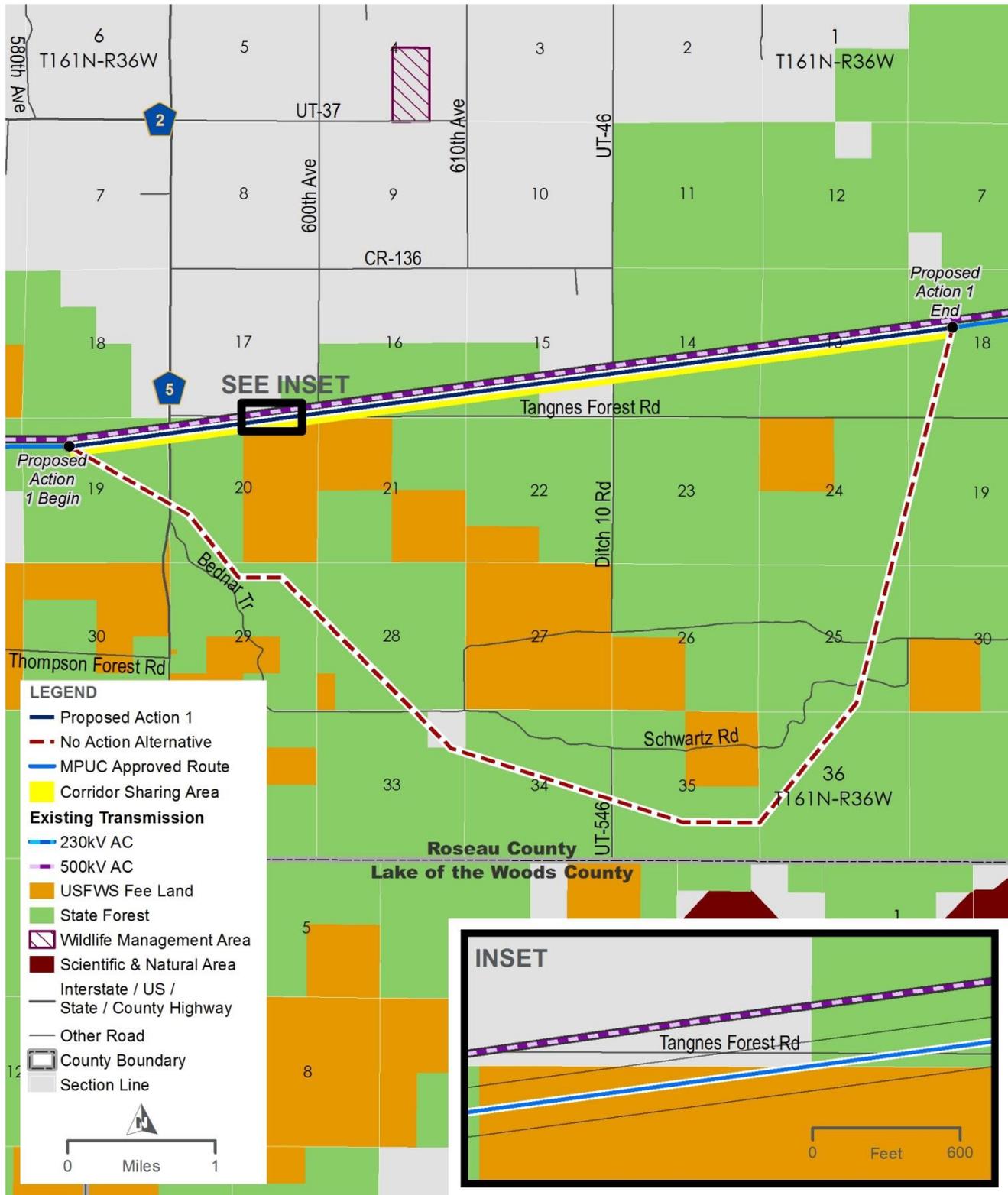


FIGURE 1
CROSSING LOCATION 1
GREAT NORTHERN TRANSMISSION LINE



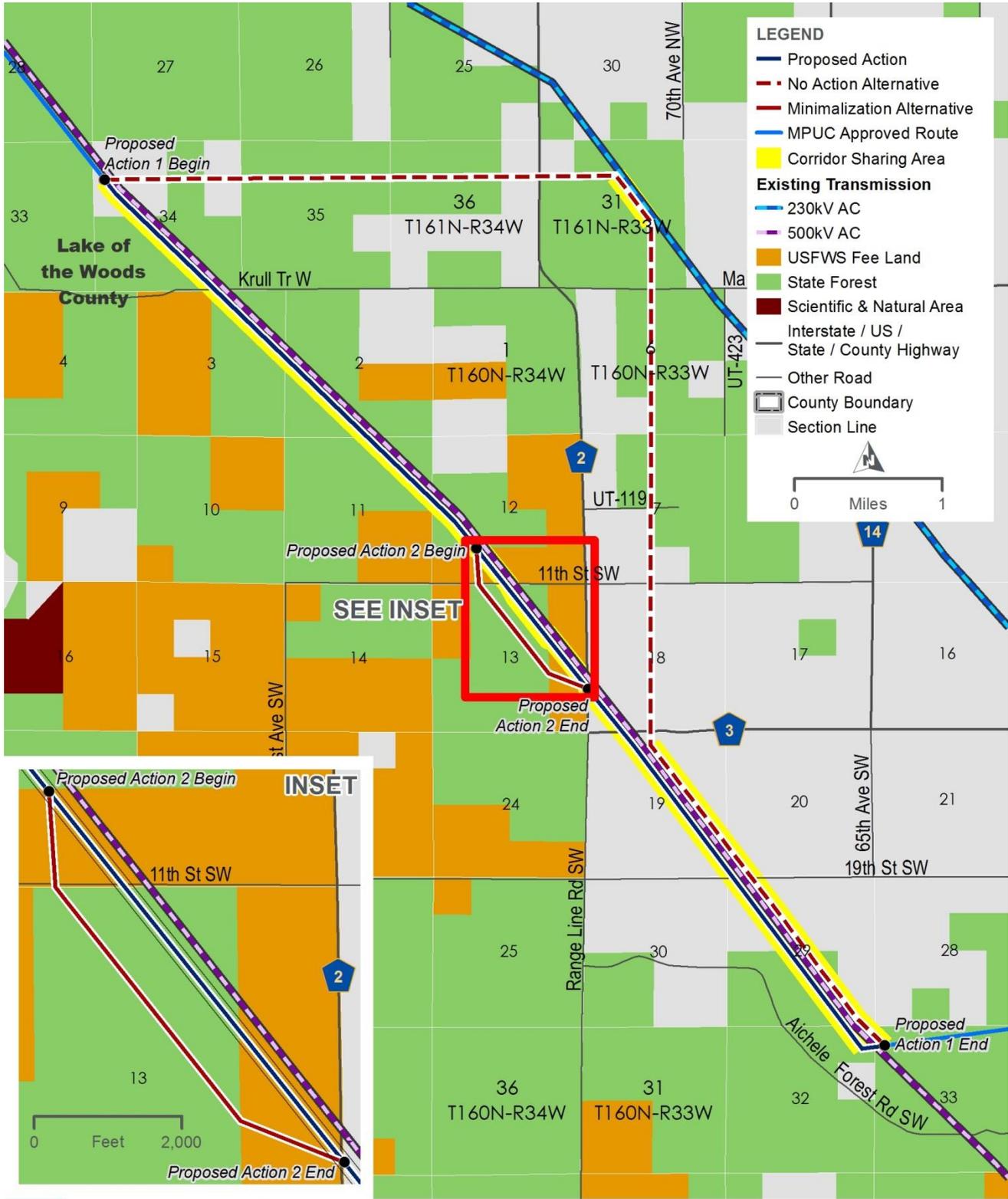


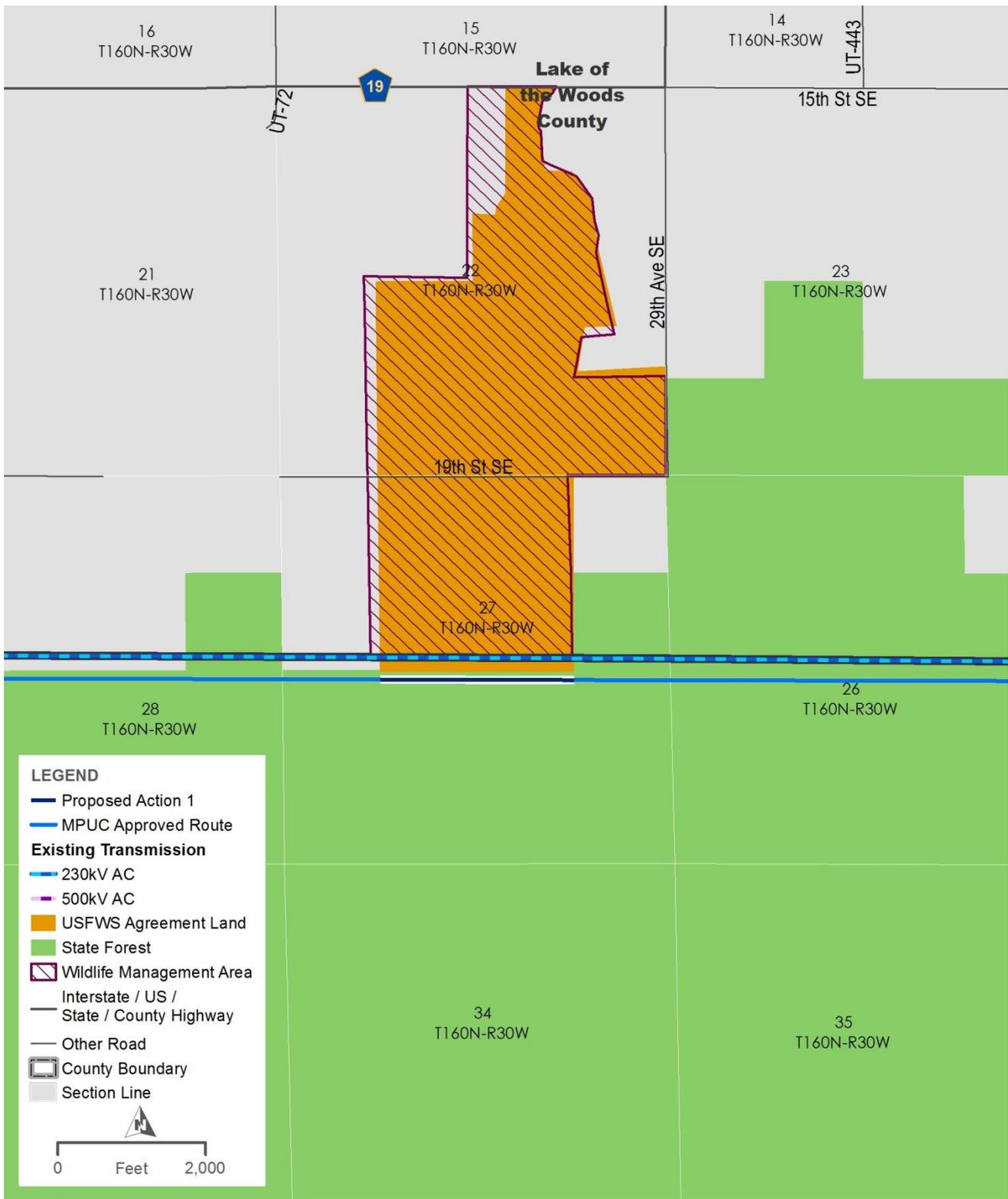
FIGURE 2
CROSSING LOCATION 2
GREAT NORTHERN TRANSMISSION LINE
ENVIRONMENTAL ASSESSMENT



PATH: \\MSPE-GIS-FILE\GIS\PROJ\LARGE\MINNPOWER\1182035\MAP_DOC\SIAGENCY\USFWS\IEA\CROSSING_2.MXD - USER: STUOHEY - DATE: 5/25/2016

3.2.3.3 SILVER LAKE WMA CROSSING

The Route Permit Application and EIS also analyzed a third crossing area of USFWS lands. Since the development and publication of those documents, however, the Applicant has progressed in the design and engineering of the Project. The proposed centerline and MN PUC-approved Route will not cross the USFWS parcel associated with the Silver Lake WMA (T160N, R30W, S27 [Figure 3]). Because this portion of the Project will not cross USFWS lands, it is not addressed in this EA.



LEGEND

- Proposed Action 1
- MPUC Approved Route
- Existing Transmission**
- 230kV AC
- 500kV AC
- USFWS Agreement Land
- State Forest
- ▨ Wildlife Management Area
- Interstate / US / State / County Highway
- Other Road
- ▭ County Boundary
- ▭ Section Line

0 Feet 2,000



FIGURE 3
CROSSING LOCATION 3
GREAT NORTHERN TRANSMISSION LINE

PATH: \\MSPE-GIS-FILE\GIS\PROJ\LARGE\MINNPOWER\182035\MAP_DOCS\AGENCY\USFWS\IEA\CROSSING_3.MXD - USER: STUOHEY - DATE: 4/19/2016

ENVIRONMENTAL ASSESSMENT

Table 3-7. Summary of Alternatives

Alternative	Total Length	ROW	Colocation with Existing T-lines ^a	Acres of Fragmentation	State Lands ^a	USFWS Lands ^a	Private Lands ^a	State Forest Lands ^a	Archaeological Sites within the ROW ^b	Archaeological Sites within 1,500 ft ^b	PWI Water X-ings ^c	FEMA Floodplains	NWI Wetlands ^c	Dominant Land Cover Type ^d	Important Bird Areas ^c	MBS Sites of Biodiversity Significance ^c	Cost
Unit of Measure	miles	acres	Percent (acres)	acres	acres	acres	acres	acres	count	count	count	acres	acres	acres	acres	acres	\$
Crossing Location 1																	
Proposed Action 1	6.04	147.1	100 (147.1)	0	128	6.6	12.8	128	0	0	1	0	93.8	Aspen/White Birch Forest: 41.9	0	134.6	\$6,192,944
No Action Alternative	9.24	224.6	0 (0)	244.6	219	0	5.2	219	1	2	0	0	161.7	Aspen/White Birch Forest: 96.7	23.3	224.6	\$14,188,635
Crossing Location 2																	
Proposed Action 1	7.98	193.5	100 (193.5)	0	111	18.3	64.7	111	0	0	1	1.3	189.1	Lowland Deciduous Shrub: 72.9	125.7	N/A	\$8,957,804
No Action Alternative	9.98	241.9	30 (72.6)	212.8	125	0	118.1	125	0	0	3	1.6	224.8	Aspen/White Birch Forest: 100.8	35.5	N/A	\$13,080,924
Proposed Action 2	1.22	29.1	100 (29.1)	0	11.6	18.3	0.3	11.6	0	0	1	1.3	29.4	Lowland Deciduous Shrub: 20.9	27.2	N/A	\$1,254,689
Minimization Alternative	1.3	31.5	0 (0)	31.5	18.7	13.2	0.3	18.7	0	0	1	1.4	31.4	Lowland Deciduous Shrub: 19.6	30	N/A	\$3,722,153

^a Figure 1 for Crossing Location 1; Figure 2 for Crossing Location 2

^b Figure 4 for Crossing Location 1; No Sites for Crossing Location 2.

