Appendix R

Biological Assessment

Department of Energy
Washington, DC 20585

October 2, 2015

Lisa Mandell
U.S. Fish and Wildlife Service
4101 American Blvd. East
Bloomington, MN 55425

SUBJECT: Request for Consultation under Section 7 of the Endangered Species Act for the Great Northern Transmission Line Project

Dear Ms. Mandell:

The Department of Energy (DOE) Office of Electricity Delivery and Energy Reliability is responding to an application by Minnesota Power (Applicant) for a Presidential permit to construct, operate, maintain, and connect the proposed Great Northern Transmission Line (GNTL) Project. Enclosed is a Biological Assessment (BA) to initiate formal consultation under Section 7(a)(2) of the Endangered Species Act (ESA).

The BA has been prepared in accordance with the legal requirements set forth under regulations implementing Section 7 of the Federal Endangered Species Act (50 CFR 402; 16 U.S.C. 1536(c)). The description of the proposed GNTL Project in Section 2.0 includes measures and best management practices that would help avoid impacts on these species, including time of year restrictions, survey commitments prior to vegetation management actions (e.g., clearing), and avoidance of habitat. Section 6.0 of the BA provides a comprehensive analysis of impacts.

The DOE prepared the enclosed BA in support of the National Environmental Policy Act (NEPA) review of potential environmental impacts related to the proposed GNTL Project. This environmental review is also being conducted jointly with the state of Minnesota Department of Commerce – Energy and Environmental Regulatory Analysis (DOC-EERA) under the Minnesota Power Plan Siting Act (PPSA) in support of the Minnesota Public Utility's Commission Route Permit decision.

As described in the enclosed BA, the proposed GNTL Project would have no effect on the Poweshiek skipperling (*Oarisma Poweshiek)*, piping plover (*Charadrius melodus)*, or the western prairie fringed orchid (*Platanthera praeclara)*. In addition, the proposed GNTL Project may affect but is unlikely to adversely affect the gray wolf (Canis lupus), Canada lynx (*Lynx canadensis)*, and Sprague's pipit (*Anthus spragueii)*. However, the proposed GNTL Project may affect, and is likely to adversely affect, the Northern long-eared bat (*Myotis septentrionalis)*, as well as may affect, and is likely to adversely affect critical habitat designated for the Northern long-eared bat and gray wolf. Therefore, DOE requests formal consultation under Section 7 of the ESA be initiated at this time.

Please feel free to contact me at any time either by email at Juliea.Smith@hq.doe.gov or by phone at (202) 586-7668.

Yours very truly,

Julie Ann Smith, PhD
Principal NEPA Document Manager
National Electricity Delivery Division, OE-20
Office of Electricity Delivery and
Energy Reliability
U.S. Department of Energy

Attch:

- GNTL Biological Assessment

Great Northern Transmission Line

Biological Assessment

Prepared for
U.S. Department of Energy
Office of Electricity Delivery and Energy Reliability

October, 2015

Great Northern Transmission Line

Biological Assessment

Prepared for
U.S. Department of Energy
Office of Electricity Delivery and Energy Reliability

October, 2015

Great Northern Transmission Line

Biological Assessment

October, 2015

Contents

Summary 1
1.0 Introduction 3
1.1 Endangered Species Act Requirements 5
1.2 Consultation History 6
2.0 Description of the Proposed Action 7
2.1 Description of Alternatives Used in the Draft EIS Analysis 7
2.2 Associated Facilities 8
2.3 Action Area and Study Area 8
2.4 Construction 8
2.4.1 Transmission Line 8
2.4.1.1 Vegetation Clearing 12
2.4.1.2 Construction Methodology 13
2.4.1.3 Restoration/Re-vegetation 14
2.4.2 Substation 15
2.4.3 500 kV Series Compensation Station 15
2.4.4 Regeneration Stations 15
2.4.5 Permanent Access Roads 16
2.4.6 Temporary Access Roads, Laydown Areas, and Fly-in Sites 16
2.5 Maintenance and Operation 16
2.5.1 Transmission Line 16
2.5.2 Substation 17
2.5.3 500 kV Series Compensation Station 17
2.5.4 Regeneration Stations 17
2.5.5 Permanent Access Roads 17
2.6 Construction and Schedule 18
2.7 Impact Minimization and Conservation Measures 18
2.7.1 Applicant–Proposed Avoidance and Minimization Measures 18
3.0 No Action Alternative 20

4.0 Federally-Listed Species and Designated Critical Habitat 21
4.1 Poweshiek Skipperling 22
4.1.1 Behavior and Life History 22
4.1.2 Distribution and Habitat 24
4.1.3 Threats 24
4.1.4 Occurrence in the Proposed Project Area 24
4.1.5 Determination of Effects 24
4.2 Gray Wolf 24
4.2.1 Behavior and Life History 25
4.2.2 Distribution and Habitat 25
4.2.3 Threats 26
4.2.4 Occurrence in the Proposed Project Area 26
4.2.5 Determination of Effects 26
4.3 Piping Plover 26
4.3.1 Behavior and Life History 26
4.3.2 Distribution and Habitat 27
4.3.3 Threats 27
4.3.4 Occurrence in the Proposed Project Area 27
4.3.5 Determination of Effects 27
4.4 Canada Lynx 28
4.4.1 Behavior and Life History 28
4.4.2 Distribution and Habitat 28
4.4.3 Threats 29
4.4.4 Occurrence in the Proposed Project Area 29
4.4.5 Determination of Effects 29
4.5 Northern Long-Eared Bat 30
4.5.1 Behavior and Life History 30
4.5.2 Distribution and Habitat 30
4.5.3 Threats 31
4.5.4 Occurrence in the Proposed Project Area 31
4.5.5 Determination of Effects 32
4.6 Western Prairie Fringed Orchid 32
4.6.1 Behavior and Life History 32
4.6.2 Distribution and Habitat 32
4.6.3 Threats 32

4.6.4 Occurrence in the Proposed Project Area 33
4.6.5 Determination of Effects 33
4.7 Sprague's Pipit 33
4.7.1 Behavior and Life History 33
4.7.2 Distribution and Habitat 33
4.7.3 Threats 34
4.7.4 Occurrence in the Proposed Project Area 34
4.7.5 Determination of Effects 34
5.0 Environmental Baseline Conditions 35
5.1 West Section 35
5.2 Central Section 37
5.3 East Section 37
6.0 Potential Effects on Federally-Listed Species 39
6.1 Gray Wolf 40
6.1.1 Construction Impacts 40
6.1.2 Operations and Maintenance Impacts 41
6.2 Canada Lynx 41
6.2.1 Construction Impacts 41
6.2.2 Operations and Maintenance Impacts 42
6.3 Northern Long-Eared Bat 42
6.3.1 Construction Impacts 42
6.3.2 Operations and Maintenance Impacts 42
6.4 Sprague's Pipit 43
6.4.1 Construction Impacts 43
6.4.2 Operations and Maintenance Impacts 43
7.0 Cumulative Effects 44
7.1 Summary of Cumulative Effects 46
8.0 Conclusions 47
8.1 Effects Determination for Federally-Listed Species 47
8.2 Effects Determination for Critical habitat 47
9.0 References 48
10.0 Acronyms 51

List of Tables

Table 1 Determination of Effect for Federally- Listed Species and Designated Critical Habitat Potentially Affected by the Proposed Project 2
Table 2 Nearby Federally-Listed Species and Designated Critical Habitat Not Affected by the Proposed Project 2
Table 3 Geographic Sections and Corresponding Variation Areas 7
Table 4 Likelihood of Occurrence of Federally-Listed Species within Geographic Sections 22
Table 5 Determination of Effect for Federally- Listed Species and Designated Critical Habitat Potentially Affected by the Proposed Project 40

List of Figures

Figure 1 Structure Schematics 12

List of Maps

Map 1 Project Overview 4
Map 2 West Section Overview 9
Map 3 Central Section Overview 10
Map 4 East Section Overview 11
Map 5 Critical Habitat Areas 23
Map 6 Ecological Subsections 36

Summary

Minnesota Power, a regulated utility division of ALLETE, Inc., as the Applicant for a Presidential permit, proposes to develop the Great Northern Transmission Line Project (proposed Project) to connect renewable sources of power generation (hydroelectric) in Manitoba, Canada to northern Minnesota. This hydroelectric power would be used to off-set projected energy shortages across the region in northern Minnesota by 2020 and to complement the Applicant's wind energy investments in North Dakota. The Applicant estimates the total capital cost for the proposed Project would be between $558 million and $710 million (2013 dollars) and is projected to be in service by 2020. The Applicant estimates that the proposed Project would create 120 direct construction jobs during the approximate 4-year construction period.