^c Figure 6 for Crossing Location 1; Figure 7 for Crossing Location 2.

^d Figure 5 for Crossing Location 1; Figure 8 for Crossing Location 2.

4 Affected Environment

This EA adopts and incorporates the description of the affected environment in the relevant sections of the October 2015 Final EIS. Table 4-1 lists all of the factors considered in the EIS and their relevance for inclusion in this EA. Factors that were identified as needing additional analysis for this EA are those factors that have different levels of impacts for the Proposed Actions and Alternatives being considered.

Table 4-1. Factors Considered in this EA

Factor	Location in EIS	Inclusion in EA?	EIS Summary and Comments
Human Settlement			
Displacement	5.2.1.1	No	Displacement would not occur for any residences or businesses as a result of the Project because there are no residences or businesses within the 200-foot ROW of any Alternative. Since there is no residential or business displacement expected from construction and operation of the Project for any proposed route or variation considered, displacement is not discussed further in this EA.
Noise	5.2.1.2	Yes	<p>Ambient noise within the ROW of the Alternatives currently consists of noise from agricultural and farming equipment, vehicle traffic, and the existing 500kV transmission line. Additional ambient noise will occur regardless of which Alternative is considered. Construction and operation of the transmission line will create noise where no such noises existed in the No Action Alternative and may increase the current ambient noise levels in the Proposed Action Alternative.</p> <p>Construction activities that generate noise may result in short-term indirect impacts on wildlife. During construction of the Project, wildlife would generally be displaced within the ROW. Some species would likely temporarily abandon their habitat during construction in favor of suitable habitats nearby. These impacts are expected to be short-term and localized. Common species habituated to human presence may continue to utilize habitats adjacent to the ROW during construction.</p> <p>Noise from construction and operation of the Project would primarily affect rural residences located near the Project. Potential noise associated with the Project could result from machinery used for construction, operation of the transmission line, and operation of the proposed Iron Range Substation, 500 kV Series Compensation Station, or regeneration stations. Since noise impacts are a function of the transmission line and equipment, predicted noise levels would not vary by proposed route or variation. Temporary, localized, adverse noise impacts during construction could exceed the Minnesota noise standards and occur regardless of the final route. Since potential construction impacts would be short-term and potential impacts from operation of the Project are expected to be below Minnesota noise standards, noise is not discussed further in Chapter 6 of the EIS. Route permits issued by the MN PUC require compliance with Minnesota’s noise standards. Construction noise at any Project location would occur on a temporary, intermittent, and localized basis during daytime hours. In the event construction works occur in the immediate vicinity (within 50 feet) from sensitive receptors, the following noise control practices are recommended to minimize construction noise levels and comply with Minnesota standards:</p> <ul style="list-style-type: none"> • Limit heavy equipment activity (e.g., pile driving, drilling, and crane use) adjacent to residences or other sensitive receptors to the shortest possible period required to complete the work activity; • Minimize construction equipment idling; • Ensure that proper mufflers, intake silencers and other noise reduction equipment are in place and in good working condition; • Maintain construction equipment according to manufacturer’s recommendations; • Use portable noise barriers to enclose noisier stationary equipment; and • Where practical, locate stationary equipment such as compressors, generators, and welding machines away from sensitive receptors or behind barriers. <p>Because Noise impacts will not vary within the Proposed Action, Minimization, or No Action Alternatives, noise will not be analyzed in this EA.</p>
Air Quality, Greenhouse Gas Emissions, and Climate Change	5.2.1.3	No	<p>The construction and operation of the Project would result in direct and indirect emissions of criteria air pollutants and GHG emissions. These emissions would be adverse, short-term, and localized. In addition, the Project would result in reductions of indirect criteria pollutant and GHG emissions, as the Project could allow the reduction of coal-fired electricity generation in Minnesota. The loss of forest carbon sink and forest carbon sequestration (see discussion of these terms in the EIS) from the clearing of forest in the transmission line ROW is not expected to result in significant changes to GHG emissions. The Applicant will implement best management practices (BMPs) during construction, which could be included as MN PUC Route Permit conditions (Section 1.3.1; Appendix B of the EIS). These BMPs, incorporated as MN PUC Route Permit conditions, could include:</p> <p>Minimizing idling of construction vehicles;</p>

Factor	Location in EIS	Inclusion in EA?	EIS Summary and Comments
			<p>Utilizing existing power sources (e.g., grid-supplied power) or clean fuel generators and vehicles rather than diesel-powered generators and vehicles, where practical;</p> <ul style="list-style-type: none"> • Ensuring that construction equipment is properly tuned and maintained prior to and during on-site operation; • Developing a project-specific dust control plan, which could include the following additional BMPs: • Using traffic controls to restrict traffic to predetermined routes • Maintaining as much natural vegetation as practicable • Phasing of construction to reduce the area of land disturbed at any one time • Using temporary mulching, or temporary vegetative (sod) cover, to reduce the need for dust control • Using mechanical sweepers on paved surfaces where necessary to prevent dirt buildup, which can create dust • Periodically moistening exposed soil surfaces with adequate water to control dust. <p>Changes in emissions and carbon sink and sequestration resulting from the Project would be similar for all Alternatives. The location of the Alternatives do not differ substantially enough to result in different impacts for the Alternatives considered, therefore air quality, GHG emissions, and climate change are not discussed further in this EA.</p>
Property Values	5.2.1.4	No	<p>The Applicant conducted routing studies and public meetings to identify residences and public concerns regarding the Project in order to reduce the potential for impacts on residences. The Applicant-proposed measures to minimize environmental impacts (Table 2-2 of the EIS), reflect the mitigation recommendations discussed in the EIS and further reduce any potential impact to property values from construction and operation. Because potential reductions in property values are expected to range from zero to at most 20 percent as a result of operation of the Project, and because potential property value reductions do not vary for Alternatives considered, property values are not discussed further in this EA.</p>
Electronic Interference	5.2.1.5	No	<p>No communication towers were identified within the Crossing Locations. Potential electronic interference impacts are expected to be limited for the Project and would be similar for all Alternatives. The Applicant has identified mitigation measures that would be implemented (see Section 2.13 of the EIS) if impacts result from operation of the Project. These Applicant-proposed measures could be included as MN PUC Route Permit conditions.</p> <p>Since electronic interference impacts resulting from the Project or variations are expected to be limited and do not vary by proposed route or variation considered, electronic interference is not discussed further in this EA.</p>
Transportation and Public Services	5.2.1.6	Yes, if applicable.	<p>Due to relatively low existing traffic volumes in the Crossing Locations, combined with the Applicant-proposed measures specified in Section 2.13 of the EIS, impacts would be short-term and localized. Other mitigation measures the Applicant could implement to further reduce any impacts may include coordinating with local officials to develop a detailed construction and mitigation plan where roadways would be temporarily closed; periodic halting of construction activity to allow queued vehicles to pass; and coordinating with rail line operators to avoid construction during periods when trains are scheduled to pass through the construction area. These Applicant-proposed measures are potential MN PUC Route Permit conditions.</p> <p>FAA-airports are located more than one mile from the Alternatives, meaning they are not within MnDOT Safety Zone A. Given that the exact transmission structure locations are not currently known, and those locations are what would determine the impact on FAA-airports, a final determination on the impact of the Project route on FAA airports would be determined once a route is selected. Further, as specified in Section 2.13 of the EIS, the Applicant would work with the FAA and MnDOT to ensure that the Project is compatible with all FAA and MnDOT requirements and the Applicant would notify the FAA as required and work with the FAA to meet applicable setback and height requirements. These Applicant-proposed measures are potential MN PUC Route Permit conditions. No impacts to FAA-regulated airports are anticipated as a result of construction or operation of the Project, regardless of the route or variation considered; therefore, airports and airstrips are not discussed further in this EA.</p> <p>Public utilities could be impacted by the Project if a gas or water pipeline or electrical lines were physically damaged during construction or if the Project resulted in the disruption of existing services. Mitigation would include working with landowners and utility providers to avoid direct or indirect impacts to public utilities, and if necessary, relocating public utility facilities where appropriate and feasible.</p> <p>The analysis of any potential impacts to transportation or public utilities within any proposed Alternatives will be included in Chapter 5 of this EA.</p>
Environmental Justice	5.2.1.7	No	<p>None of the census tracts crossed by the Project routes or variations have minority or low-income populations at levels indicating that minority or low-income populations in the designated Crossing Location Areas are significantly different from the general population. This indicates that minority or low-income groups would not be exposed to disproportionate impacts from construction, operation, maintenance, and emergency repair of the Project.</p>

Factor	Location in EIS	Inclusion in EA?	EIS Summary and Comments
			<p>Furthermore, many of the impacts from construction, operation, and maintenance of the Project on human populations would be short-term and localized. The potential impacts resulting from the Project on minority or low-income populations would not differ significantly among the Alternatives considered. Therefore, environmental justice is not discussed further in this EA.</p> <p>Construction or operation of the Project could potentially impact the economic activities of Red Lake Nation, chiefly by impacting the availability of natural resources used for natural resource-based economies. Potential direct and indirect impacts include the following:</p> <ul style="list-style-type: none"> • Removal of natural resources, e.g. timber, or of wildlife habitat • Degradation of the quality of natural resources or habitat left in place • Limitation of access to habitats or resources • Indirect impacts on natural resources-based commercial enterprises or subsistence-based trade economies that result from change in quantity or quality of natural resources and habitats
Socioeconomics	5.2.1.8	No	<p>No long-term population impacts are expected as a result of construction, operation, maintenance, or emergency repair of the Project for any proposed route or variation considered. Therefore, population is not discussed further in this EA.</p> <p>During construction, employment impacts in the Crossing Locations are expected to be minor and beneficial, both for the local construction workforce and for the service sectors that support construction. During operation, the Project would not employ any new workers and would not impact local employment rates. This forecast would not change substantively among any combination of proposed routes or variations, because the distances between them are not great enough to result in different labor pools during the hiring of construction workers and related contractors. Since employment impacts resulting from the Project are not expected to be long-term and do not vary by Alternative considered, employment is not discussed further in this EA.</p> <p>The Project would be expected to have beneficial economic impacts in the Crossing Locations. The estimated tax and revenue impacts of the Project would not differ according to the Alternative considered, because the values considered in this analysis are derived from estimated investment and spending on the Project, regardless of its location. Taxes would be collected at the local, county, and state levels and tax rates would be set independently in each jurisdiction.</p> <p>Since the estimated tax and revenue impacts from the Project would not vary according to proposed route or variation considered at this level of analysis, taxes and revenue are not discussed further in this EA.</p>
Recreation & Tourism	5.2.1.9	Yes	<p>Impacts to recreation and tourism due to construction of the Project are expected to be short-term and localized in nature, lasting only for the duration of construction. Once constructed, the Project could have long-term direct and indirect aesthetic impacts in the Crossing Locations as a result of obstruction of scenic views or detracting from the setting of nearby recreational activities. Potential impacts from the Project could result in long-term indirect impacts to recreation and tourism.</p> <p>The analysis of potential impacts to recreation areas within USFWS parcels will be included in Chapter 5 of this EA.</p>
Aesthetics	5.3.1.1	Yes	<p>General impacts on existing aesthetic resources may be caused by construction and operation of the Project and could include short term and long-term impacts. Impacts on aesthetics are assessed based on the extent of changes to landscape character and scenic quality, the level of contrast introduced by the Project, its proximity to viewers, and the visual sensitivity related to views of the Project.</p> <p>General impacts on existing aesthetic resources are included in the Recreation and Tourism sections of Chapter 5 in this EA.</p>
Land Use Compatibility	5.3.1.2	Yes	<p>The EIS describes impacts to land use compatibility as impacts to state and/or federal lands. This EA functions as an additional document in support of the NEPA process for the Project and is directly related to land use compatibility.</p> <p>The analysis of potential impacts to land use compatibility for USFWS parcels will be included in Chapter 5 of this EA.</p>
Cultural Values	5.3.1.3	No	<p>Impacts to cultural values may occur as result of the Project - particularly where transmission lines run close to communities whose values are at odds with the presence of new, large, infrastructure projects; however, these impacts can be minimized primarily through corridor sharing with existing transmission infrastructure. Therefore, this factor is not included in this EA.</p>
Public Health and Safety			

Factor	Location in EIS	Inclusion in EA?	EIS Summary and Comments
Electric and Magnetic Fields	5.2.2.1	No	<p>Potential public health and safety impacts associated with magnetic fields would not be expected, regardless of Alternative or structure type considered since residences and businesses are located outside of the ROW in all instances.</p> <p>Since EMF impacts resulting from the Project are expected to be below regulatory thresholds and do not vary by Alternative considered, EMF is not discussed further in this EA.</p>
Implantable Medical Devices	5.2.2.2	No	<p>Potential impacts related to implantable medical devices as result of EMF are not expected as a result of construction or operation of the Project and do not vary by Alternative considered.</p> <p>Since potential impacts related to EMFs are not expected from construction, operation, maintenance, and emergency repairs of the Project for any Alternative considered, implantable medical devices are not discussed further in this EA.</p>
Stray Voltage	5.2.2.3	No	<p>Stray voltage impacts are not anticipated as a result of construction, operation, maintenance, and emergency repair of the Project because the Project would not parallel a new or existing distribution line. However if there is not proper grounding or wiring on any distribution system or at a nearby business, residence, or farm, these currents could result in potential stray voltage impacts. In those instances where transmission lines could induce currents on inadequately grounded distribution circuits, mitigation measures for stray voltage may be required by. These mitigation measures would involve the use of phase cancellation, increased transmission-to-distribution separation, neutral isolation (i.e., decoupling the distribution neutral system from the farm neutral system), and improved grounding.</p> <p>Potential impacts related to stray voltage are not expected from construction, operation, maintenance, and emergency repair of the Project for any Alternative considered, therefore stray voltage is not discussed further in this EA.</p>
Induced Voltage	5.2.2.4/5.2.2.5	Yes	<p>Potential impacts from construction of the Project related to induced voltage are not expected. Provided objects are effectively grounded, no impacts due to induced voltage are anticipated from operation, maintenance, or emergency repair of the Project. However, for metallic objects where effective grounding is more difficult to achieve, impacts such as mild shock could occur. This would be expected to occur in limited instances where a person is standing on the ground and touching ungrounded machinery, such as farming activities or conducting recreational activities (e.g. hunting, snowmobile use, ATVs), while directly under a transmission line. Such impacts could occur only if a person was standing on the ground and touching the machinery while directly under a transmission line. The primary means of minimizing this potential impact is to avoid exiting and entering machinery directly under a line and adhering to MN PUC and NESC standards related to electric field limit and line to ground clearances.</p> <p>If the objects upon which a voltage is induced are insulated or semi-insulated from the ground and a person touches them, a small current would pass through the person's body to the ground. This might be accompanied by a spark discharge and mild shock, similar to what could occur when a person walks across a carpet and touches a grounded object or another person. The main concern with induced voltage is the current flow (amps) through a person to the ground. Most shocks from induced current are considered more of a nuisance than a danger, but to ensure the safety of persons in proximity to a transmission line, the NESC requires that any discharge be less than 5 mA. In addition, the MN PUC's electric field limit of 8 kV/m is designed to prevent serious hazard from shocks due to induced voltage under transmission lines. Recreational activities may still occur beneath the transmission line.</p> <p>As induced voltage relates to wildlife; no impacts are anticipated from the Project if effective grounding is implemented.</p> <p>As such, potential impacts from induced voltage are not expected to be significant. Since potential impacts from induced voltage are expected to be limited, and they do not vary by proposed route or variation considered, induced voltage is not discussed further in this EA.</p>
Intentional Destructive Acts	5.2.2.6	No	<p>While the likelihood for intentional destructive acts to the Project is difficult to predict, it is unlikely that such acts would occur based on past experience along the thousands of miles of electrical transmission lines in the U.S. A more likely scenario would typically involve mischievous or criminal acts of theft or vandalism, which would generally pose lower safety risks.</p> <p>Although some theft or vandalism is considered possible, related health and safety impacts to workers or the public from the Project are not expected and do not vary by proposed routes or variation considered, therefore intentional destructive acts are not discussed further in this EA.</p>