The proposed Project would run from the Applicant's proposed international border crossing in Roseau County, Minnesota to the proposed Iron Range 500 kV Substation located just east of the existing Blackberry Substation near Grand Rapids, Minnesota. It would be located on all new 200-foot wide right of way (ROW) with a wider area required for certain spans at angle and corner structures, for guyed structures, or where special design requirements are dictated by topography. The proposed Iron Range 500 kV Substation would accommodate the required 500 kV interconnection. The Applicant is also proposing to construct a new 500 kV series compensation station, regeneration stations, permanent access roads, temporary access roads, laydown areas, and fly-in sites. The proposed Project would be owned and operated in the United States by the Applicant.

This Biological Assessment (BA) has been prepared in accordance with the legal requirements set forth under regulations implementing Section 7 of the Federal Endangered Species Act (ESA) (50 CFR 402; 16 U.S.C. 1536(c)). The purpose of this BA is to review the proposed Project in sufficient detail to determine if the proposed action may affect any federally threatened or endangered species and/or critical habitat.

Based on the description of the proposed Project in Section 2 of this BA and further described in the associated Environmental Impact Statement (EIS) (Department of Energy (DOE) 2015), the status of potentially affected federally-listed species in Section 4 of this BA, environmental baseline conditions in Section 5 of this BA, and the analysis of potential impacts in Section 6 of this BA, DOE concludes determinations of effect for the species and designated critical habitat that occur in the proposed Project area as identified in Table 1. Similarly, DOE concludes that the proposed Project would have no effect on the species and designated critical habitat identified in Table 2.

Table 1 Determination of Effect for Federally- Listed Species and Designated Critical Habitat Potentially Affected by the Proposed Project

Scientific Name	Common Name	ESA Status[1]	Determination of Effect
Canis lupus	Gray wolf	T	May affect, but not likely to adversely affect
Lynx canadensis	Canada lynx	T	May affect, but not likely to adversely affect
Myotis septentrionalis	Northern long-eared bat	T	May affect, likely to adversely affect
Anthus spragueii	Sprague's pipit	Can.	May affect, but not likely to adversely affect
Designated Critical Habitat			**Determination of Effect**
Canis lupus (gray wolf)			May affect, likely to adversely affect

(1) Endangered Species Act. "E" refers to federally-listed as endangered, "T" refers to federally-listed as threatened, "Can" refers to federal candidate species.

Table 2 Nearby Federally-Listed Species and Designated Critical Habitat Not Affected by the Proposed Project

Scientific Name	Common Name	ESA Status[1]
Oarisma poweshiek	Poweshiek skipperling	E
Charadrius melodus	Piping plover	T
Platanthera praeclara	Western prairie fringed orchid	T
Designated Critical Habitat		
Lynx canadensis	Canada lynx	T
Charadrius melodus	Piping plover	T
Oarisma poweshiek[2]	Poweshiek skipperling	E

(1) Endangered Species Act. "E" refers to federally-listed as endangered, "T" refers to federally-listed as threatened, "Can" refers to federal candidate species.

(2) The U.S. Fish and Wildlife Service (USFWS) proposed designated critical habitat for Poweshiek skipperling October 24, 2013 in portions of Minnesota, Iowa, Michigan, Wisconsin, and the Dakotas.

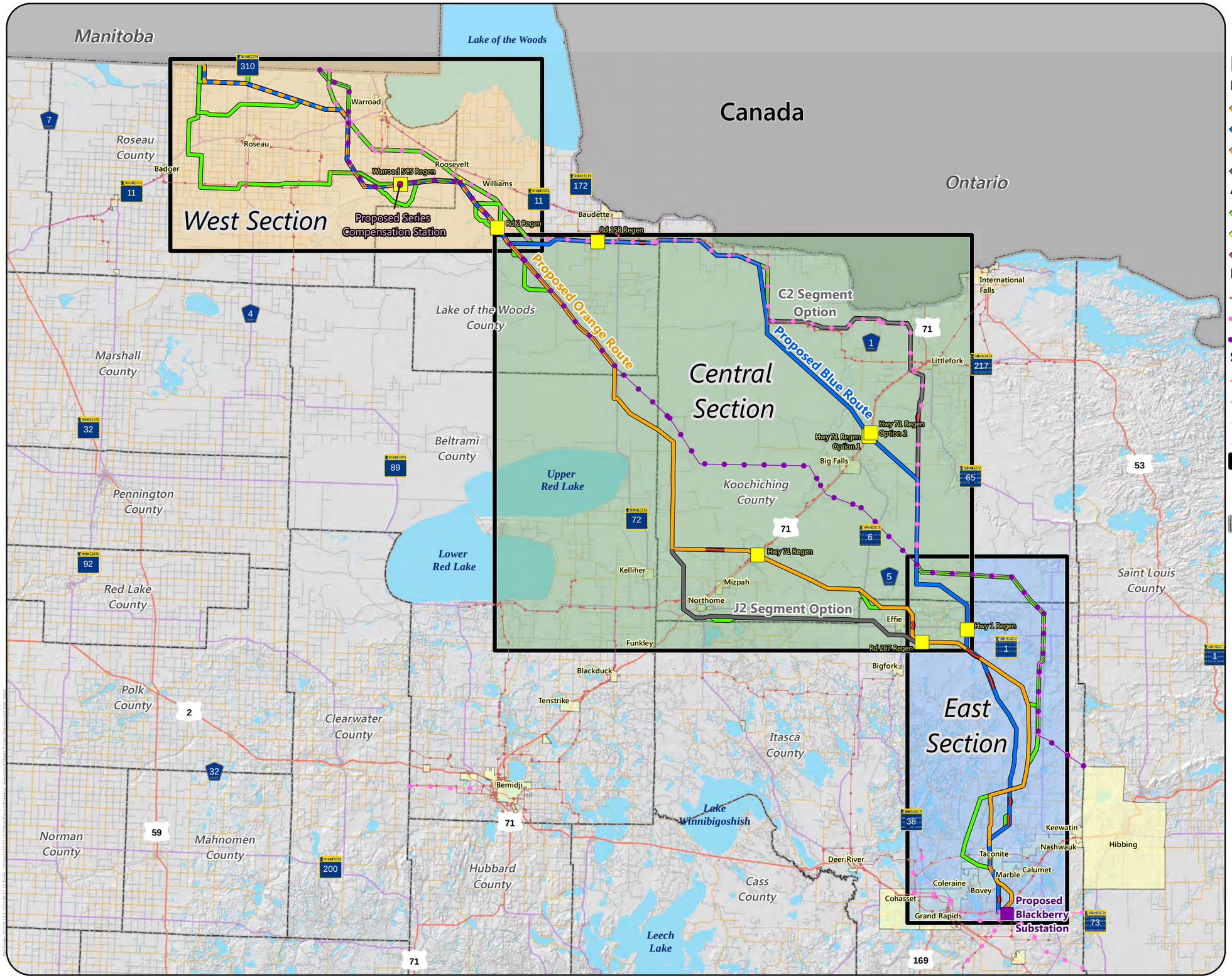
1.0 Introduction

The purpose of this Biological Assessment (BA) is to evaluate the potential impacts of the proposed Great Northern Transmission Line Project (proposed Project) on federally-listed threatened or endangered species, and to comply with requirements of the Endangered Species Act (ESA) of 1973 (16 United States Code [U.S.C.] 1531-1534). The proposed Federal Action by the U.S. Department of Energy (DOE) is the issuance of a Presidential permit that would authorize Minnesota Power, a regulated utility division of ALLETE, Inc. (the Applicant) to construct, operate, and maintain the proposed Project crossing of the United States/Canada international border.

DOE has prepared an Environmental Impact Statement (EIS) for the proposed Project (DOE 2015) to comply with requirements of the National Environmental Policy Act. Therefore, DOE is preparing this BA as the lead Federal Action Agency for the proposed Project. The EIS contains additional details about the proposed Project and potential effects on the natural and human environment, and is incorporated into this BA by reference. The U.S. Army Corps of Engineers will evaluate potential impacts to navigable waters by the Federal Action and determine if issuance of a Clean Water Act Section 404 permit for the proposed Project is warranted. Other cooperating agencies involved with the EIS process include the U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency, the Minnesota Department of Natural Resources (MnDNR), and the Red Lake Band of Chippewa Indians.

The Applicant proposed to develop the Project to connect renewable sources of power generation (hydroelectric) in Manitoba, Canada to northern Minnesota. This hydroelectric power would be used to off-set projected energy shortages across the region in northern Minnesota by 2020 and to complement the Applicant's wind energy investments in North Dakota. The Applicant estimates the total capital cost for the proposed Project would be between $558 million and $710 million (2013 dollars) and is projected to be in service by 2020. The Applicant estimates that the proposed Project would create 120 direct construction jobs during the approximate 4-year construction period.

The proposed Project would travel from the Applicant's proposed international border crossing in Roseau County, Minnesota to the proposed Iron Range 500 kV Substation located just east of the existing Blackberry Substation near Grand Rapids, Minnesota (Map 1). It would be located on all new 200-foot wide right of way (ROW) with a wider area required for certain spans at angle and corner structures, for guyed structures, or where special design requirements are dictated by topography. The transmission towers would be steel lattice structures for the majority of the route, with the exact type of structure in any given location dependent on land type, land use, and potential effect on the surrounding landscape. Tower heights would range from approximately 100 feet to about 170 feet. In some instances, such as where the proposed Project crosses an existing transmission line, taller structures would be required. The proposed Iron Range 500 kV Substation would accommodate the required 500 kV interconnection. The Applicant is also proposing to construct a new 500 kV series compensation station, regeneration stations, permanent access roads, temporary access roads, laydown areas, and fly-in sites. The proposed Project would be owned and operated in the United States by the Applicant.



Proposed Regeneration Site Location
Proposed Blackberry Substation Location
Proposed Series Compensation Station

Proposed Routes
- Blue/Orange Route
- Blue Route
- Orange Route
- Segment Option

Alternatives
- Route Variation
- Route Variation Hop
- Alignment Modification

Existing Transmission Lines
- 69 or 115 kV
- 230 kV
- 500 kV

Streets and Highways
- US Highway
- State Trunk Highway
- County State Aid Highway
- Local Road
- Project Section
- Municipal Boundary
- County Boundary
- International Boundary

PROJECT OVERVIEW
Great Northern Transmission Line
Biological Assessment

On April 15, 2014, the Applicant applied to the DOE for a Presidential permit for the proposed Project pursuant to Executive Order (EO) 10485, as amended by Executive Order 12038, and the regulations codified at 10 Code of Federal Regulations (CFR) Part 205.320 et seq. (2000), "Application for Presidential Permit Authorizing the Construction, Connection, Operation, and Maintenance of Facilities for Transmission of Electric Energy at International Boundaries." On the same date, the Applicant also applied to the Minnesota Public Utilities Commission (MN PUC) for a Route Permit under the Minnesota Power Plant Siting Act. The proposed transmission line would run from the Applicant's proposed international border crossing in Roseau County, Minnesota to the proposed Iron Range 500 kV Substation located just east of the existing Blackberry Substation near Grand Rapids, Minnesota.

On October 29, 2014, the Applicant submitted an amendment to their Presidential permit and Route Permit applications to DOE and MN PUC, respectively, for the proposed Project as a result of new information. The amended Presidential permit application changed the location of the proposed international border crossing under DOE's consideration to latitude 49 00 00.00 N and longitude 95 54 50.49 W, roughly 2.9 miles east of Highway 89 in Roseau County, Minnesota. The proposed Project, as amended, is described in detail below in Section 2 of this BA.

1.1 Endangered Species Act Requirements

The ESA establishes procedures for the protection and conservation of threatened and endangered species and the ecosystems upon which they depend (i.e., designated critical habitat). The ESA describes several categories of federal status for plants and animals and their critical habitat, which have been designated by the USFWS. In addition to allowing the listing of species and subspecies, the ESA allows listing of "distinct population segments" (DPSs) of vertebrate species. A DPS is a portion of a species' or subspecies' population or range; DPS are defined geographically, rather than biologically.

An "endangered" species is defined as any species in danger of extinction throughout all or a large portion of its range. A "threatened" species is defined as any species likely to become an endangered species in the foreseeable future. A "candidate" species is defined as any species for which the USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions. "Critical habitat" is defined in the ESA as "a specific geographic area that is essential for the conservation of a threatened or endangered species and that could require special management or protection." Critical habitat can include an area that is not occupied by a species but is needed for the recovery of that species.

The USFWS has the responsibility for implementing the ESA. Federal agencies must consult with the USFWS, under Section 7(a)(2) of the ESA, on activities that may affect a federally-listed species. These interagency consultations, or Section 7 consultations, are designed to assist federal agencies in fulfilling their duty to ensure federal actions do not jeopardize the continued existence of a species or destroy or adversely modify critical habitat.

1.2 Consultation History

The following interactions between the DOE and the USFWS regarding the proposed Project have occurred prior to the preparation of this BA and have supported its development:

- March 14, 2014 – Letter from the USFWS to the Minnesota Department of Commerce (DOC) providing comments during the environmental impact statement (EIS) scoping process.
- August 4, 2014 – DOE met with USFWS and Minnesota Power in person to discuss the proposed transmission line and avoidance of USFWS interest lands.
- August 14, 2014 – Letter from USFWS to DOE providing comments on specific routing alternatives to be analyzed in the Draft EIS.
- November 5, 2014 – DOE sent letter to the USFWS initiating informal consultation under Section 7 of the ESA.
- March 3, 2015 – Email sent to the USFWS to request GIS data on Canada lynx and gray wolf.
- March 5, 2015 – Email response from the USFWS with wolf occupied township shapefile and wolf range shapefile attached.
- August 10, 2015 – Letter from USFWS to DOE providing comments on the Draft EIS during the public comment period.
- September 14, 2015 – DOE held a conference call with USFWS to discuss the initiation of formal consultation under Section 7 of the ESA.