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Environmental Contamination	5.2.2.7	No	<p>If the record provided information that the Project would impact known contaminated sites, the MN PUC could require—as special condition to the Route Permit—that the Applicant conduct an investigation of potentially contaminated sites within the ROW and 250 feet from the final permitted route in order to ensure that construction of the Project does not disturb contaminated soils or groundwater. As part of its SPCC, the Applicant would develop procedures to maintain a clean substation facility and to prevent mishandling of materials should a spill of potentially hazardous materials occur. In addition, the SPCC would detail spill prevention and response procedures for construction. Implementation of this plan would reduce, but not eliminate, the potential that spills could occur. Spills of hazardous materials or fuels that occur during construction or operations would be limited due to the anticipated quantities and adherence to the SPCC plan.</p> <p>Potential impacts related to environmental contamination from the Project are limited and do not vary by Alternative considered, therefore environmental contamination is not discussed further in this EA.</p>
Worker Health and Safety Considerations	5.2.2.8	No	<p>Impacts to worker and general public health and safety resulting from the Project would be anticipated to be similar across the Project’s routes and variations, and substation and compensation locations as construction activities would be similar in all locations. Since potential impacts related to worker health and safety from the Project does not vary by Alternative considered, worker health and safety is not discussed further in Chapter 6 of the EIS. The Applicant would comply with federal, state, and local regulatory requirements regarding public and occupational health and safety and implement BMPs to safeguard the workers and the public from transmission line construction and operational hazards.</p>
Land-Based Economies			
Agriculture	5.3.2.1	No	Agricultural land uses do not occur within the anticipated centerline of the Proposed or No Action Alternatives.
Forestry	5.3.2.2	Yes	Refer to Chapter 5 for a discussion of forestry impacts. The analysis of potential impacts to forestry for USFWS parcels will be included in Chapter 5 of this EA.
Mining and Mineral Resources	5.3.2.3	No	Mining and Mineral Resources do not occur within the anticipated centerline of the Proposed or No Action Alternatives.
Archaeology & Historic Architectural Resources			
Archaeology & Historic Architectural Resources	5.3.3	Yes	<p>Archaeology and Historic Architectural resources do not occur within the anticipated centerline or the Proposed or No Action Alternatives; however, detailed surveys have yet to be performed for this Project. Any records of archaeology and historic architectural resources within USFWS parcels will be communicated to the USFWS.</p> <p>The analysis of potential impacts to archeology and historic architectural resources for USFWS parcels will be included in Chapter 5 of this EA.</p>
Natural Environment			
Water Resources	5.3.4.1	Yes	<p>The Proposed Action, No Action, and Minimization Alternatives are located in the Rainy River Regional Watershed. Waterbodies are not common in the area; however there may be a few unnamed waterbodies present. There are no impaired waters in the Crossing Locations. Wetlands within the Crossing Locations primarily consist of large peatland complexes, including shrubby bog areas intermixed with forested and emergent wetlands.</p> <p>Construction and operation of the Project may result in short-term and long-term impacts on water resources. Impacts to watercourses and waterbodies are primarily assessed by determining whether the ROW would require water crossings. The EIS assesses floodplain impacts by first quantifying the floodplain acreage within the ROW and then determining if the span between structures is long enough to require transmission structure placement in the floodplain. Similar to floodplain impacts, permanent wetland impacts are determined by whether fill associated with a transmission structure would be placed within wetland boundaries. Conversion of one wetland type to another through removal of woody vegetation as well as any changes to wetland functions or values due to impacts are also considered.</p> <p>The analysis of potential impacts to water resources within USFWS parcels will be included in Chapter 5 of this EA.</p>
Vegetation	5.3.4.2	Yes	<p>The Crossing Locations are located in the Agassiz Lowlands Ecological Subsection which is predominantly comprised of vast peatlands and resulting from the retreat of Glacial Lake Agassiz. Peatlands are a mosaic of forests dominated by black spruce or tamarack, or herbaceous sedge meadow, fresh meadow, and poor or rich fens. The subsection is generally very flat and poorly drained. Past attempts at ditching and farming the peatlands have been largely unsuccessful and most of the subsection is uninhabited.</p> <p>Based on the USGS GAP data, the Crossing Locations are primarily comprised of herbaceous agricultural vegetation, upland forests, and lowland</p>

Factor	Location in EIS	Inclusion in EA?	EIS Summary and Comments
			<p>swamps. Additional land cover types present in Crossing Locations include forested wetlands, shrub land, and, emergent wetlands. Both Crossing Locations are located within the Beltrami State Forest. In addition, several sensitive ecological resources, such as MnDNR High Conservation Value Forest, Wildlife Management Areas (WMAs), Minnesota Biological Survey (MBS) Sites of Biodiversity Significance, and rare native plant communities are located within or adjacent to the Crossing Locations.</p> <p>Construction and operation of the Project may cause short-term and/or long-term impacts on vegetation. The EIS assesses impacts on vegetation by primarily using the USGS GAP land cover mapping to identify vegetation cover within the ROW and by evaluating the proximity of the ROW to state forests, wetlands, and sensitive ecological resources.</p> <p>The analysis of potential impacts to vegetative resources within USFWS parcels will be included in Chapter 5 of this EA.</p>
Wildlife	5.3.4.3	Yes	<p>The landscape types and vegetation communities within and near the Crossing Locations provide forage, shelter, nesting, overwintering, and stopover habitat for a wide range of resident and migratory wildlife species. Habitat types are diverse and range from grassland-dominant habitat types in the western part of the section to increasingly forested habitat types to the east. Similarly, wildlife communities also change along this same vegetative gradient from west to east.</p> <p>Native community types located within the Agassiz Lowlands subsection provide habitat for species associated with lowland conifer, dune, and nonforested wetland vegetation communities. Birds found in this subsection include white pelican, common tern, American bittern, yellow rail, and numerous migratory shorebird, waterfowl, and perching species. Typical mammals that occupy these habitats include beaver, otter, and bog lemming. Forest communities present in this subsection include habitats that harbor species such as spruce grouse, great gray owl, short-eared owls, and sharptailed grouse. Approximately 88 species designated by either the federal or state government as endangered, threatened, special concern, or SGCN might occur within community types present within this subsection.</p> <p>Both Crossing Locations are located within the National Audubon Society Big Bog Important Bird Area. The National Audubon Society has established Important Bird Areas in an effort to identify and conserve areas that are vital to birds and other biodiversity.</p> <p>Construction and operation of the Project may cause short-term and long-term impacts on wildlife resources. The EIS assesses impacts on wildlife by evaluating the vegetation cover/habitat in the ROW, the proximity of the ROW to sensitive wildlife habitats, such as those described above, and known occurrences of sensitive wildlife species. Construction of the Project may result in long-term adverse impacts on wildlife from the loss or conversion of habitat and habitat fragmentation. The Project would expand existing cleared corridors and/or create new corridors, some of which would be converted from forest and shrub land to low-stature vegetation.</p> <p>Habitat fragmentation reduces the size of contiguous blocks of vegetation, such as forest; this reduces the total area of contiguous habitat available to wildlife species and increases the isolation of the habitat. Opportunistic and adaptable animals often succeed in highly fragmented habitats. Non-native invasive or pioneering plant species may encroach where disturbance provides a competitive advantage and an avenue of introduction, such as where habitat fragments occur. The alteration of plant community composition and structure can adversely affect those species that rely on the presence of certain plant species or vegetative cover. Fragmentation effects are greatest where large contiguous blocks are broken up into smaller patches that reduces interior forest habitat necessary for some species such as song birds. The effects would generally be greatest where new corridor is created, rather than where the transmission line parallels an existing corridor.</p> <p>The analysis of potential impacts to wildlife resources within USFWS parcels will be included in Chapter 5 of this EA.</p>
Rare and Unique Natural Resources	5.3.5.1	Yes	<p>The MnDNR has established several classifications of rare communities across the state, including Scientific and Natural Areas (SNAs), Minnesota Biological Survey (MBS) Sites of Biodiversity Significance, MnDNR High Conservation Value Forest, and MBS native plant communities. There are no SNA's within or near either Crossing Location.</p> <p>The MnDNR MBS assigns a biodiversity significance rank to all sites surveyed across the state. These ranks are used to communicate statewide native biological diversity of each site and help to guide conservation and management activities. There are four biodiversity significance ranks: outstanding, high, moderate, and below. A site's biodiversity significance rank is based on the presence of rare species populations, the size, and condition of native plant</p>

Factor	Location in EIS	Inclusion in EA?	EIS Summary and Comments
			<p>communities within the site, and the landscape context of the site.</p> <p>MnDNR High Conservation Value Forests are broadly defined as areas of outstanding biological or cultural significance. The MnDNR is required by Minnesota Statutes, chapter 89, State Forests; Tree Planting; Forest Roads and Minnesota Statutes, chapter 89A, Sustainable Forest Resources, to manage a broad set of objectives and forest resources, including the management and protection of rare species, communities, features, and values across the landscape. This directive coincides with the Forest Stewardship Council – United States’ National Forest Management Standard, which requires that forests of high conservation value be identified and managed to maintain or enhance identified high conservation values. Most sites managed as MnDNR High Conservation Value Forests are to remain working forests.</p> <p>The MnDNR MBS also identifies native plant communities across the state. A native plant community is a group of native plants that interact with each other and their environment in ways that have not been greatly altered by modern human activity or introduced organisms. Native plant communities provide a range of ecological functions that are increasingly recognized as valuable for the quality of life in Minnesota. In addition to the habitat value native plant communities provide, they have also played an important role in the development of Minnesota’s cultural history and heritage.</p> <p>Construction and operation of the Project may cause short-term and long-term impacts on rare and unique natural resources. Additional construction and operation-related impacts to wildlife are described above. The EIS assesses impacts on rare and unique natural resources by evaluating the presence of rare species and their associated habitats within or near the ROW and the proximity of the ROW to rare resources and communities, such as those described above. Federally listed species that could occur in the ROW or associated construction areas are summarized above. The Project may affect, but is not likely to adversely affect these federally listed species or designated critical habitat; the Biological Opinion for the Project provides discussion on potential impacts of the Project on federally listed species and designated critical habitat.</p> <p>The analysis of potential impacts to wildlife resources within USFWS parcels will be included in Chapter 5 of this EA.</p>
Corridor Sharing	5.3.6	Yes	<p>Minnesota Rules, part 7850.4200, subparts H and J require that MN PUC consider corridor sharing in determining whether to issue a permit for a high voltage transmission line. Corridor sharing can include use or paralleling of existing infrastructure including existing transportation, pipeline, and electrical transmission systems or rights-of-way, or use of established boundaries such as survey lines or agricultural field lines. Sharing corridors with existing infrastructure or paralleling existing ROWs minimizes fragmentation of the landscape and can minimize impacts to adjacent property.</p> <p>By following existing corridors, and reducing the need to create new transmission line corridors for the Project, potential impacts to human settlements, land-based economies, and the natural environment would be minimized. Specifically, the following impacts could be minimized by corridor sharing:</p> <ul style="list-style-type: none"> • Impacts to human settlement can be minimized by selecting route alternatives that maximize corridor sharing with existing linear ROW (e.g., transmission lines, roadways and railroads) to reduce aesthetic impacts in open spaces and developed areas, and to reduce impacts to cultural values that conflict with new infrastructure corridors. • Impacts on land-based economies can be reduced by sharing ROW to minimize the total ROW needed and paralleling existing corridors to consolidate encumbrances to certain land based economies like forestry and mining. • Impacts on the natural environment can be minimized through corridor sharing that reduces habitat fragmentation. <p>The Proposed Actions in each Crossing Location parallel an existing 500kV transmission line for 100% of their lengths. The No Action and Minimization Alternatives do not parallel existing transmission lines or other linear features for any significant portion of their lengths.</p> <p>Corridor sharing for each Alternative is discussed in Chapter 5 of this EA.</p>
Cost	5.3.8	Yes	Refer to Chapter 5 for a discussion of cost.
Cumulative Impacts		Yes	Refer to Chapter 5 for a discussion of cumulative impacts.

5 Environmental Consequences

Chapter 4 of this EA summarizes the EIS's discussion of the affected environment for each resource and general impacts from the construction, operation, and maintenance of Project. This chapter describes the relevant resource components of the affected environment that could be impacted by the Project and related alternatives, and presents the applicable environmental impacts in comparative form to help define the issues and provide a basis for USFWS decision makers to consider and choose among options. The following resource areas are presented and analyzed further in this chapter: Transportation and Public Services, Recreation and Tourism, Land Use Compatibility, Forestry, Archaeology and Historic Architectural Resources, Water Resources, Vegetation, Wildlife, Rare and Unique Natural Resources, Corridor Sharing, Electrical System Reliability, Cost, and Cumulative Impacts.

For each crossing location, the Proposed Action and No Action Alternatives will be evaluated as well as a summary of impacts to the specific USFWS parcel being crossed.

5.1 Crossing Location 1 (CL1)

Crossing Location 1 occurs in Roseau County, Minnesota. Two Alternatives will be evaluated at this crossing location: the No Action Alternative which avoids all impacts to USFWS parcels and the Proposed Action which crosses one USFWS parcel in Section 20 (Figure 1). In addition, resource characteristics of the Proposed Action ROW within the USFWS parcel will be included in each analysis.

5.1.1 Human Settlement

5.1.1.1 TRANSPORTATION & PUBLIC SERVICES

The Proposed Action and No Action Alternatives cross the following roadways: Tangnes Forest Road, 590th Avenue, 250th Street, and 600th Avenue in Roseau County, MN (Figure 1). Tangnes Forest Road is the only roadway that crosses the USFWS parcel.

Due to relatively low existing traffic volumes in the area, combined with the Applicant-proposed measures specified in Section 2.13 of the EIS, impacts would be short-term and localized. If the Proposed Action is chosen by the USFWS, it will require the Applicant to further reduce any impacts by coordinating with local officials to develop a detailed construction and mitigation plan where roadways would be temporarily closed and periodic halting of construction activity to allow queued vehicles to pass. These Applicant-proposed measures are also potential MN PUC Route Permit conditions.

Public utilities in CL1 include the existing 500kV transmission line. No other public utilizes, such as gas and water pipelines, are located within CL1.