2.0 Description of the Proposed Action

This section summarizes the key elements of the proposed Project, which was derived from the EIS (DOE 2015). The following items related to the proposed Project are defined and summarized in the sub-sections below: the alternatives considered and evaluated in the EIS, the Action Area and Study Area, details related to construction, maintenance, and operation, construction schedule, and impact and minimization and conservation measures.

2.1 Description of Alternatives Used in the Draft EIS Analysis

The proposed Project would include construction, operation, and maintenance of an approximately 220-mile long, 500-kilovolt (kV) overhead, single-circuit, alternating current (AC) electric transmission system. The Applicant identified two proposed routes; the Blue Route and the Orange Route, as identified on Map 1. Additional routing alternatives were developed during the proposed Project scoping process (see Appendix C in the EIS).

For purposes of understanding the routing alternatives associated with the proposed Project, and to facilitate the analysis in the EIS (DOE 2015), the proposed Project was divided into three geographical sections, including the West Section, Central Section, and East Section (Map 1). Within each geographical section, multiple "variation areas" were developed to address local issues across route alternatives or "variations." Each variation area contains portions of the Applicant's proposed route(s) and variations, which were developed from alternative route segments identified during the proposed Project scoping process (see Appendix C in the EIS). The EIS evaluated the potential environmental impacts and presents the results for the alternatives — proposed routes and variations — within each variation area.

Table 3 and Map 2 through Map 4 provide an overview of the geographic sections and the variation areas contained within them. Because potential effects on federally-listed species from the proposed Project would not differ between portions of the proposed routes and variations within a particular variation area, the BA does not go into detail on all route alternatives evaluated for the proposed Project. The EIS provides information on sections of the proposed routes, variations, and alignment modifications evaluated for the proposed Project (DOE 2015).

Table 3 Geographic Sections and Corresponding Variation Areas

Sections	Variation Areas
West Section (Roseau and Lake of the Woods counties)	Border Crossing Variation Area
	Roseau Lake WMA Variation Area
	Cedar Bend WMA Variation Area
	Beltrami North Variation Area
	Beltrami North Central Variation Area
Central Section (Lake of the Woods, Koochiching, Beltrami, and Itasca counties)	Pine Island Variation Area
	Beltrami South Central Variation Area
	Beltrami South Variation Area

Sections	Variation Areas
	North Black River Variation Area
	C2 Segment Option Variation Area
	J2 Segment Option Variation Area
	Northome Variation Area
	Cutfoot Variation Area
East Section (Koochiching and Itasca counties)	Effie Variation Area
	East Bear Lake Variation Area
	Balsam Variation Area
	Dead Man's Pond Variation Area
	Blackberry Variation Area

2.2 Associated Facilities

In addition to the proposed approximately 220-mile long, 500 kV overhead, single-circuit, AC electric transmission system, the Applicant also proposes a new Iron Range 500 kV Substation, located on the same site as the Applicant's existing Blackberry 230/115 kV Substation, adjacent to and east of the existing substation to accommodate the required 500 kV interconnection and to construct a new 500 kV series compensation station, and regeneration stations (Map 1). In addition, the Applicant would need to construct permanent access roads, temporary access roads, laydown areas, and fly-in sites; however, the detailed design and locations of these features would not be determined until the Presidential permit and Route Permit are issued by the DOE and Minnesota PUC, respectively.

2.3 Action Area and Study Area

The Action Area is defined in 50 CFR Part 402.02 as "all areas to be affected directly or indirectly by the Federal Action and not merely the immediate area involved in the action." The Action Area for federally-listed species in the proposed Project is 100 feet on either side of all proposed routes and variations, which is the anticipated ROW, and the footprints for the proposed Iron Range 500 kV Substation, new 500 kV series compensation station, and regeneration stations.

The Study Area for this BA includes all proposed routes and variations and associated facilities, as described above, plus a one-mile buffer around them.

2.4 Construction

The following subsections describe the specific engineering details of the transmission system and how the Applicant proposes to install and operate the transmission line and facilities for the proposed Project.

2.4.1 Transmission Line

The Applicant is evaluating several structure types and configurations, including a self-supporting lattice structure, a lattice guyed-V structure, and a lattice guyed-delta structure. It is currently estimated that 4 to 5 structures would be needed per mile of transmission line and the structures would be placed

Note:
This map only depicts proposed alignments. The Applicant will be issued a Route Permit with a specific route width.

Border Crossing Point

Proposed Routes

- Blue/Orange Route
- Blue Route
- Orange Route

Alternatives

- Route Variation
- Route Variation Hop

Existing Transmission Lines

- 69 or 115 kV
- 230 kV
- 500 kV
- State Forest Boundary
- Variation Area
- Project Section
- Municipal Boundary
- County Boundary
- International Boundary

Land Use/Land Cover

- Developed or Disturbed Land
- Forested and/or Swamp Land
- Great Plains Grassland & Shrubland
- Agricultural Land
- Introduced & Semi Natural Vegetation

Note:
Callout box provides longitude and latitude coordinates in NAD83 for each border crossing location

Border Crossing Pine Creek Variation (95° 55' 35.79" W, 49° 00' 00.00" N)

Proposed International Border Crossing (95° 54' 50.49" W, 49° 00' 00.00" N)

Border Crossing Highway 310 Variation (95° 46' 8.82" W, 49° 00' 00.00" N)

Border Crossing 500 kV Variation (95° 32' 23.96" W, 49° 00' 00.00" N)

Border Crossing 230 kV Variation (95° 30' 26.18" W, 49° 00' 00.00" N)