5.1.1.2 RECREATION & TOURISM

A review of the MN DNR's Recreation Compass interactive Map (MN DNR 2015) did not produce any State trails (water or terrestrial), State Parks, Walk-in Access sites, or Parks of Regional Significance within or near the Proposed Action. The Proposed Action crosses Tangnes Forest Road/ Forest Road 1153 which may provide recreational opportunities for hiking, snowmobiling, and ATV-ing, etc. Tangnes Forest Road traverses the USFWS parcel crossed by the Proposed Action. The Proposed Action parallels the existing 500-kV transmission line through this area and is not anticipated to have a notable impact on aesthetic resources.

The No Action Alternative crosses Tangnes Forest Road/Forest Road 1153 & 1154, Ditch-10 Road, Bednar Forest Road, and Schwartz Road. These roads may provide similar recreational opportunities as described above. A water access trail is located off of Schwartz Road in Section 27 (R161N, R36W) (Figure 1), near the No Action Alternative. The No Action Alternative does not parallel the existing 500-kV transmission line, and in some places is located almost three miles south of the existing transmission line, causing new impacts to aesthetic resources for users of the many trails listed above.

Recreational impacts related to construction of the Proposed Action and No Action Alternatives are expected to be short-term and localized in nature, lasting only for the duration of construction. Generally, construction activities will be periodic, and will last for a few hours to a few weeks in a given area for each type of construction activity (that is, tree clearing, foundation installation, structure installation, wire stringing and restoration). Impacts may include increased noise and dust, which could detract from nearby recreational activities, discourage tourism, and could affect the aesthetic setting of non-motorized recreational activities as well as displace wildlife during hunting season. These effects would cease once construction was completed. Construction of Project components across rivers or snowmobile trails could temporarily disrupt recreational users of these amenities. If the Proposed Action is selected by the USFWS, the Applicant will be required to post notices about construction activities or alternative routes around the construction zone. Once construction has been completed, these areas would again be available for outdoor recreational uses. Therefore, construction is not expected to result in ongoing or long-term impacts to recreation and tourism.

Once constructed, the Project could have long-term direct and indirect aesthetic impacts in the area as a result of obstruction of scenic views or detracting from the setting of nearby recreational activities. Aesthetic impacts will be minimal for the Proposed Action where the line parallels the existing 500 kV line, since those impacts are already present. It will be greater for the No Action Alternative since it will be constructed where no current ROW exists. Most recreational activities (e.g., hiking, snowmobiling, mountain biking, bird watching, etc.) can be done safely in transmission line ROWs, but certain activities are not recommended and could result in public safety hazards. Activities to be avoided include flying kites or model planes near transmission lines. The project will be compatible with lawful hunting activities and will not affect underlying fee owner rights to authorize or restrict those hunting activities.

Implementation of proper signage and restricted access to the Project transmission line routes and variations, substation, and compensation facilities would reduce the potential for public health and safety hazards from recreational activities.

5.1.1.3 LAND USE COMPATIBILITY

Crossing Location 1 contains areas of private, state, and federally owned property. There are no County-owned parcels within Crossing Location 1, nor is the Applicant required to complete any county-level permitting for this Project.⁴ Easements will be negotiated for crossings of private lands and applicable state land crossing permits will be obtained for state land crossings. This EA serves as part of the required permitting/approval step for crossings of federal parcels. Table 5-1 below compares the land ownership types within both Alternatives.

Table 5-1. CL1: Land Use Compatibility

Resource	Evaluation Parameter	Proposed Action	No Action Alternative	Proposed Action Crossing of USFWS lands
Transmission Line	Length (mi)	6.04	9.24	0.27 (1,436 feet)
Colocation with Existing Transmission	Percentage	100	0	100
ROW	Acres	147.1	224.6	6.6
State Lands (Forests, Fee, Con-Con, Other, Trust)	Acres within ROW	127.7	219.4	0
USFWS Lands	Acres within ROW	6.6	0	6.6
Private Lands	Acres within ROW	12.8	5.2	0

Source: MN DNR, USFWS, Roseau County Tax Assessment Data

Additional information on the land cover type can be found in the forestry and wetlands sections below.

The Proposed Action and No Action Alternatives would both result in a long-term change in land use, but these changes would be limited in extent, and there would still be extensive state and federal lands in the surrounding area; so these changes are expected to have a minimal impact on land use. Further, the impacts related to land use compatibility are similar for USFWS land as for State land, since both agencies have similar management objectives. The length of the Proposed Action that would parallel an existing corridor is important, and in this case, the Proposed Action would parallel an existing 500 kV transmission line for 100% of its length. The No Action Alternative would not parallel an existing corridor; rather, it would create an entirely new corridor that exceeds nine miles in length through public and private lands.

⁴ Minn. Stat. § 216E.01, Subd. 5

5.1.1.4 LAND-BASED ECONOMY – FORESTRY

Impacts to forestry are derived from the total amount of state forest lands within the ROW of each Alternative. Table 5-2 identifies the acreage of state forest land that would be impacted by the Proposed and No Action Alternatives.

Table 5-2. CL1: State Forest Lands

Resource	Evaluation Parameter	Proposed Action	No Action Alternative	Proposed Action Crossing of USFWS lands
Transmission Line	Length (mi)	6.04	9.24	0.27 (1,436 feet)
ROW	Acres within ROW	147.1	224.6	6.6
State Forest Lands	Acres within ROW	127.7	219.4	0

Source: MN DNR

The Proposed Action, which is shortest and parallels existing corridors for 100 percent of its length, would cross fewer acres of state forest land (approximately 128 acres). The No Action Alternative does not parallel an existing corridor and would have almost twice the amount of impact to state forest lands than the Proposed Action Alternative (approximately 219 acres). The No Action Alternative would increasingly fragment the landscape in this area. More information about habitat fragmentation can be found in the wildlife discussion in the table in Chapter 4 of this EA.

Construction activities could limit timber harvesting efforts, affect timber stands and soil by compaction, damage trees, or cause erosion. Woody vegetation would routinely need to be cleared from the transmission line ROW in order to maintain low-stature vegetation that would not interfere with the operation of the line.

5.1.1.5 ARCHAEOLOGY & HISTORIC ARCHITECTURAL RESOURCES

The EIS describes the 'Area of Potential Effect,' specifically for archaeology and historic architectural resources as within the ROW, within 1,500 feet of the anticipated alignment, and within one-mile of the anticipated alignment. For the purposes of this EA, resources within the ROW and within 1,500 feet of the anticipated alignment are evaluated. Table 5-3 provides a summary of the previously recorded archaeological sites and historic architectural resources within the ROW and 1,500 feet of the anticipated alignment.

Table 5-3. CL1: Archaeological and Historic Resources

Resource	Evaluation Parameter	Proposed Action	No Action Alternative	Proposed Action Crossing of USFWS lands
Transmission Line	Length (mi)	6.04	9.24	0.27 (1,436 feet)
Historic Architectural Sites within the ROW	Count	0	0	0
Historic Architectural Sites within 1,500 feet	Count	0	0	0
Archaeological Sites within the ROW	Count	0	1	0
Archaeological Sites within 1,500 feet	Count	0	2	0

There are no archaeological or historic architectural sites located within the ROW of the Proposed Action that could be subject to direct adverse impacts. The No Action Alternative has an archaeological resource (Site 21ROao) within the ROW that could potentially be directly affected by the Project (Figure 4). The National Register of Historic Places (NRHP) eligibility status is unknown for this resource.

To date, no specific Native American resources have been previously recorded within the ROW or within one mile of the anticipated alignments of either Alternative. The Department of Energy is continuing to consult with the federally-recognized Indian tribes to identify Native American resources within the APE of the Proposed Action. The EIS Scoping Alternative from which the No Action Alternative was derived is not included in the on-going consultation with the tribes as it was not carried forward during the EIS process.

There is currently no identified potential for direct, long-term, adverse impacts on archaeological or historic architectural sites within the Proposed Action although cultural resource investigations have not yet occurred for the Project. Archaeological surveys, architectural site surveys or inventories, and surveys or inventories for Native American resources will be required as part of cultural resource investigations conducted in compliance with federal and/or state regulations for cultural resources. These investigations will be implemented as part of the GNTL Programmatic Agreement (PA) that will establish a process to identify cultural resources, evaluate NRHP-eligibility of identified resources, and develop measures to avoid, minimize, and mitigate adverse impacts on cultural resources during construction and operation of the Project. The DOE led Section 106 Consultation process and PA signing is scheduled to be completed June 2016.

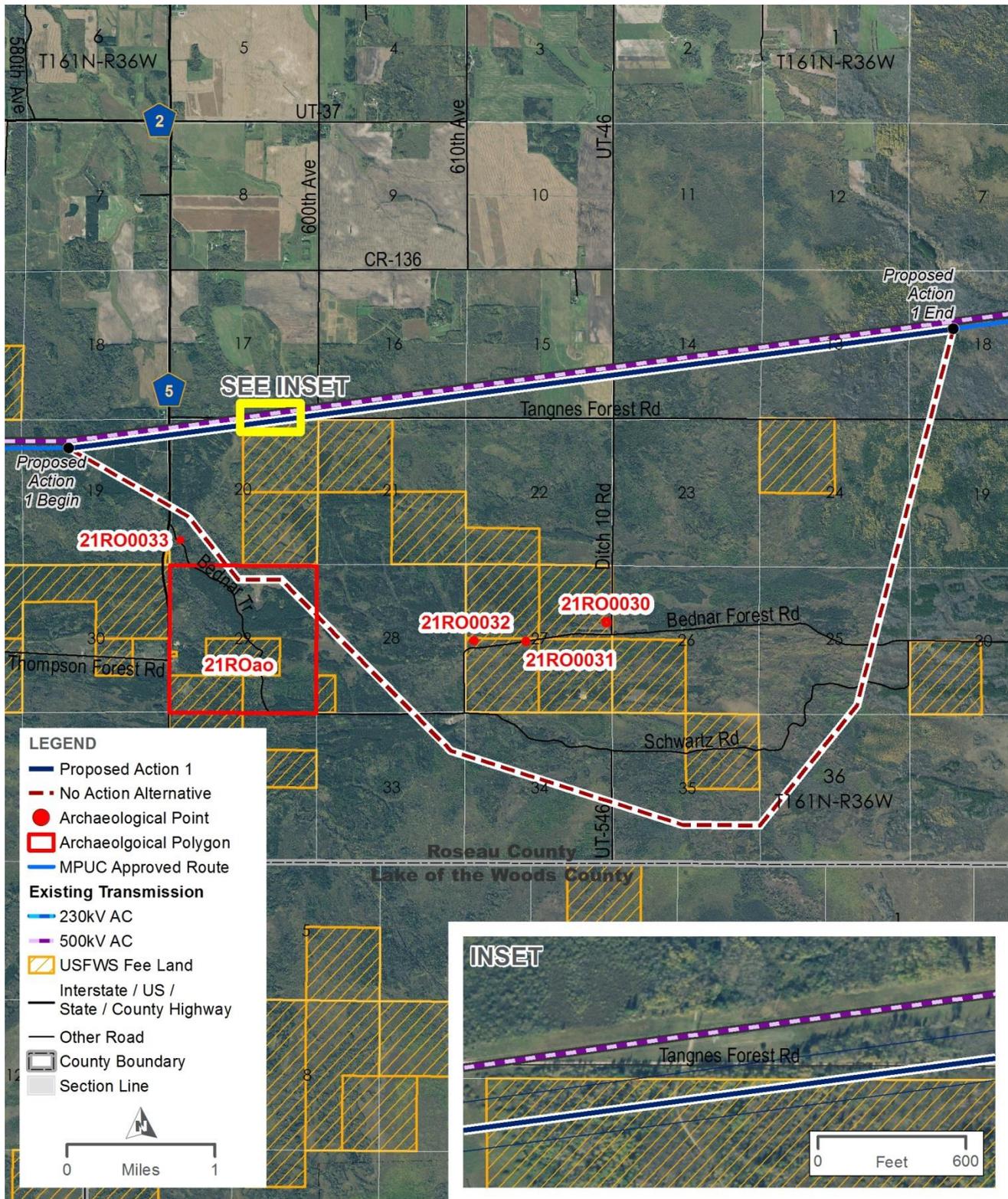


FIGURE 4 - ARCHAEOLOGICAL & HISTORICAL RESOURCES WITHIN CROSSING LOCATION 1 GREAT NORTHERN TRANSMISSION LINE



Direct, adverse, long-term impacts for the No Action Alternative may occur as a result of the presence of an archaeological resource being present within the ROW which could be affected by ground disturbing activities associated with the construction of the Project. Because the NRHP eligibility of the archaeological resource is unknown, the Project may result in direct impacts to the resource that could be considered an adverse impact under Section 106 of the NHPA if this archaeological resource is determined NRHP-eligible. Minnesota Power will adhere to all requirements and procedures in the PA including consultation with the Minnesota State Historical Preservation Office and affected tribes including Red Lake Nation. Potential impacts will be mitigated consistent with the terms of the PA.

5.1.2 Natural Resources

5.1.2.1 WATER RESOURCES

Impacts to water resources are derived from impacts to Public Water Inventory (PWI) waters, Impaired Waters, Trout Streams, Floodplains, and National Wetland Inventory (NWI) wetlands within the ROW of each Alternative. Table 5-4 identifies the occurrence of water resources potentially impacted by the Proposed and No Action Alternatives.

Table 5-4. CL1: Water Resources

Resource	Evaluation Parameter	Proposed Action	No Action Alternative	Proposed Action Crossing of USFWS lands
Transmission Line	Length (mi)	6.04	9.24	0.27 (1,436 feet)
ROW	Acres within ROW	147.1	224.6	6.6
PWI Waters	Number of Crossings	1	0	0
Impaired Waters	Number of Crossings	0	0	0
Trout Streams	Number of Crossings	0	0	0
Floodplains	Acres within ROW	0	0	0
NWI Wetlands	Acres within ROW	93.8	161.7	5.1

The Proposed Action would require crossing an Unnamed Stream (Intermittent); a PWI waterway. Neither Alternative would cross impaired waters, trout streams, nor do they contain any acres of designated Floodplains. The portion of the USFWS parcel crossed by the Proposed Action is almost entirely NWI wetland. It is anticipated that the PWI crossing is spannable (crossing would be less than the average spanning length of 1,250 feet) and transmission structures would not be placed within the PWI water.

Based on the NWI, both Alternatives would require conversion of forested and shrub wetland areas to herbaceous wetland type through removal of woody vegetation in the ROW.

The No Action Alternative contains almost twice the amount of forested and shrub wetlands (approximately 162 acres) as the Proposed Action Alternative (approximately 94 acres), and therefore would result in the greatest amount of wetland type conversion. The portion of the USFWS parcel crossed by the Proposed Action contains approximately 5.1 acres of NWI wetlands. While these direct, adverse impacts to forested and shrub wetlands would be permanent and may change wetland functions within the ROW, e.g. altering the hydrology and habitat, they are expected to be minimal because of the amount of surrounding shrub and forested wetlands in the region. A detailed discussion of changes in wetland function can be found in Section 5.3.4.1 of the EIS.

The Proposed Action and No Action Alternatives would require placement of permanent fill in wetlands for construction of transmission structures. It is possible that this impact cannot be avoided by spanning as NWI wetland crossings generally exceed the average span length allowable for structures, but impacts to wetlands from permanent fill are expected to be minimal because of the localized extent of the impact (33 square feet per structure).

Due to the large wetland complexes in the area, it would be expected that both Alternatives would require temporary construction access through wetlands, which is also likely to be minimal due to the short-term, localized nature of the impact, and the Applicant's intended use of minimization measures, such as matting.

5.1.2.2 VEGETATION

Impacts to vegetation are based on GAP land cover types within the ROW of each Alternative. Table 5-5 identifies the occurrence of vegetative resources potentially impacted by the Proposed and No Action Alternatives (Figure 5).

Table 5-5. CL1: Vegetative Resources

Resource	Evaluation Parameter	Proposed Action	No Action Alternative	Proposed Action Crossing of USFWS lands
Transmission Line	Length (mi)	6.04	9.24	0.27 (1,436 feet)
Colocation with Existing Transmission	Percent Total Length	100	0	100
ROW	Acres within ROW	147.1	224.6	6.6
GAP Land Cover – Top 3 Dominant Types				
Aspen/White Birch Forest	Acres within ROW	41.9	96.7	3.9
Lowland Deciduous Shrub	Acres within ROW	39.0	80.1	1.3
Upland Shrub	Acres within ROW	15.2	19.8	0.6

Source: GAP Land Cover Dataset

**GAP Land Cover data is only accurate to 30- meter cells; totals of land cover type may not be equal to individual cover type counts.*

The No Action Alternative would pass through more forested land (approximately 97 acres) than the Proposed Action Alternative (approximately 42 acres); therefore resulting in more permanent removal of forested vegetation relative to the Proposed Action Alternative. In addition, the No Action Alternative follows the least amount of existing transmission line corridor and traverses further into State Forest, which would result in more fragmentation of intact forest. The portion of the USFWS parcel crossed by the Proposed Action contains mostly Aspen/White Birch Forest and lowland deciduous shrub. Forested vegetation would be permanently removed within the ROW as it crosses the USFWS parcel.

The primary impact on vegetation that would differ across the Proposed Action and the No Action Alternatives is the loss or fragmentation of forest. The Proposed Action Alternative parallels an existing transmission line corridor for its entire length, which would avoid forest fragmentation impacts. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project.

The Applicant would permanently clear woody vegetation at structure locations and from the center 70-foot ROW during construction; the outside edges of the ROW would be maintained as low-stature trees or shrub vegetation in order to reduce interference with the maintenance and function of the transmission line.

Within the USFWS parcels, impacts to vegetation include changes in vegetation type. The upland and lowland shrub habitats (1.9 acres) would have partial conversion to grassland, while the aspen/birch forest (3.9 acres) would be converted to shrub land and grassland.

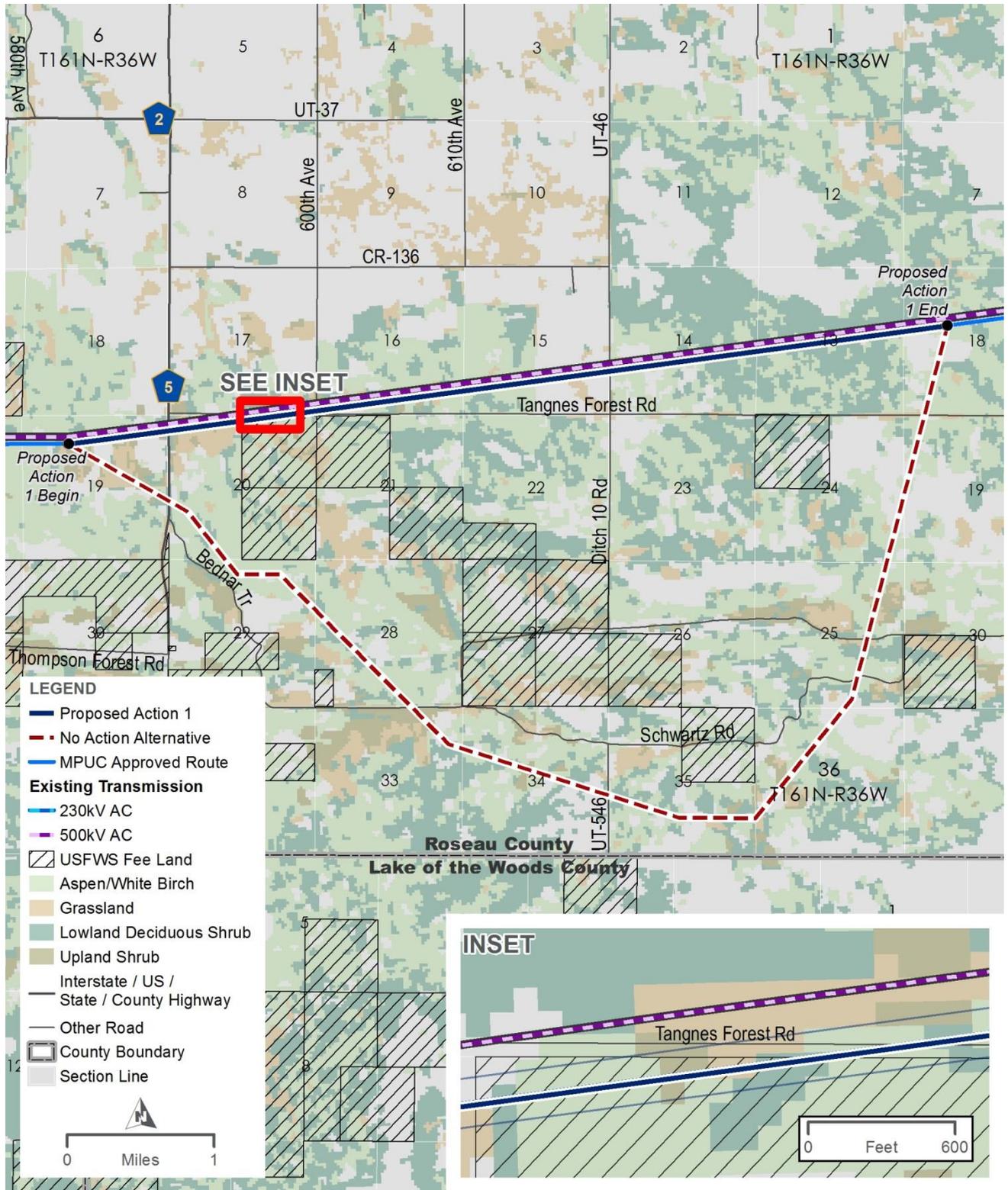


FIGURE 5
DOMINANT LAND COVER TYPES WITHIN CROSSING LOCATION 1
GREAT NORTHERN TRANSMISSION LINE

PATH: \\MSPE-GIS-FILE\GIS\PROJ\LARGE\MINNPOWER\182035\MAP_DOCS\AGENCY\USFWS\EA\CROSSING_1_GAP.MXD - USER: STUOHEY - DATE: 6/25/2016

ENVIRONMENTAL ASSESSMENT



5.1.2.3 WILDLIFE

Impacts to wildlife are derived from impacts to wildlife resources within the ROW of each Alternative. Table 5-6 identifies the occurrence of wildlife resources potentially impacted by the Proposed and No Action Alternatives (Figure 6).

Table 5-6. CL1: Wildlife Resources

Resource	Evaluation Parameter	Proposed Action	No Action Alternative	Proposed Action Crossing of USFWS lands
Transmission Line	Length (mi)	6.04	9.24	0.27 (1,436 feet)
Colocation with Existing Transmission	Percent Total Length	100	0	100
Wildlife Management Areas	Acres	0	0	0
Important Bird Areas	Acres	0	23.3	0

Source: MN DNR

The No Action Alternative would pass through the Big Bog Important Bird Area; the Proposed Action Alternative avoids this resource (Figure 6). The portion of the USFWS parcel crossed by the Proposed Action is not within the Big Bog Important Bird Area. No DNR Wildlife Management Areas are present within CL1.

The No Action Alternative would require the creation of a new corridor for its entire length which includes the Big Bog Important Bird Area. Creation of a new corridor in the Big Bog Important Bird Area would likely result in both short-term and long-term direct and indirect adverse impacts on birds and other wildlife associated with the area. The short-term indirect impacts would be associated with construction and alteration of the birds' habitat while the long-term direct impacts would be associated with the operation of the Project, which is discussed in more detail in Section 5.3.4.3 of the EIS.

The short-term indirect impacts are expected to be minimal because of the overall amount of similar habitat in the surrounding region, and the long-term direct impacts would be minimized through use of Applicant-proposed mitigation measures.

The primary impacts on wildlife resources that would differ across the Proposed Action and No Action Alternatives include loss and fragmentation of natural and managed wildlife habitat and proximity of both Alternatives to these areas.

The Proposed Action would "expand" existing corridor or create new corridor; this would result in conversion from forest to low-stature woody or open vegetation communities, favoring wildlife species that prefer shrubby or open vegetation communities. Section 5.1.2.2 (Vegetation) summarizes potential impacts on forested vegetation from the Proposed Action and No Action Alternatives.

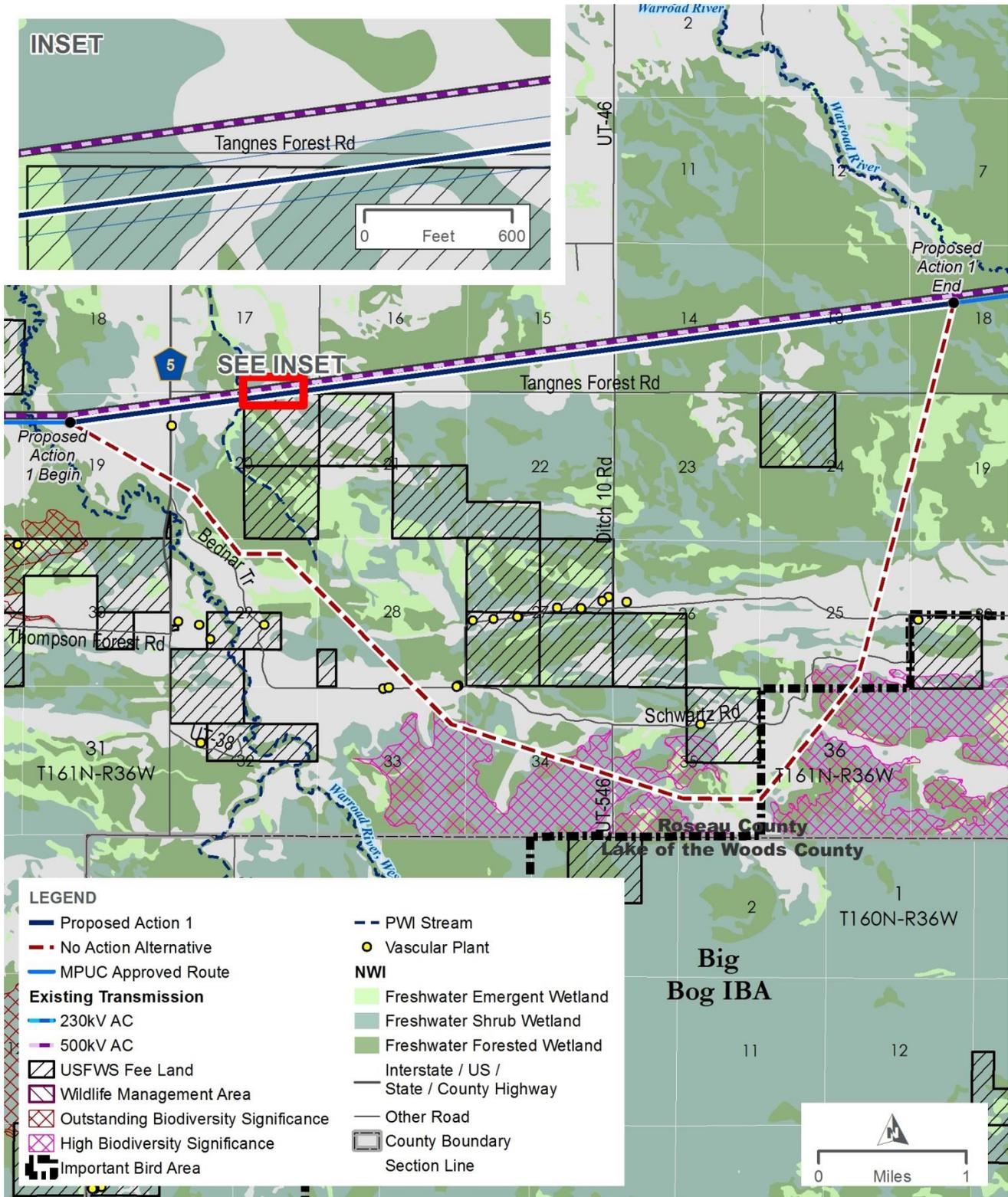


FIGURE 6
NATURAL RESOURCES WITHIN CROSSING LOCATION 1
GREAT NORTHERN TRANSMISSION LINE

Within the USFWS parcels, impacts to wildlife are expected to be minimal because there would not be additional fragmentation, and the habitat types would have minimal impacts. For example, the upland and lowland shrub habitats (1.9 acres) would have partial conversion to grassland, while the aspen/birch forest (3.9 acres) would be converted to shrub land and grassland.

5.1.2.4 RARE & UNIQUE NATURAL RESOURCES

Rare and unique natural resources are divided into rare species and rare communities. Rare species encompass federally listed or state endangered, threatened, or special concern species while rare communities may include state-designated features, such as MBS sites of Biodiversity Significance.

Rare Species

Impacts to rare species are derived from impacts to federally and state-listed species within a one-mile buffer surrounding each Alternative. Table 5-7 identifies the occurrence (as recorded by the DNR NHIS) of threatened and endangered species within one mile of the Alternatives. Specifically, no threatened and endangered species occurrences (as recorded by the DNR NHIS) have been recorded within one mile of the USFWS parcels within this Crossing Location.

Table 5-7. CL1: Rare, Non-Aquatic Species Occurrences

Common Name	Scientific Name	Federal Status	State Status	Type	Proposed Action	No Action Alternative
Canada lynx*	<i>Lynx canadensis</i>	Threatened		Animal	X	X
Gray wolf	<i>Canis lupus</i>	Threatened		Animal	X	X
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened		Animal	X	X
Common Moonwort	<i>Botrychium lunaria</i>	-	threatened	vascular plant		X
Least Moonwort	<i>Botrychium simplex</i> vars.	-	special concern	vascular plant	X	X
Michigan Moonwort	<i>Botrychium michiganense</i>	-	watch list	vascular plant		X
Mingan Moonwort	<i>Botrychium lunaria</i> var. <i>minganense</i>	-	special concern	vascular plant		X
Northern Androsace	<i>Androsace septentrionalis</i>	-	special concern	vascular plant		X
Pale Moonwort	<i>Botrychium pallidum</i>	-	special concern	vascular plant		X
Ram's-head Lady's-Slipper	<i>Cypripedium arietinum</i>	-	threatened	vascular plant	X	X

Common Name	Scientific Name	Federal Status	State Status	Type	Proposed Action	No Action Alternative
St. Lawrence Grapefern	<i>Botrychium rugulosum</i>	-	special concern	vascular plant		X
Upward-lobed Moonwort	<i>Botrychium ascendens</i>	-	endangered	vascular plant		X

*Canada lynx and gray wolf records are not documented in the NHIS database; however, habitat for these species occurs in CL1.