United States - Canada International Border

Lake of the Woods

Border Crossing Variation Area

Proposed Blue/Orange Route

Lost River State Forest

Roseau Lake WMA Variation 2

Warroad

Willow Creek

Cedar Bend WMA Variation

Cedar Bend WMA Variation Area

Roseau

Roseau Lake WMA Variation Area

Lake of the Woods State Forest

Roosevelt

Beltrami North Central Variation 3 & 4

Beltrami North Central Variation 1 & 5

Badger

Roseau Lake WMA Variation 1

Beltrami North Variation 1

Beltrami North Variation Area

Sucker Creek

Bear Creek

Williams

Beltrami North Central Variation Area

Roseau River

Severson Creek

Beltrami North Central Variation 4 & 5

Roseau County

Beltrami North Variation 2

Beltrami North Central Variation 1, 2 & 5

Paulson Creek

Beltrami North Central Variation 2

Beltrami Island State Forest

Hansen Creek

Beltrami North Central Variation 1 & 3

Beltrami North Central Variation 1, 2 & 3

South Fork Roseau River

Lake of the Woods County

Marshall County

Beltrami County

Miles

4.5 0 4.5

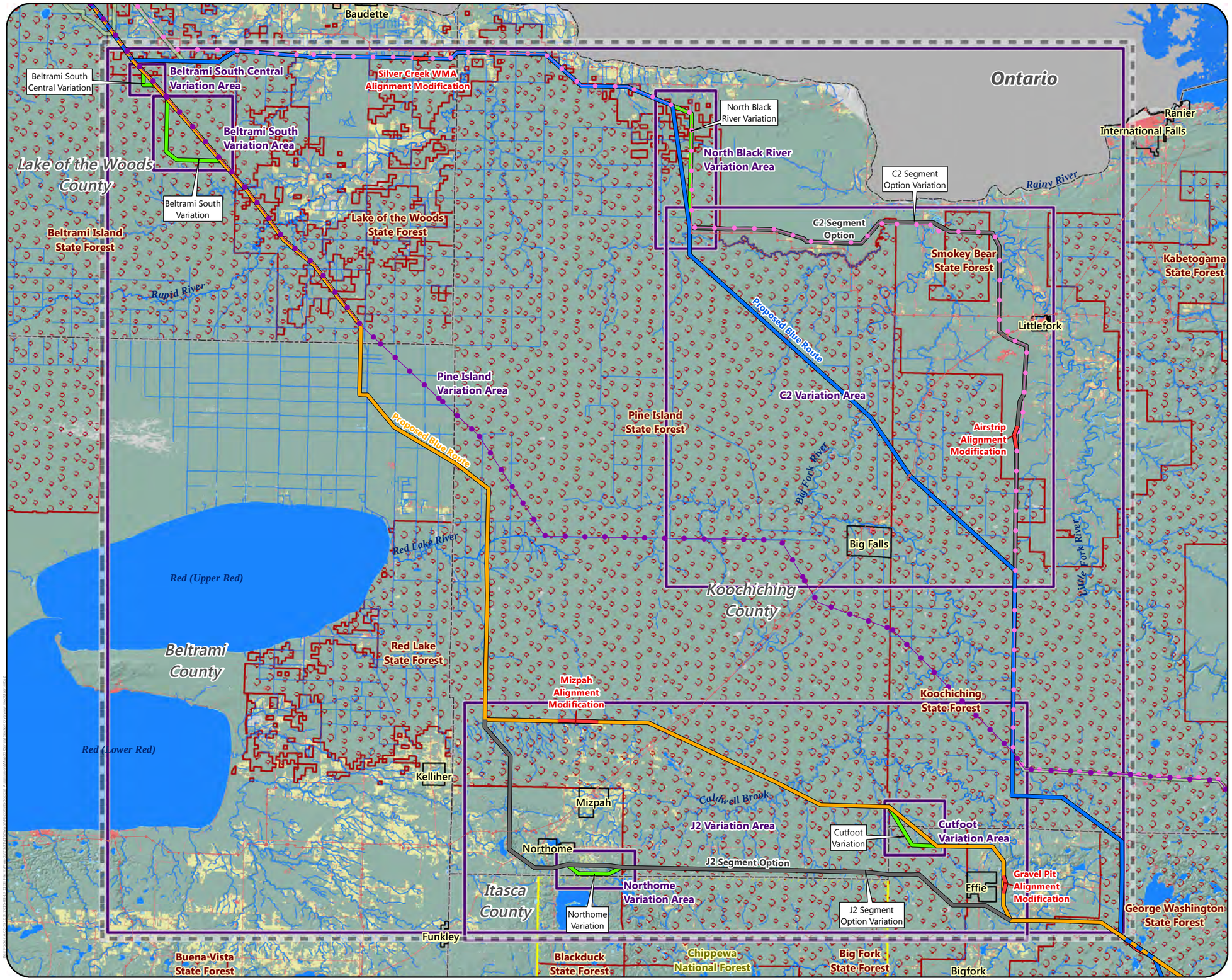
Map 2

WEST SECTION OVERVIEW

Great Northern Transmission Line
Biological Assessment

U.S. DEPARTMENT OF ENERGY

MINNESOTA DEPARTMENT OF COMMERCE



Proposed Routes
- Blue/Orange Route
- Blue Route
- Orange Route
- Segment Option

Alternatives
- Route Variation
- Alignment Modification

Existing Transmission Lines
- 69 or 115 kV
- 230 kV
- 500 kV
- State Forest Boundary
- National Forest Boundary
- Variation Area
- Project Section
- Municipal Boundary
- County Boundary

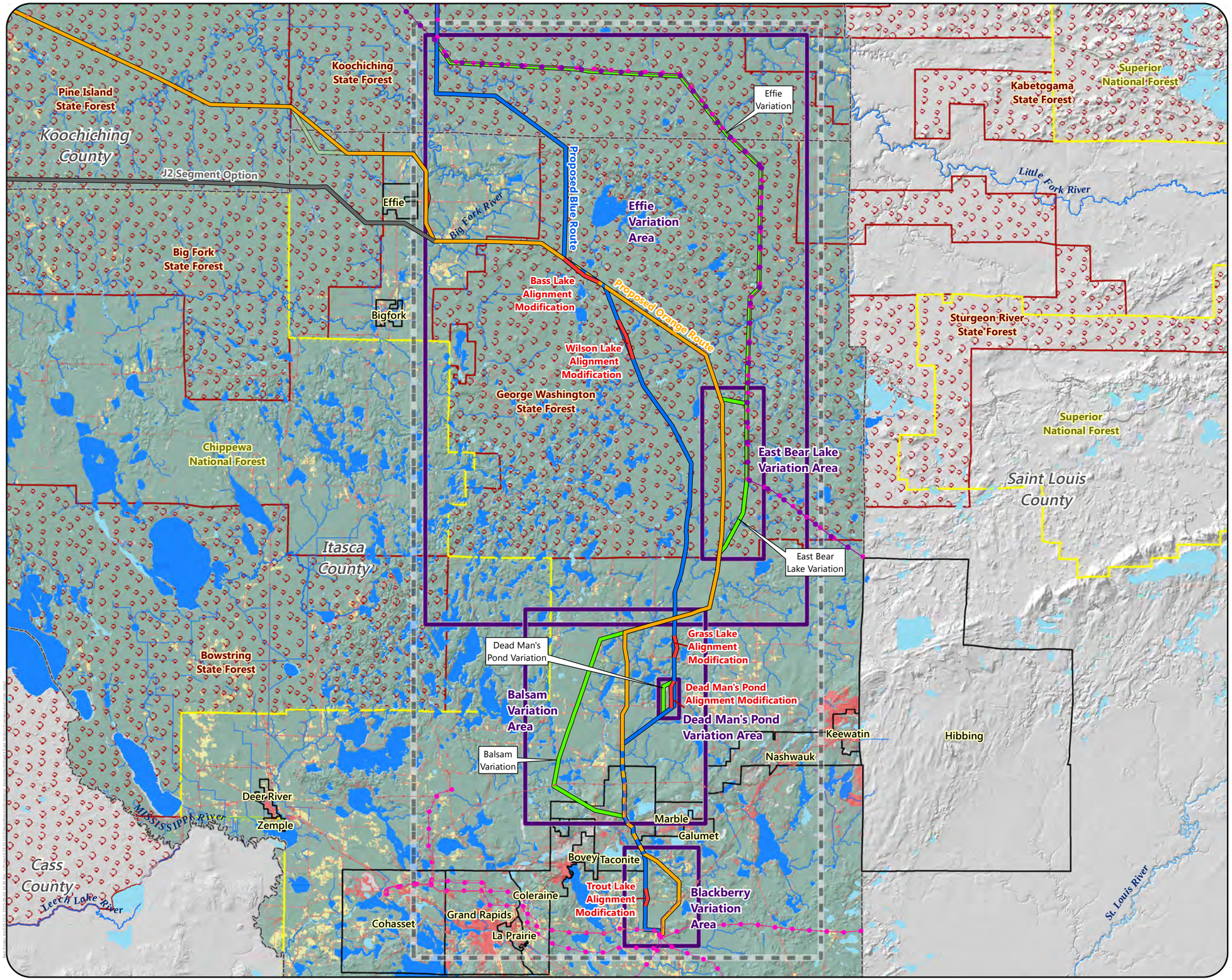
Land Use/Land Cover
- Developed or Disturbed Land
- Forested and/or Swamp Land
- Great Plains Grassland & Shrubland
- Agricultural Land
- Introduced & Semi Natural Vegetation

Miles
6.5 0 6.5

Map 3

CENTRAL SECTION OVERVIEW
Great Northern Transmission Line
Biological Assessment

U.S. DEPARTMENT OF ENERGY
MINNESOTA DEPARTMENT OF COMMERCE



Proposed Routes
- Blue/Orange Route
- Blue Route
- Orange Route
- Segment Option

Alternatives
- Route Variation
- Alignment Modification

Existing Transmission Lines
- 69 or 115 kV
- 230 kV
- 500 kV
- State Forest Boundary
- National Forest Boundary
- Variation Area
- Project Section
- Municipal Boundary
- County Boundary

Land Use/Land Cover
- Developed or Disturbed Land
- Forested and/or Swamp Land
- Great Plains Grassland & Shrubland
- Agricultural Land
- Introduced & Semi Natural Vegetation

Miles
5.5 0 5.5

Map 4

EAST SECTION OVERVIEW
Great Northern Transmission Line
Biological Assessment

U.S. DEPARTMENT OF ENERGY
MINNESOTA DEPARTMENT OF COMMERCE

approximately 1,000 to 1,700 feet apart, with a maximum span of 1,700 feet. The type of structure in any given location of transmission line would depend on land type and land use.