Source: MN DNR Natural Heritage Information System (NHIS) database.

The USFWS is currently developing a Biological Opinion (BO) for the Project. Information about federally-listed species, such as the gray wolf, Canada lynx, and northern long-eared bat will be discussed in detail in the BO. Although there are no occurrence records in the MN DNR's NHIS database, all three aforementioned federally-listed species are habitat generalists that occur in forested habitats within CL1.

Any indirect impacts to rare species from the Project are expected to be minimal because of the amount of surrounding forested habitat and woody vegetation. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected. DOE's informal consultation under Section 7 of the ESA with USFWS is currently ongoing and a Biological Assessment has been prepared to assess potential impacts on federally listed species.

As discussed in Section 2.11.1 of the EIS, Minnesota Power and its consultants will perform biological surveys of the PUC-approved Route in 2016. The results of these surveys will be provided to the USFWS and any direct impacts to federal- and state-listed species will be assessed at that time.

Rare Communities

Impacts to rare communities are derived from impacts to MBS Sites of Biodiversity Significance, Scientific and Natural Areas (SNA), and Ecologically Important Lowland Conifers within the ROW of each Alternative. There are no occurrences of SNAs within 1,500 feet (SNA analysis distance) or Ecologically Important Lowland Conifers within the ROW for each Alternative. Table 5-8 below describes the occurrence of MBS Sites of Biodiversity Significance within the ROW of each Alternative.

Table 5-8. CL1: Rare Communities and Resources

Resource	Evaluation Parameter	Proposed Action	No Action Alternative	Proposed Action Crossing of USFWS lands
Transmission Line	Length (mi)	6.04	9.24	0.27 (1,436 feet)
Colocation with Existing Transmission	Percent Total Length	100	0	100
MBS Sites of	High	0	30.3	0

Resource	Evaluation Parameter	Proposed Action	No Action Alternative	Proposed Action Crossing of USFWS lands
Biodiversity Significance (Acres within ROW)	Moderate	92.7	194.3	6.6
	Below	41.9	0	0

Source: MN DNR

The No Action Alternative would pass through more acres designated as rare communities, relative to the Proposed Action Alternative. The No Action Alternative would impact the most acres of MBS Sites of Biodiversity Significance, including those areas considered 'High.'

The portion of the USFWS parcel crossed by the Proposed Action is entirely classified as an area of 'Moderate' biodiversity. As noted in the vegetation management, some of this habitat would be converted from shrub land to grassland and some would be converted from aspen/birch forest to shrub land and grassland.

The rare communities and resources listed in Table 5-8 show that the Project may result in direct, long-term, localized adverse impacts to MBS Sites of Biodiversity. The primary impact on rare communities and resources that would differ across the Proposed Action and No Action Alternatives is the loss or conversion of native vegetation. The Applicant would permanently remove vegetation at each structure footprint and within portions of the ROW that are currently dominated by forest or other woody vegetation. The MN PUC Route Permit requires the development of a Vegetation Management Plan as a permit condition, which will include plant surveys along the permitted ROW.

5.1.3 Corridor Sharing

Sharing or paralleling existing corridors or linear features minimizes fragmentation of the landscape and can minimize impacts to adjacent property. Table 5-9 identifies the percentage of total transmission line length that the Proposed Action and No Action Alternatives parallel an existing corridor or linear feature.

Table 5-9. CL1: Corridor Sharing

Feature Sharing Corridor	Evaluation Parameter	Proposed Action	No Action Alternative	Proposed Action Crossing of USFWS lands
Transmission Line	Percent Total Length	100	0	100
Public Land Survey Section (1/2 or 1/4-section line)	Percent Total Length	0	0	0
Road/Trail	Percent Total Length	0	0	0

Source: PLSS & MnDOT

The Proposed Action Alternative would parallel existing transmission line corridors for its entire length. The No Action Alternative would not parallel an existing transmission line, public land survey section line, or road/trail for any of its length. The portion of the USFWS parcel crossed by the Proposed Action is parallel and adjacent to the existing 500-kV transmission line. As indicated in the sections above, increased fragmentation of the forested landscape in this Crossing Location would impact forestry, vegetation, and rare and unique resources

Within the USFWS parcels, the Proposed Action would share corridors with the existing 500 kV line.

5.1.4 Cost

Table 5-10 summarizes the costs associated with constructing the Proposed Action and No Action Alternatives. As indicated in Table 5-10, the No Action Alternative would be the most expensive to construct, while the Proposed Action Alternative would cost less to construct.

Table 5-10. CL1: Conceptual Construction Costs

Alternative	Cost (Total)	Length (mi)
Proposed Action	\$6,192,944	6.04
No Action Alternative	\$14,188,635	9.24

Source: Power Engineers, 2016

The cost for routine maintenance would depend on the topology and the type of maintenance required, but typically runs from \$1,100 to \$1,600 per mile annually (Minnesota Power 2013, reference (135) from the EIS). Using the \$1,600 per mile for operation and maintenance, the estimated cost would range from \$9,700 to \$14,800 annually for the Alternatives in CL1, respectively.

5.1.5 Cumulative Impacts

The potential for cumulative impacts depends, in part, on temporal factors within the environment. The temporal boundaries for cumulative impacts include past actions, ongoing actions, and reasonably foreseeable future actions that cover the construction period of the Project (beginning in fall 2017) and the beginning of operations (summer 2020). The temporal period would also carry through the life of the Project for operational impacts (such as aesthetic or EMF effects).

Past related actions include the existing 500kV transmission line that parallels the Proposed Actions for each Crossing Location. Impacts relating to this past action are briefly mentioned in Section 4 and discussed in more detail in Chapter 5 of the EIS.

Present and reasonably foreseeable projects that are (1) under construction, have permits, or have submitted permit applications, and (2) have the potential to collectively impact resources within the Project's ROW or general region of influence (see EIS for definitions) for the various resources evaluated in Section 4 and 5. The types of projects considered include roadways, railroad lines, industrial facilities, and energy projects such as power plants, transmission lines, and pipelines.

The EIS reviewed the Minnesota Department of Transportation (DOT) Statewide Transportation Improvement Program and the MN DOC project database (power plant, transmission line, pipeline, or wind project). None of the project listed in the DOT plan or MN DOC database occur within or near the Crossing Locations discussed in this EA. For a detailed discussion present and reasonably foreseeable projects as they relate to the entire Project, see Chapter 7 of the EIS.

Cumulative impacts analysis must be conducted within the context of the resources evaluated in this EA. The magnitude and context of the effect on a resource depends on whether the cumulative effects exceed the capacity of the resource to sustain itself and remain productive (EIS 2015).

The primary past activity that is relevant to both the Proposed Action and the No Action Alternatives is the existing 500 kV transmission line that crosses the USFWS parcels. The Proposed Action would parallel the existing 500 kV line, and would add to that line's effects in the manner described above.

The cumulative effect of these two lines is not expected to be notable with respect to the resources within the USFWS parcels. The No Action Alternatives (both Crossing Locations) and the Minimization Alternative (CL2) avoid or minimize impacts to USFWS parcels but are longer than the Proposed action, and thus would have larger cumulative effect on the surrounding resources. There are no reasonably anticipated future actions that would contribute to cumulative effects of the Proposed Action.

5.2 Crossing Location 2 (CL2)

Crossing Location 2 occurs in T160N, R34W, Sections 12 and 13 in Roseau County, Minnesota. Two sets of Alternatives will be evaluated at this crossing location:

1. the No Action Alternative which avoids all impacts to USFWS parcels, and the Proposed Action 1 Alternative which crosses two USFWS parcels (Figure 2), and
2. the Proposed Action 2 Alternative which is a shorter section of Proposed Action 1 and the Minimization Alternative which minimizes the total distance crossed of the two aforementioned USFWS parcels (Figure 2). In order to compare and contrast the impacts of the Minimization Alternative, a shorter section of Proposed Action 1 that has common start and end points as the Minimization Alternative was used for this analysis.

In addition, resource characteristics of the Proposed Actions (1 & 2) and Minimization Alternative ROWs within the USFWS parcels will be included in each analysis.

5.2.1 Human Settlement

5.2.1.1 TRANSPORTATION & PUBLIC SERVICES

The No Action Alternative crosses the following roadways: State Highway 2, Main St SW, UT-119, 11th St SW, State Highway 3, and 19th St SW. Proposed Action 1 crosses the following roadways: Krull Tr W, 11th St SW, State Highway 2, State Highway 3, and 19th St SW. Proposed Action 2 and the Minimization Alternative cross the following roadways: 11th St, in Lake of the Woods County, MN (Figure 2).

Due to relatively low existing traffic volumes in the area, combined with the Applicant-proposed measures specified in Section 2.13 of the EIS, impacts would be short-term and localized. If the USFWS selects either the Proposed Alternative 1 or 2, the Applicant will be required to coordinate with local officials to develop a detailed construction and mitigation plan where roadways would be temporarily closed and periodic halting of construction activity to allow queued vehicles to pass. These Applicant-proposed measures are potential MN PUC Route Permit conditions.

Public utilities in CL2 include the existing 500kV transmission line that crosses the USFWS parcels and an electrical distribution line that runs parallel to State Hwy 2. No other public utilities, such as gas and water pipelines, are known to be located within CL2. If the distribution line is damaged during construction or if it is disrupted, mitigation would include working with utility providers to manage any outages or relocations that may be necessary.

5.2.1.2 RECREATION & TOURISM

A review of the MN DNR's Recreation Compass interactive Map (MN DNR 2015) did not produce any State trails (water or terrestrial), State Parks, Walk-in Access sites, or Parks of Regional Significance. Proposed Action 1 crosses Krull Tr. W (Forest Road 0068) that appears to continue west into the Beltrami Island State Forest. Proposed Actions 1 & 2 crosses 11th St SW (Forest Road 0064A).

Aerial imagery indicates that there may be additional, smaller trails that diverge from the Forest Roads listed above; one of which passes directly under the existing 500-kV transmission line across USFWS & State-owned property (Proposed Actions 1 & 2 and the Minimization Alternative). These trails may provide recreational opportunities for hiking, snowmobiling, and ATV-ing, etc. The No Action Alternative crosses State Hwy 2 which also serves as Forest Road 0068 and is likely used by snowmobilers.

Recreational impacts related to construction of the Project are expected to be short-term and localized in nature, lasting only for the duration of construction. Generally, construction activities will be periodic, and will last for a few hours to a few weeks in a given area for each type of construction activity (that is, tree clearing, foundation installation, structure installation, wire stringing and restoration), Impacts may include increased noise and dust in the Project area, which could detract from nearby recreational activities, discourage tourism, and could affect the setting of non-motorized recreational activities as well as displace wildlife during hunting season. These effects would cease once construction was completed.

Construction of Project components across rivers or snowmobile trails could temporarily disrupt recreational users of these amenities. If the USFWS selects either the Proposed Alternative 1 or 2, the Applicant will be required to provide notices about construction activities or alternative routes around the construction zone. Once construction has been completed, these areas would again be available for outdoor recreational uses. Therefore, construction of the Project is not expected to result in ongoing or long-term impacts to recreation and tourism.

Once constructed, the Project could have long-term direct and indirect aesthetic impacts in the area as a result of obstruction of scenic views or detracting from the setting of nearby recreational activities. Aesthetic impacts will be minimal for locations where the line parallels the existing 500 kV line, since those impacts are already present. Most recreational activities (e.g., hiking, snowmobiling, mountain biking, bird watching, etc.) can be done safely in transmission line ROWs, but certain activities are not recommended and could result in public safety hazards. Activities to be avoided include flying kites or model planes near transmission lines. The project will be compatible with lawful hunting activities and will not affect underlying fee owner rights to authorize or restrict those hunting activities. Implementation of proper signage and restricted access to the Project transmission line routes and variations, substation, and compensation facilities would reduce the potential for public health and safety hazards from recreational activities.

5.2.1.3 LAND USE COMPATIBILITY

Crossing Location 2 contains areas of private, state, and federally owned property. There are no County-owned parcels within Crossing Location 2, nor is the Applicant required to complete any county-level permitting for this Project due to state preemption.⁵ Easements will be negotiated for crossings of private lands and applicable state land crossing permits will be obtained for state land crossings. This EA serves as part of the required permitting/approval step for crossings of federal parcels.

⁵ Minn. Stat. § 216E.01, Subd. 5

Table 5-11 and Table 5-12 below compare the land ownership types within the Alternatives.

Table 5-11. CL2: Land Use Compatibility – No Action & Proposed Action 1

Resource	Evaluation Parameter	Proposed Action 1	No Action Alternative
Transmission Line	Length (mi)	7.98	9.98
ROW	Acres	193.45	241.94
Colocation with Existing Transmission	Percent Total Length	100	30
State Lands (Forests, Fee, Con-Con, Other, Trust)	Acres within ROW	111.1	124.5
USFWS Lands	Acres within ROW	18.3	0
Private Lands	Acres within ROW	64.7	118.1

Source: MN DNR, USFWS, Lake of the Woods County Tax Assessment Data

Table 5-12. CL2: Land Use Compatibility– Proposed Action 2 & Minimization Alternative

Resource	Evaluation Parameter	Proposed Action 2	Minimization Alternative	USFWS Land within Proposed Action 2	USFWS Land within Minimization Alternative
Transmission Line	Length (mi)	1.22	1.30	0.75 (3,979 feet)	0.53 (2,797 feet)
ROW	Acres	29.09	31.52	18.18	12.85
Colocation with Existing Transmission	Percent Total Length	100	0	100	0
State Lands (Forests, Fee, Con-Con, Other, Trust)	Acres within ROW	11.6	18.7	0	0
USFWS Lands	Acres within ROW	18.3	13.2	18.3	13.2
Private Lands	Acres within ROW	0.3	0.3	0	0

Source: MN DNR, USFWS, Lake of the Woods County Tax Assessment Data

Additional information on the land cover type can be found in the forestry and wetlands sections below.

All Alternatives would result in a long-term change in land use, but these changes would be limited in extent, and there would still be extensive state and federal lands in the surrounding area; so these changes are expected to have a minimal impact on land use. Further, the impacts related to land use compatibility are similar for USFWS land as for State land, since both agencies have similar management objectives.

The length of the Proposed Actions that would parallel an existing corridor is important, and in this case, the Proposed Actions (1 & 2) would parallel an existing 500-kV transmission line for 100% of their lengths. The No Action and Minimization Alternatives would parallel little to zero percent of their lengths with an existing corridor; they would create an entirely new corridor through public and private lands.

5.2.1.4 LAND-BASED ECONOMY – FORESTRY

Impacts to forestry are derived from the total amount of state forest lands within the ROW of each Alternative. Table 5-13 and Table 5-14 identify the acreage of state forest land that would be impacted by the No Action, Proposed Action, and Minimization Alternatives.

Table 5-13. CL2: State Forest Lands – No Action & Proposed Action 1

Resource	Evaluation Parameter	Proposed Action 1	No Action Alternative
Transmission Line	Length (mi)	7.98	9.98
ROW	Acres	193.45	241.94
State Forest Lands	Acres within ROW	111.1	124.5

Source: MN DNR

Table 5-14. CL2: State Forest Lands – No Action & Proposed Action 2

Resource	Evaluation Parameter	Proposed Action 2	Minimization Alternative	USFWS Land within Proposed Action 2	USFWS Land within Minimization Alternative
Transmission Line	Length (mi)	1.22	1.30	0.75 (3,979 feet)	0.53 (2,797 feet)
ROW	Acres	29.09	31.52	18.18	12.85
State Forest Lands	Acres within ROW	11.6	18.7	0	0

Source: MN DNR

The Proposed Action, which parallels an existing corridor for 100 percent of its length, would cross fewer acres of state forest land (approximately 111 acres). The No Action and Minimization Alternatives parallel very little existing corridor and would have a greater impact to state forest lands than the Proposed Actions and increasingly fragment the landscape in this area.

Construction activities could limit timber harvesting efforts, affect timber stands and soil by compaction, damage trees, or cause erosion. Woody vegetation would routinely need to be cleared from the transmission line ROW in order to maintain low-stature vegetation that would not interfere with the operation of the line.

5.2.1.5 ARCHAEOLOGY & HISTORIC ARCHITECTURAL RESOURCES

The EIS describes the 'Area of Potential Effect,' specifically for archaeology and historic architectural resources as within the ROW, within 1,500 feet of the anticipated alignment, and within one-mile of the anticipated alignment. For the purposes of this EA, resources within the ROW and within 1,500 feet of the anticipated alignment are evaluated. No Archaeological and/or historical architectural resources were noted within the ROW of all three Alternatives.

To date, no specific Native American resources have been previously recorded within the ROW or within one-mile of the anticipated alignments of either Alternative. The Department of Energy is continuing to consult with the federally-recognized Indian tribes to identify Native American resources within the APE of the Proposed Action. The EIS Scoping Alternative from which the No Action Alternative was derived is not included in the on-going consultation with the tribes as it was not carried forward during the EIS process.

There is currently no identified potential for direct, long-term, adverse impacts on archaeological or historic architectural sites within any of the Alternatives although cultural resource investigations have not yet occurred for the Project. Archaeological surveys, architectural site surveys or inventories, and surveys or inventories for Native American resources will be required as part of cultural resource investigations conducted in compliance with federal and/or state regulations for cultural resources. These investigations will be implemented as part of the GNTL Draft PA that will establish a process to identify cultural resources, evaluate NRHP-eligibility of identified resources, and develop measures to avoid, minimize, and mitigate adverse impacts on cultural resources during construction and operation of the Project.

The DOE led Section 106 Consultation process and PA signing is scheduled to be completed in June 2016. USFWS proposes to be included as a consulting party in the PA for compliance with Section 106. Minnesota Power will adhere to all requirements and procedures in the PA including consultation with the Minnesota State Historical Preservation Office and affected tribes including Red Lake Nation.

5.2.2 Natural Resources

5.2.2.1 WATER RESOURCES

Impacts to water resources are derived from impacts to PWI waters, Impaired Waters, Trout Streams, Floodplains, and NWI wetlands within the ROW of each Alternative. Table 5-15 identifies the occurrence of water resources potentially impacted by the Proposed, Minimization, and No Action Alternatives (Figure 7).

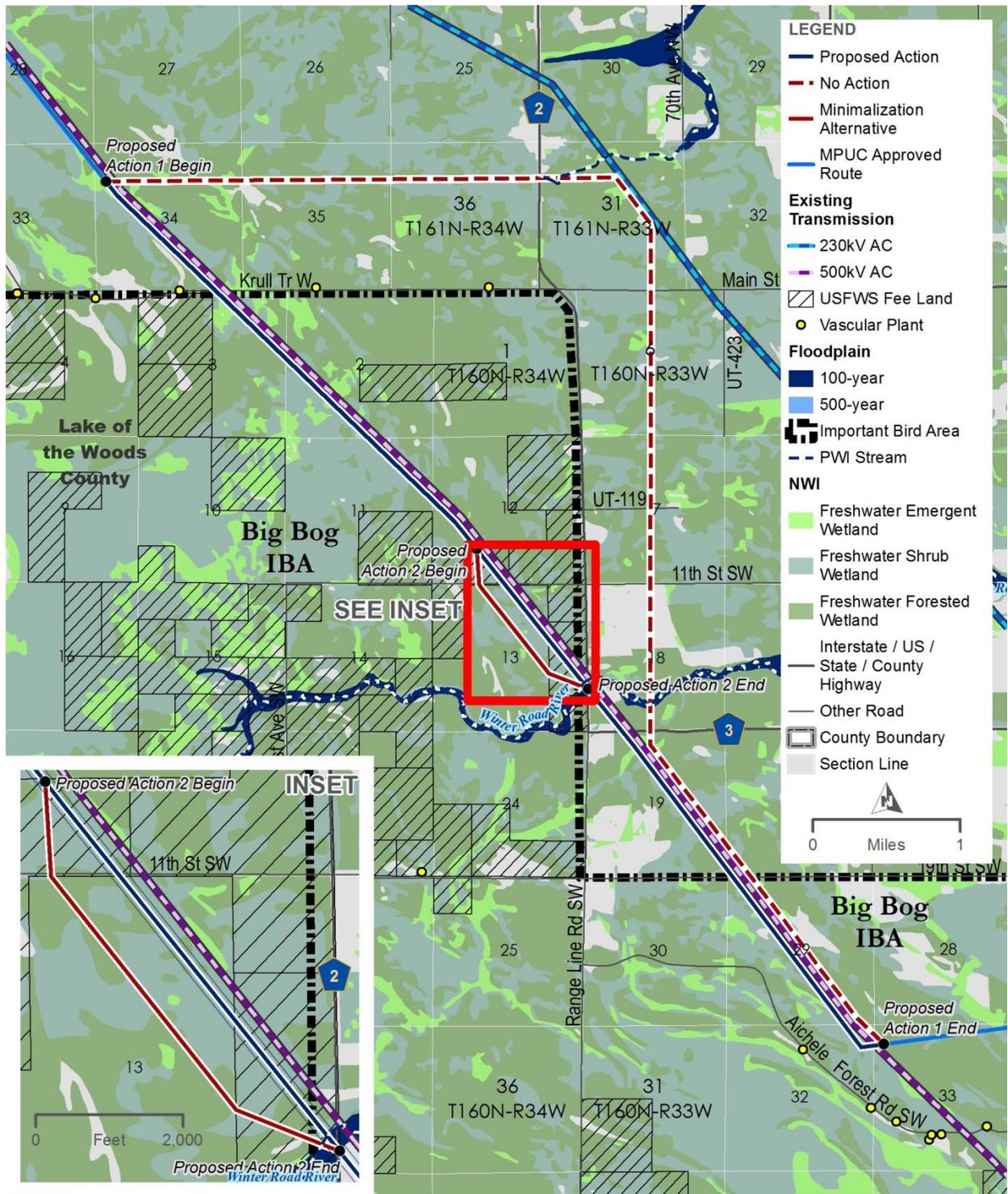


FIGURE 7

NATURAL RESOURCES WITHIN CROSSING LOCATION 2

GREAT NORTHERN TRANSMISSION LINE

PATH: \\M:\SPE-GIS-FILE\GIS\PROJ\LARGE\MINNPOWER\182035\MAP_DOC\SIAGENCY\USFWS\IEA\CROSSING_2_NATRES.MXD - USER: STUOHEY - DATE: 5/25/2016

ENVIRONMENTAL ASSESSMENT



Table 5-15. CL2: Water Resources – No Action & Proposed Action 1

Resource	Evaluation Parameter	Proposed Action 1	No Action Alternative
Transmission Line	Length (mi)	7.98	9.98
ROW	Acres	193.45	241.94
PWI Waters	Number of Crossings	1	3
Impaired Waters	Number of Crossings	0	0
Trout Streams	Number of Crossings	0	0
Floodplains	Acres within ROW	1.3	1.6
NWI Wetlands	Acres within ROW	189.1	224.8

The No Action Alternative requires crossing three PWI waters (Winter Road River, Unnamed Drainage Ditch [Intermittent], and Unnamed Stream [Perennial]) while the Proposed Action Alternative 1 crosses one PWI water (Winter Road River). Neither Alternative crosses impaired waters or trout streams. Both Alternatives impact a similar acreage of FEMA floodplains.

The No Action Alternative crosses nearly 36 more acres of NWI wetlands than the Proposed Action Alternative. It is anticipated that PWI crossings, non-PWI water crossings, and impaired waters are spannable (crossings would be less than the average span length of 1,250 feet) and transmission structures would not be placed within them. Additional information on the impacts to these water resources is found below.

Table 5-16. CL2: Water Resources– Proposed Action 2 & Minimization Alternative

Resource	Evaluation Parameter	Proposed Action 2	Minimization Alternative	USFWS Land within Proposed Action 2	USFWS Land within Minimization Alternative
Transmission Line	Length (mi)	1.22	1.30	0.75 (3,979 feet)	0.53 (2,797 feet)
ROW	Acres	29.09	31.52	18.18	12.85
PWI Waters	Number of Crossings	1	1	1	1
Impaired Waters	Number of Crossings	0	0	0	0
Trout Streams	Number of Crossings	0	0	0	0
Floodplains	Acres within ROW	1.3	1.4	1.2	1.3

Resource	Evaluation Parameter	Proposed Action 2	Minimization Alternative	USFWS Land within Proposed Action 2	USFWS Land within Minimization Alternative
NWI Wetlands	Acres within ROW	29.4	31.4	17.9	12.8

Proposed Action 2 and the Minimization Alternative would cross Winter Road River, a PWI water. Neither Alternative crosses impaired waters or trout streams. Both Alternatives cross a similar acreage of FEMA Floodplains.

It is anticipated that PWI crossings are spannable (crossings would be less than the average spanning length of 1,250 feet) and transmission structures would not be placed within them.

Based on the NWI data, all Alternatives would require conversion of forested and shrub wetland areas to herbaceous wetland type through removal of woody vegetation in the ROW. As further described in the Vegetation section below, the No Action Alternative contains the most forested and shrub wetlands and therefore would result in the greatest amount of wetland type conversion. The portions of USFWS parcels crossed by Proposed Action 2 and the Minimization Alternative include approximately 18 and 13 acres of NWI wetlands, respectively.

While these direct, adverse impacts to forested and shrub wetlands would be permanent and may change wetland functions within the ROW, e.g. altering the hydrology and habitat, they are expected to be minimal because of the amount of surrounding shrub and forested wetlands in the region. A detailed discussion of changes in wetland function can be found in Section 5.3.4.1 of the EIS.

Impacts to wetlands generally cannot be avoided by spanning as wetland crossings generally exceed the average spanning length allowable for structures, but impacts to wetlands from permanent fill are expected to be minimal because of the localized extent of the impact (33 square feet per structure). Due to the large wetland complexes in the area, it would be expected that all Alternatives would require temporary construction access through wetlands, which is also likely to be minimal due to the short-term, localized nature of the impact, and the Applicant's intended use of minimization measures, such as matting.

5.2.2.2 VEGETATION

Impacts to vegetation are based on GAP land cover types within the ROW of each Alternative.

Figure 8. Dominant Land Cover Types within Crossing Location 2.

Table 5-17 and The No Action Alternative has more than twice as many acres of forested land than the Proposed Action 1 Alternative. Additional discussion of impacts to vegetative resources can be found below (Figure 8)

Table 5-18 identifies the occurrence of vegetative resources potentially impacted by the No Action, Proposed Action, and Minimization Alternatives (Figure 8).

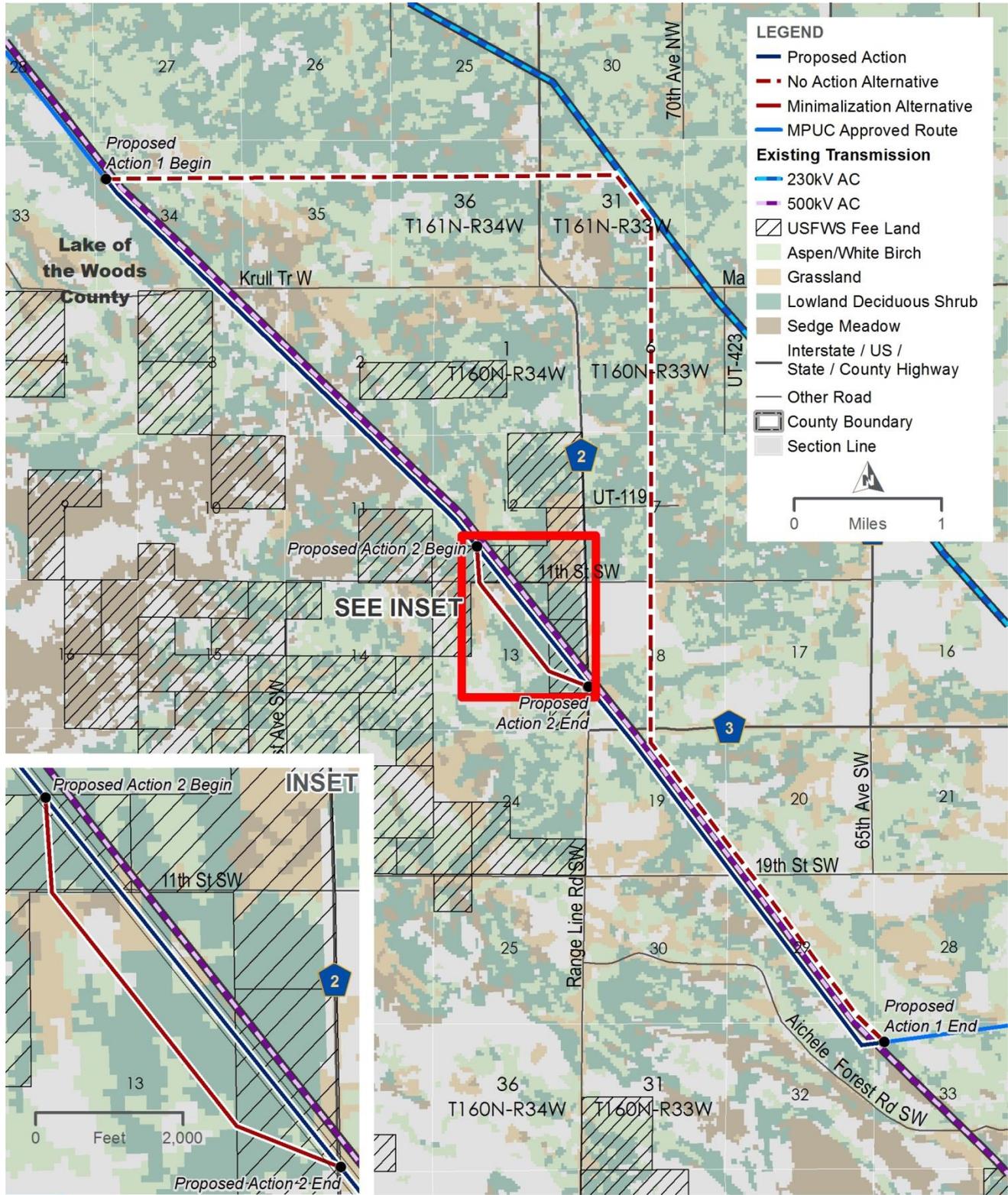


FIGURE 8
DOMINANT LAND COVER TYPES WITHIN CROSSING LOCATION 2
GREAT NORTHERN TRANSMISSION LINE



Table 5-17. CL2: Vegetative Resources – No Action & Proposed Action 1

Resource	Evaluation Parameter	Proposed Action 1	No Action Alternative
Transmission Line	Length (mi)	7.98	9.98
Collocation with Existing Transmission	Percent Total Length	100	0
ROW	Acres	193.45	241.94
GAP Land Cover – Top 3 Dominant Types			
Aspen/White Birch Forest	Acres within ROW	33.2	100.8
Lowland Deciduous Shrub	Acres within ROW	72.9	45.4
Upland Shrub	Acres within ROW	0	22.8
Sedge Meadow	Acres within ROW	35.1	0

Source: GAP Land Cover Dataset

*GAP Land Cover data is only accurate to 30-meter cells; totals of land cover type may not be equal to individual cover type counts.