The structures would typically range in height from 100 to 170 feet, depending on the structure type and the terrain. In some instances, such as where the proposed Project crosses an existing transmission line, taller structures may be required. The structures would be placed approximately 1,200 to 1,700 feet apart, with a maximum span of 1,700 feet.

On cultivated land or in areas of intensive land use, the Applicant anticipates using self-supporting lattice structures. In other areas where guy wires would not significantly interfere with land use, the proposed Project may be installed on one of the guyed structure types. The area of permanent impact for guyed structures is anticipated to be 33 square feet per structure with a temporary construction disturbance footprint of approximately 0.92 acres per structure. Structure types are illustrated in Figure 1.

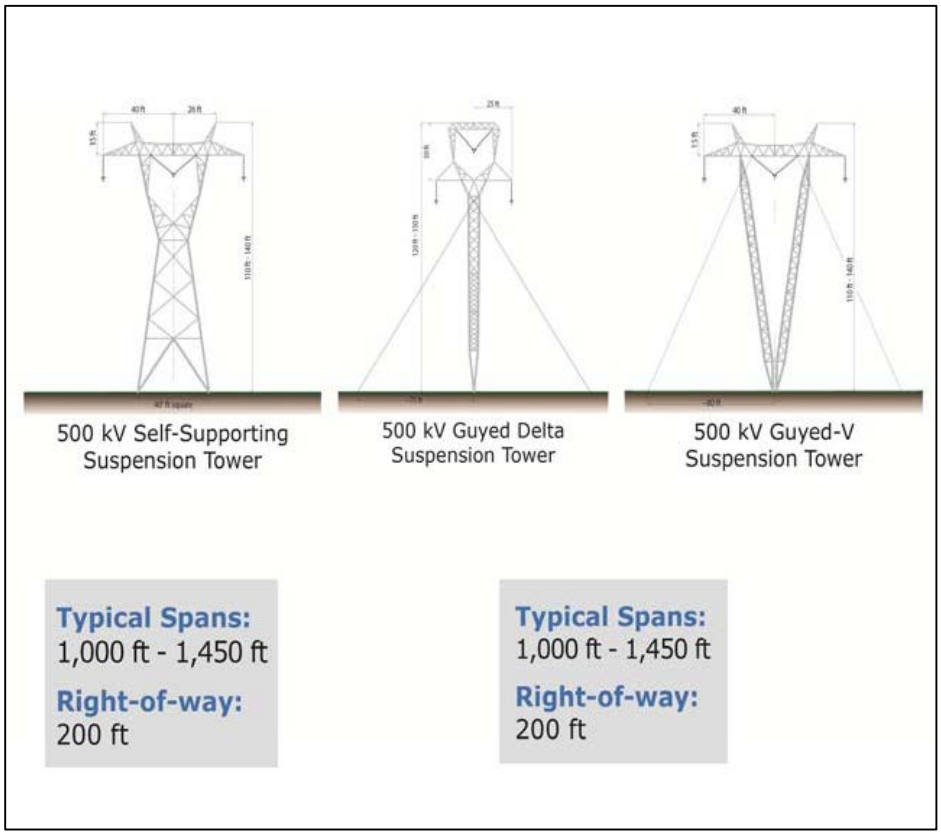


Figure 1 Structure Schematics

2.4.1.1 Vegetation Clearing

The Applicant would have to clear all woody vegetation and brush within the 200-foot-wide ROW to ensure that facilities can be safely and efficiently constructed, operated, and maintained. The Applicant has proposed to leave low-growing woody vegetation in wetlands within the outer one-third of the ROW. A reasonably level temporary access path is necessary so construction equipment can pass safely. At structure locations, a stable working surface free of tripping hazards is necessary for installing foundations and guy anchors and for assembling and erecting structures.

Vegetation would be cut at or slightly above the ground surface. Rootstock would be left in place to stabilize existing soils and to regenerate vegetation after construction. With the approval of the landowner or land manager, stumps of tall-growing species would be treated with an approved herbicide to discourage re-growth.

To minimize the potential for tire and chassis damage to construction equipment, and to maintain a safe, level, temporary access path during construction, incidental stumps would be removed.

Merchantable timber would be cut to standard log lengths and stacked along the ROW. To the extent practical, the Applicant would work with the landowner to determine a mutually agreeable means of disposing of the cleared material, such as chipping, burning, or stacking for landowner use or sale. Vegetation clearing debris (that is, unmerchantable trees, brush, and slash) may be cut and scattered, placed in windrow piles, chipped, or burned, depending on location.

In order to avoid potential direct impacts to the northern long-eared bat, the Applicant will avoid tree clearing during the bat's pup season of June and July. The Applicant intends to clear trees during the winter months, outside of the bat's maternal roosting period from April 1 through September 30, to the extent practicable; but tree clearing will likely be necessary during other times of the year. However, prior to clearing trees during the maternal roosting period (but outside of the pup season), the Applicant has agreed to conduct acoustical surveys (see Section 6.3 of this BA).

2.4.1.2 Construction Methodology

Construction materials would be hauled either directly to structure sites from the local highway or railroad network, or brought first to material staging areas and then to the structure sites. The transmission line components, including the structures, conductor, and hardware, are normally brought to the temporary staging areas on flatbed trucks. These materials are stored until needed and then loaded on flatbed trailers or special structure trailers for delivery to the structure site where they are unloaded for installation.

Where reinforced concrete foundations are required, large rubber-tired or track-mounted auger equipment is used to excavate a circular hole of the appropriate diameter and depth. In upland areas, excavated material would be spread evenly around the structure base to promote site drainage. Reinforcing steel and anchor bolts are set in position. Ready-mixed concrete is then placed in the excavation.

In wetland areas, a telescoping temporary steel caisson would be placed in the foundation hole to stabilize the soil walls. Water pumped from the excavation would be either 1) appropriately filtered prior to discharge at the site, 2) placed in tanker trucks or empty concrete trucks and hauled to a specially designated upland disposal area, or 3) brought back to the concrete batch plant for discharge. Concrete truck wash-water would be discharged only in specially designated upland disposal areas or at the concrete batch plant.

After the concrete is poured, the steel caisson is removed. In some situations, a permanent caisson may be required to stabilize the excavation. During drilling, a minimal amount of granular material (from an outside source) may be placed in the area between the caissons and the matting (if required at that location) to provide safe footing for construction personnel.

The Applicant and its contractors would remove construction waste and scrap on a regular schedule or at the end of each construction phase to minimize short-term visual impacts. Regular, frequent cleaning of construction equipment and vehicles on the ROW would occur. Restoration of cleared ROWs, storage areas, and access roads would minimize the extent of disturbed areas and limit the potential for dust generation.

2.4.1.3 Restoration/Re-vegetation

Following construction, the granular construction material would be leveled or removed to reinstate the original ground contours for re-vegetation of native species. Once the foundation concrete has been placed, excess excavated materials would be transported by truck to a suitable upland site for disposal. After allowing adequate curing time, the baseplate structures are bolted to the concrete foundations.

In some cases driven-piling foundations may be required, as well as temporary and permanent guy anchors, large rubber-tired or track-mounted pile-driving equipment would be used to install the foundation. Additional fixtures or a concrete pile cap may also be attached to the piling foundation as necessary for structure setting. Piling foundations generally result in little or no generation of spoils or dewatering requirements.

Once the structures have been completed and appropriate stringing equipment has been installed, wires can be strung. The wire-stringing process would begin in a set-up area prepared to accommodate the stringing equipment and materials, normally located near mid-span on the centerline of the ROW.

Using stringing blocks, pulley ropes and other equipment, and with careful monitoring by the construction crew, the wires are finally strung and clipped into place. If set-up areas in wetlands have unstable surface conditions, timber matting may need to be used. The Presidential permit and Route Permit applications provide a more detailed description of the wire-stringing process.

When the site is later restored, the granular material would be leveled or removed to reinstate the original ground contours for re-vegetation. Where rutting occurs, the Applicant would repair the surface before restoring ground vegetation. Soil compaction in cultivated areas would be treated and restored through tillage operations.

All areas of ground disturbance not permanently altered would be prepared for restoration and reseeded with an appropriate seed mix recommended by the appropriate agency's management or according to landowner requirements. The Applicant has indicated that they would continue to coordinate with MnDNR to minimize and avoid impacts on plant communities on state lands through adjustments to the anticipated ROW, permit conditions, and mitigation. Where forested areas are cleared, appropriate herbaceous native seed mixes from sources as close as possible to the impacted area would be used to

re-vegetate, as rapidly as possible, to prevent encroachment by non-native and noxious weed species. Where possible, reliance on natural re-vegetation would be encouraged (particularly in wetland areas).

2.4.2 Substation

The proposed Project would terminate at the proposed Iron Range 500 kV Substation, located on the same site as the Applicant's existing Blackberry 230/115 kV Substation, adjacent to and east of the existing substation (Map 1), and would be designed to accommodate the new 500 kV transmission line, 500/230 kV transformation, existing 230 kV transmission lines, and all associated 500 kV and 230 kV equipment. Existing 230 kV and 115 kV transmission lines currently located on the property would also need to be rerouted. The proposed Iron Range 500 kV Substation and access roads would permanently impact approximately 23 acres.

The new substation would be constructed in compliance with the applicable requirements of the National Electric Safety Code (NESC), Occupational Safety and Health Administration (OSHA), and state and local regulations. Designs would be completed by professional engineers who are licensed in Minnesota and have relevant experience. Contractors would be committed to safe working practices.

The final designs would consider local conditions and access considerations, and where warranted, would include safety provisions beyond the minimum requirements established in the various applicable safety codes. The designs would also strive to facilitate future maintenance.

2.4.3 500 kV Series Compensation Station

The proposed Project would also require a 500 kV series compensation station to be located within or adjacent to the final approved route (Map 1). The series compensation station would include the necessary 500 kV series capacitor banks and all associated 500 kV equipment. The 500 kV series compensation station would permanently impact approximately 6 acres.

The new series compensation station would be constructed in compliance with the applicable requirements of NESC, OSHA, and state and local regulations. Designs would be completed by professional engineers who are licensed in Minnesota and have relevant experience. Contractors would be committed to safe working practices.

The final designs would consider local conditions and access considerations, and where warranted, would include safety provisions beyond the minimum requirements established in the various applicable safety codes. The designs would also strive to facilitate future maintenance.

2.4.4 Regeneration Stations

The Applicant proposes to locate three regeneration stations within or adjacent to the final route approved by the MN PUC (Map 1). The sites would be 75 feet by 75 feet and located on uplands.

2.4.5 Permanent Access Roads

The Applicant proposes to establish a permanent "2-track" trail on uplands within the ROW as a result of construction traffic. This "2-track" trail would be unimproved and it is assumed that there would be no grading or filling for this permanent access.

2.4.6 Temporary Access Roads, Laydown Areas, and Fly-in Sites

The Applicant has indicated the need for constructing temporary access roads outside of the ROW; the anticipated access road width is 16 feet. The Applicant proposes to establish a main staging area for temporary storage of materials and equipment. Such an area would include sufficient space to lay down material and pre-assemble some structural components or hardware. Other staging areas located along the ROW would be limited to a structure site for lay down and framing prior to structure installation. In general, the laydown yards would be approximately 20 to 40 acres and would be located along suitable roadways approximately 40 to 50 miles apart and would be within five miles of the final route approved by the MN PUC. The Applicant has indicated that upland areas with prior disturbance would be preferred for siting staging areas; however, there may be some areas where this is not feasible and other areas would be used. Staging areas would be in place for at least one year and would be used to store equipment and materials and include the construction offices.

Similar to laydown yards, the Applicant proposes to establish fly-in yards that would be approximately 10 acres in size, located as near to the ROW as possible, and approximately 5 to 7 miles apart. Upland areas with prior disturbance would be preferred; however, there may be some areas where this is not feasible and other areas would be used. These sites would be in place for less than 1 year (likely 6 months) and would be used to assemble structures for sky crane construction. The Applicant would identify final fly-in locations during final design.

The Applicant proposes to establish temporary stringing sites within or adjacent to the final route approved by the MN PUC. The sites would be 200 feet by 600 feet with a two-mile spacing.

To the extent practicable, staging areas would be located and arranged in a manner to preserve trees and vegetation and restored to preconstruction conditions.

Temporary access roads outside of the ROW would be required. The Applicant would work with local property owners to identify suitable access locations. Temporary roads and other temporarily impacted areas would be restored as appropriate once construction is completed.

2.5 Maintenance and Operation

The following subsections describe how the Applicant proposes to maintain and operate the transmission line and facilities for the proposed Project.

2.5.1 Transmission Line

A transmission line must be inspected, maintained, and repaired over the entire life of the facility. The 500 kV transmission lines are generally inspected annually by foot, all-terrain vehicle, truck, or snowmobile, or

by air. Inspections are limited to the ROW and to those areas where obstruction or terrain may require off-ROW access.

Vegetation in the ROW that could interfere with operations must be removed. In most cases, the ROW would need to remain free of trees throughout construction and operation of the proposed Project; however, the Applicant has indicated that bushy shrubs and low-growing vegetation could be allowed to regenerate in portions of the ROW to reduce, though not eliminate, the visual impacts. Planting of visual screening would be considered on a case-by-case basis.

Vegetation maintenance for 500 kV transmission lines is typically on a 2- to 5-year cycle. Vegetation may be cleared using a combination of mechanical and hand clearing, and herbicides may be applied where allowed and approved by the landowner. Prior to maintaining vegetation in a particular area, the Applicant would make an effort to notify affected landowners.

2.5.2 Substation

Substation facilities must be regularly inspected, maintained, and repaired over the life of the facilities, and vegetation that might interfere with the safe and reliable operation of the facilities must be removed.

In order to minimize potential safety impacts, the substation facilities would have appropriate signage, would be fenced, and access would be limited to authorized personnel.

2.5.3 500 kV Series Compensation Station

The 500 kV series compensation station must be regularly inspected, maintained, and repaired over the life of it, and vegetation that might interfere with its safe and reliable operation would be removed.