The No Action Alternative has more than twice as many acres of forested land than the Proposed Action 1 Alternative. Additional discussion of impacts to vegetative resources can be found below (Figure 8).

Table 5-18. CL2: Vegetative Resources – Proposed Action 2 & Minimization Alternative

Resource	Evaluation Parameter	Proposed Action 2	Minimization Alternative	USFWS Land within Proposed Action 2	USFWS Land within Minimization Alternative
Transmission Line	Length (mi)	1.22	1.30	0.75 (3,979 feet)	0.53 (2,797 feet)
Collocation with Existing Transmission	Percent Total Length	100	0	100	0
ROW	Acres	29.09	31.52	18.18	12.85
GAP Land Cover – Top 3 Dominant Types					
Lowland Deciduous Shrub	Acres within ROW	20.9	19.6	15.3	11.2
Aspen/White Birch	Acres within ROW	2.4	5.1	1.0	1.2
Grassland	Acres within ROW	5.9	3.6	1.8	0.5

Source: GAP Land Cover Dataset

*GAP Land Cover data is only accurate to 30-meter cells; totals of land cover type may not be equal to individual cover type counts.

Proposed Action 2 and the Minimization Alternative have similar impacts to forested, shrub, and grassland cover types.

The primary impact on vegetation that would differ across the Alternatives is the loss or fragmentation of forest. The Proposed Action Alternatives are the only Alternatives that parallel an existing cleared corridor (500-kV transmission line ROW) for their entire lengths, which minimizes forest fragmentation impacts. The Minimization Alternative follows the least amount of existing transmission line corridor, which would result in more fragmentation of intact forest. The same would be true of the No Action Alternative, which only parallels existing transmission lines for 30% of its length. While direct, adverse impacts to forested areas would be long-term, contiguous forest is abundant in the region surrounding the Project.

The Applicant would permanently clear woody vegetation at structure locations and from the center 70-foot ROW during construction; the outside edges of the ROW would be maintained as low-stature trees or shrub vegetation in order to reduce interference with the maintenance and function of the transmission line.

Within USFWS parcels, vegetation impacts would be slightly less for the Minimization alternative (12.9 acres) than for the Proposed Action 2 (18.1 acres). Most of this difference would occur in lowland shrub lands, which would be partially converted to grassland.

5.2.2.3 WILDLIFE

Impacts to wildlife are derived from impacts to wildlife resources within the ROW of each Alternative. Table 5-19 and Table 5-20 identify the occurrence of wildlife resources potentially impacted by the Alternatives (Figure 7).

Table 5-19. CL2: Wildlife Resources– No Action & Proposed Action 1

Resource	Evaluation Parameter	Proposed Action 1	No Action Alternative
Transmission Line	Length (mi)	7.98	9.98
Collocation with Existing Transmission Line	Percent Total Length	100	30
Wildlife Management Areas	Acres	0	0
Important Bird Areas	Acres	125.7	35.5

Source: MN DNR

Table 5-20. CL2: Wildlife Resources – Proposed Action 2 & Minimization Alternative

Resource	Evaluation Parameter	Proposed Action 2	Minimization Alternative	USFWS Land within	USFWS Land within
				Proposed Action 2	Minimization Alternative
Transmission Line	Length (mi)	1.22	1.30	0.75 (3,979 feet)	0.53 (2,797 feet)
Collocation with Existing Transmission	Percent Total Length	100	0	100	0
Wildlife Management Areas	Acres	0	0	0	0
Important Bird Areas	Acres	27.2	30	15.6	11.4

Source: MN DNR

All Alternatives would pass through the Big Bog Important Bird Area; which could result in more impacts on birds. The Proposed Action Alternatives would parallel an existing transmission line corridor for their entire lengths and the No Action and Minimization Alternatives parallel the existing corridor for very short distances, if at all. The portions of USFWS parcels crossed by the Proposed Action 2 and Minimization Alternative contain similar acreages of Important Bird Area.

The No Action and Minimization Alternatives would require the creation of a new corridor for almost their entire lengths. The Minimization Alternative would create new corridor within the Big Bog Important Bird Area; whereas the No Action Alternative parallels an existing transmission line within the area designated as IBA. Creation of a new corridor in the Big Bog Important Bird Area would likely result in both short-term and long-term direct and indirect adverse impacts on birds and other wildlife associated with the area.

The short-term indirect impacts would be associated with construction and alteration of the birds' habitat while the long-term direct impacts would be associated with the operation of the Project, which is discussed in more detail in Section 5.3.4.3 of the EIS.

The short-term indirect impacts are expected to be minimal because of the overall amount of similar habitat in the surrounding region, and the long-term direct impacts would be minimized through use of Applicant-proposed mitigation measures.

The primary impacts on wildlife resources that would differ across the Alternatives include loss and fragmentation of natural and managed wildlife habitat and proximity of all Alternatives to these areas. The Proposed Action Alternatives would "expand" existing corridor or create new corridor; this would result in conversion from forest to low-stature woody or open vegetation communities, favoring wildlife species that prefer shrubby or open vegetation communities. Section 5.2.2.2 (Vegetation) summarizes potential impacts on forested vegetation from the Alternatives. Within the USFWS parcels, impacts to wildlife would be expected to be greater for the Minimization alternative because of greater fragmentation.

Impacts due to conversion in vegetation types are slightly less for the Minimization Alternative (12.9 acres) than for the Proposed Action 2 Alternative (18.1 acres, Table 5-18). Most of this difference would occur in lowland shrub lands, which would be partially converted to grassland.

5.2.2.4 RARE & UNIQUE NATURAL RESOURCES

Rare and unique natural resources are divided into rare species and rare communities. Rare species encompass federally listed or state endangered, threatened, or special concern species while rare communities may include state-designated features, such as MBS sites of Biodiversity Significance. MBS Sites of Biodiversity Significance have not been completed for Lake of the Woods County and are not included in the following analyses.

Rare Species

Impacts to rare species are derived from impacts to federally and state-listed species within a one-mile buffer surrounding each Alternative. Table 5-21 identifies the occurrence (as recorded by the DNR NHIS) of threatened and endangered species recorded within one mile of the Proposed Action 1 and No Action Alternatives. No threatened or endangered species were recorded within one mile of Proposed Action 2 or Minimization Alternatives (or the USFWS parcels over which they cross).

Table 5-21. CL2: Rare, Non-Aquatic Species Occurrences - No Action & Proposed Action 1

Common Name	Scientific Name	Federal Status	State Status	Type	Proposed Action 1	No Action Alternative
Canada lynx*	<i>Lynx canadensis</i>	Threatened		Animal	X	X
Gray wolf	<i>Canis lupus</i>	Threatened		Animal	X	X
Northern long-eared bat	<i>Myotis septentrionalis</i>	Threatened		Animal	X	X
Common Moonwort	<i>Botrychium lunaria</i>	-	threatened	vascular plant	X	X
Least Moonwort	<i>Botrychium simplex</i> vars.	-	special concern	vascular plant	X	X
Pale Moonwort	<i>Botrychium pallidum</i>	-	special concern	vascular plant	X	X
Upward-lobed Moonwort	<i>Botrychium ascendens</i>	-	endangered	vascular plant		X

*Canada lynx and gray wolf records are not documented in the NHIS database; however, habitat for these species occurs in CL2.

Source: MNDNR Natural Heritage Information System (NHIS) database.

The USFWS is currently developing a Biological Opinion (BO) for the Project. Information about federally-listed species, such as the gray wolf, Canada lynx, and northern long-eared bat will be discussed in detail in the BO. Although there are no occurrence records in the MN DNR's NHIS database, all three aforementioned federally-listed species are habitat generalists that occur in forested habitats crossed by the Alternatives in CL2.

Any indirect impacts to rare species from the Project are expected to be minimal because of the amount of surrounding forested habitat and woody vegetation. Through use of Applicant-proposed avoidance and minimization measures, direct impacts to rare species are not expected. DOE's informal consultation under Section 7 of the ESA with USFWS is currently ongoing and a Biological Assessment has been prepared to assess potential impacts on federally listed species.

As discussed in Section 2.11.1 of the EIS, Minnesota Power and its consultants will perform biological surveys of the PUC-approved Route in 2016. The results of these surveys can be provided to the USFWS and any direct impacts to federal- and state-listed species can be assessed at that time.

Rare Communities

None of the Alternatives are within the EIS-designated impact area of 1,500 feet from an SNA, nor are any MBS Sites of Biodiversity Significance or Ecologically Important Lowland Conifers noted within the ROW of any Alternatives.

It is possible that MBS Sites of Biodiversity Significance exist within the ROW of the Alternatives within Crossing Location 2; however, the data has not been published by the DNR by the writing of this EA.

In the event rare communities exist within the ROW of the Alternatives, the Project may result in direct, long-term, localized adverse impacts to MBS Sites of Biodiversity. The primary impact on rare communities and resources that would differ across the Proposed Actions and No Action/Minimization Alternatives – regardless of the lack of published MBD data - is the loss or conversion of native vegetation. The Applicant would permanently remove vegetation at each structure footprint and within portions of the ROW that are currently dominated by forest or other woody vegetation.

The MN PUC Route Permit requires the development of a Vegetation Management Plan as a permit condition, which will include plant surveys along the permitted ROW.

5.2.3 Corridor Sharing

Sharing or paralleling existing corridors or linear features minimizes fragmentation of the landscape and can minimize impacts to adjacent property. Table 5-22 and Table 5-23 identify the percentage of total transmission line length that the Alternatives parallel an existing corridor or linear feature.

Table 5-22. CL2: Corridor Sharing – No Action & Proposed Action 1

Feature Sharing Corridor	Evaluation Parameter	Proposed Action 1	No Action Alternative
Transmission Line	Percent Total Length	100	30
Public Land Survey Section (1/2 or 1/4-section line)	Percent Total Length	0	70
Road/Trail	Percent Total Length	0	0

Source: PLSS & MnDOT

Table 5-23. CL2: Corridor Sharing– Proposed Action 2 & Minimization Alternative

Feature Sharing Corridor	Evaluation Parameter	Proposed Action 2	Minimization Alternative	USFWS Land within Proposed Action 2	USFWS Land within Minimization Alternative
Transmission Line	Percent Total Length	100	0	100	0
Public Land Survey Section (1/2 or 1/4-section line)	Percent Total Length	0	0	0	0
Road/Trail	Percent Total Length	0	0	0	0

Source: PLSS & MnDOT

The Proposed Action Alternatives would parallel existing transmission line corridors for their entire lengths; the No Action Alternative would parallel the existing transmission line corridor for 30% of its length. The Minimization Alternative would not parallel any existing corridor or linear feature. The portions of the USFWS parcels crossed by Proposed Action 2 are parallel and adjacent to the existing 500-kV transmission line. The portions of USFWS parcels crossed by the Minimization Alternative are not parallel to the existing 500-kV transmission line.

As indicated in the sections above, increased fragmentation of the forested landscape in this Crossing Location would impact forestry, vegetation, and rare and unique resources. Within the USFWS parcels, the Proposed Action would share corridors with the existing 500 kV line.

5.2.4 Cost

Table 5-24 summarizes the costs associated with constructing the Proposed Actions, No Action and Minimization Alternatives. As indicated in Table 5-10, the No Action Alternative would be the most expensive to construct, while the Proposed Action 1 & 2 Alternatives would cost the least to construct. The Minimization Alternative would require four additional corner structures which would more than triple the cost.

Table 5-24. CL2: Conceptual Construction Costs

Alternative	Cost (Total)	Length (mi)
Proposed Action 1	\$8,957,804	7.98
No Action Alternative	\$13,080,924	9.98
Proposed Action 2	\$1,254,689	1.22
Minimization Alternative	\$3,722,153	1.30

Source: Power Engineers, 2016

The cost for routine maintenance would depend on the topology and the type of maintenance required, but typically runs from \$1,100 to \$1,600 per mile annually (Minnesota Power 2013, reference (135) from the EIS). Using the \$1,600 per mile for operation and maintenance, the estimated cost would range from approximately \$2,000 to \$16,000 annually for the Alternatives in CL2.

5.2.5 Cumulative Impacts

See Section 5.1.5 of this EA for a discussion of Cumulative Resources.

6 List of Preparers

Table 6-1. List of Preparers

Preparer	Section(s)
Christina Rolfes (HDR)	1, 3, 4, 5, 7, 8, & 10
Sean Tuohey (HDR)	Tables and Figures
Lydia Nelson (HDR)	QC
Jay Johnson (Venable, LLC)	QC
Jim Atkinson (Minnesota Power)	QC
David Moeller (Minnesota Power)	QC

7 Consultation and Coordination with the Public and Others

A detailed summary of Public and Agency consultation and coordination for the EIS process can be found in Chapter 1: Regulatory Framework of the EIS. Additional consultation information can be found in the following EIS Appendices:

- A: Tribal Consultations
- C: Narrative of the Scoping Summary Report
- D: MN DOC-EERA Scoping Decisions
- P: Cultural Resources Report
- Q: USFWS & DOE Section 7 Consultations
- R: Biological Assessment
- U: USFWS Recommended Route
- V: Draft Programmatic Agreement

The USFWS is also preparing a Biological Opinion for this Project. More information about federally-listed species can be found in that document.

The MN DNR and the Red Lake Band of Ojibwe were consulted as part of this EA.

Specifically, the Draft EA was published to allow public comment on **XXXX, 2016**. See more information in Chapter 8.

8 Public Comment on the Draft EA and Response

This EA was published on <insert date>. The 30-day comment period commenced on that date and closed on <insert date>. The following is a summary of comments and responses received during the comment period.

8.1 Comments Received

<insert comments>

8.2 Responses to Comments Received

<insert responses>

9 References Cited

- United States Department of Energy (DOE), Office of Electricity Delivery and Energy Reliability. *Great Northern Transmission Line Project - Final Environmental Impact Statement*. Washington, DC: DOE Headquarters, 2015. Online <<http://www.greatnortherneis.org/Home/documentsFEIS>>.
- Minnesota Department of Natural Resources (MN DNR). 2015. Recreation Compass Interactive Map. Accessed Online. <http://www.dnr.state.mn.us/maps/compass.html?map=COMPASS_MAPFILE&zoomsize=3>. February 2015.