In order to minimize potential safety impacts, the 500 kV series compensation station would have appropriate signage, would be fenced, and access would be limited to authorized personnel.

2.5.4 Regeneration Stations

The regeneration stations must be regularly inspected, maintained, and repaired over their lifespan, and vegetation that might interfere with their safe and reliable operation would be removed.

In order to minimize potential safety impacts, the regeneration stations would have appropriate signage, would be fenced, and access would be limited to authorized personnel.

2.5.5 Permanent Access Roads

Permanent access roads must be regularly inspected, maintained, and repaired over their lifespan, and vegetation that might interfere with their safe and reliable operation must be removed.

2.6 Construction and Schedule

The Applicant requires an in-service date of June 1, 2020. Currently, the Presidential permit and Route Permit approval process (including federal and state environmental review) would be completed by early 2016. Depending on the timing of other permits, construction is estimated to begin in 2017.

2.7 Impact Minimization and Conservation Measures

As part of the application development process, the Applicant detailed a number of industry-accepted best management practices (BMPs) that would be incorporated to avoid or minimize environmental impacts during construction and operation of the proposed Project. These BMPs are identified and summarized in the EIS, including but not limited to the following: vegetation management, including noxious weed and invasive species control, soil management, spill management, water resources management, and cultural resources management (DOE 2015).

Specific measures intended to avoid impacts on threatened or endangered species and their occupied habitats are summarized below.

2.7.1 Applicant–Proposed Avoidance and Minimization Measures

Section 2.13 of the EIS provides details of Applicant-proposed avoidance and minimization measures for the proposed Project (DOE 2015). Applicant-proposed measures that are applicable to federally-listed species are summarized here. The Applicant has indicated that they would retain an environmental inspector during project construction, responsible for understanding all of the conditions of the proposed Project's environmental permits and ensuring that contractors abide by these conditions.

The Applicant has indicated that construction crews would follow local, state, and federal regulations with regard to construction noise, dust, and timing. Construction crews would comply with local, state, and NESC standards regarding installation of facilities and standard construction practices. Established Applicant and industry safety procedures would be followed during and after construction of the proposed Project, including clear signage during all construction activities.

The Applicant has proposed to avoid or minimize impacts on federally-listed species and their occupied habitats across the proposed Project. In addition, measures developed through consultation with agencies including the USFWS and MnDNR would be included, if applicable.

The Applicant would develop an Avian Protection Plan, which would include an avian impact risk mitigation strategy. The Applicant would also incorporate industry best practices, which are consistent with Avian Powerline Interaction Committee's 2012 guidelines. The Applicant would work with the USFWS and MnDNR to identify potential locations for line marking, such as areas of high avian use, nest sites, feeding areas, and migratory corridors.

Surveys would be conducted prior to vegetation removal to avoid impacts on nesting birds and to avoid active nest sites of sensitive species. Appropriate construction windows would be incorporated into the

construction schedule to minimize impacts on species such as bald eagle and goshawk in areas where these species are found to be present.

If the ROW is not cleared or mowed in the fall or winter before the breeding season, the Applicant would have a qualified biologist conduct surveys for active nesting birds prior to construction. If active nesting locations are identified during the surveys, the Applicant proposes to avoid nest sites during the breeding season and to identify construction restraints that would avoid disturbance to nesting birds.

The Applicant would conduct surveys for sensitive plants during appropriate periods of the growing season to properly identify their presence and/or absence along the selected ROW. If sensitive plants or communities are identified during surveys, individual avoidance and minimization measures would be evaluated and submitted to the appropriate regulatory agencies prior to construction.

The Applicant would conduct surveys for native prairie areas and other sensitive plant communities such as calcareous fens along the selected ROW. If sensitive resources are encountered, construction plans that minimize the impacts, such as shifting structure locations or implementing construction techniques that avoid or minimize impacts on these resources, would be developed and submitted to the appropriate regulatory agencies prior to construction.

Avoidance measures may include shifting the location of structures or implementing construction techniques that avoid and/or minimize impacts on sensitive biological resources.

3.0 No Action Alternative

Under the No Action Alternative, environmental impacts associated with the proposed Project, including potential impacts on federally-listed species, would not occur.

4.0 Federally-Listed Species and Designated Critical Habitat

The USFWS technical assistance website was reviewed to determine if any federally-listed species or federally-designated critical habitats are known to be present in the counties located across the proposed Project area, including Roseau, Lake of the Woods, Koochiching, Beltrami, and Itasca counties (USFWS 2015a). The USFWS lists six species as occurring across the counties in the proposed Project area, including the federally-endangered Poweshiek skipperling (*Oarisma poweshiek*) butterfly in Roseau County and the federally threatened gray wolf (*Canis lupus*), Canada lynx (*Lynx canadensis*), and northern long-eared bat (*Myotis septentrionalis*) in all five counties; the federally threatened piping plover (*Charadrius melodus*) in Lake of the Woods County; and the federal candidate bird, Sprague's pipit (*Anthus spragueii*) in Roseau County (USFWS 2015a; Table 4).

The USFWS Information, Planning, and Conservation (IPaC) System was also queried to obtain a list of federally-listed species that could potentially be impacted by a transmission line project in Roseau, Lake of the Woods, Koochiching, Beltrami, and/or Itasca counties (USFWS 2015b). The IPaC query identified the gray wolf, Canada lynx, and the northern long-eared bat across all counties in the proposed Project area, piping plover in Lake of the Woods County, and the federally-threatened western prairie fringed orchid (*Platanthera praeclara*) in Roseau County.

Designated critical habitat associated with federally listed species consists of "the specific areas within the geographical area occupied by the species, at the time it is listed…on which are found within those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection" (50 CFR 1533[b][2]). Designated critical habitat for the gray wolf is present in the Action Area and Study Area (Map 5); however no other designated critical habitat for other federally-listed species is present in the Action Area or Study Area.

Table 4 Likelihood of Occurrence of Federally-Listed Species within Geographic Sections

Scientific Name	Common Name	ESA Status[1]	Critical Habitat		Possible Occurrence within Geographic Sections		
			Designated for Species?	Located within or adjacent to Proposed Action Area?	West Section (Roseau and Lake of the Woods Counties)	Central Section (Lake of the Woods, Koochiching, Beltrami, and Itasca Counties)	East Section (Koochiching and Itasca Counties)
Oarisma poweshiek	Poweshiek skipperling	E	No[2]	No	Yes	No	No
Canis lupus	Gray wolf	T	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
Charadrius melodus	Piping plover	T	Yes	No	Yes[3]	Yes[3]	No
Lynx canadensis	Canada lynx	T	Yes	No	Yes[3]	Yes[3]	Yes[3]
Myotis septentrionalis	Northern long-eared bat	T	No	No	Yes[3]	Yes[3]	Yes[3]
Platanthera[3] *praeclara*	Western prairie fringed orchid	T	No	No	Yes[4]	No	No
Anthus spragueii	Sprague's pipit	Can.	No	No	Yes	No	No

(1)"E" refers to federally-listed as endangered, "T" refers to federally-listed as threatened, "Can" refers to federal candidate species.
(2) The USFWS proposed designated critical habitat for Poweshiek skipperling October 24, 2013 in portions of Minnesota, Iowa, Michigan, Wisconsin, and the Dakotas.
(3) The western prairie fringed orchid is not listed for counties in the proposed Project area but is listed in Kittson County, which is west of Roseau County. This species was identified by IPaC as a species that should be considered in the effects analysis for Roseau County.
(4) Species identified in IPaC query.

4.1 Poweshiek Skipperling

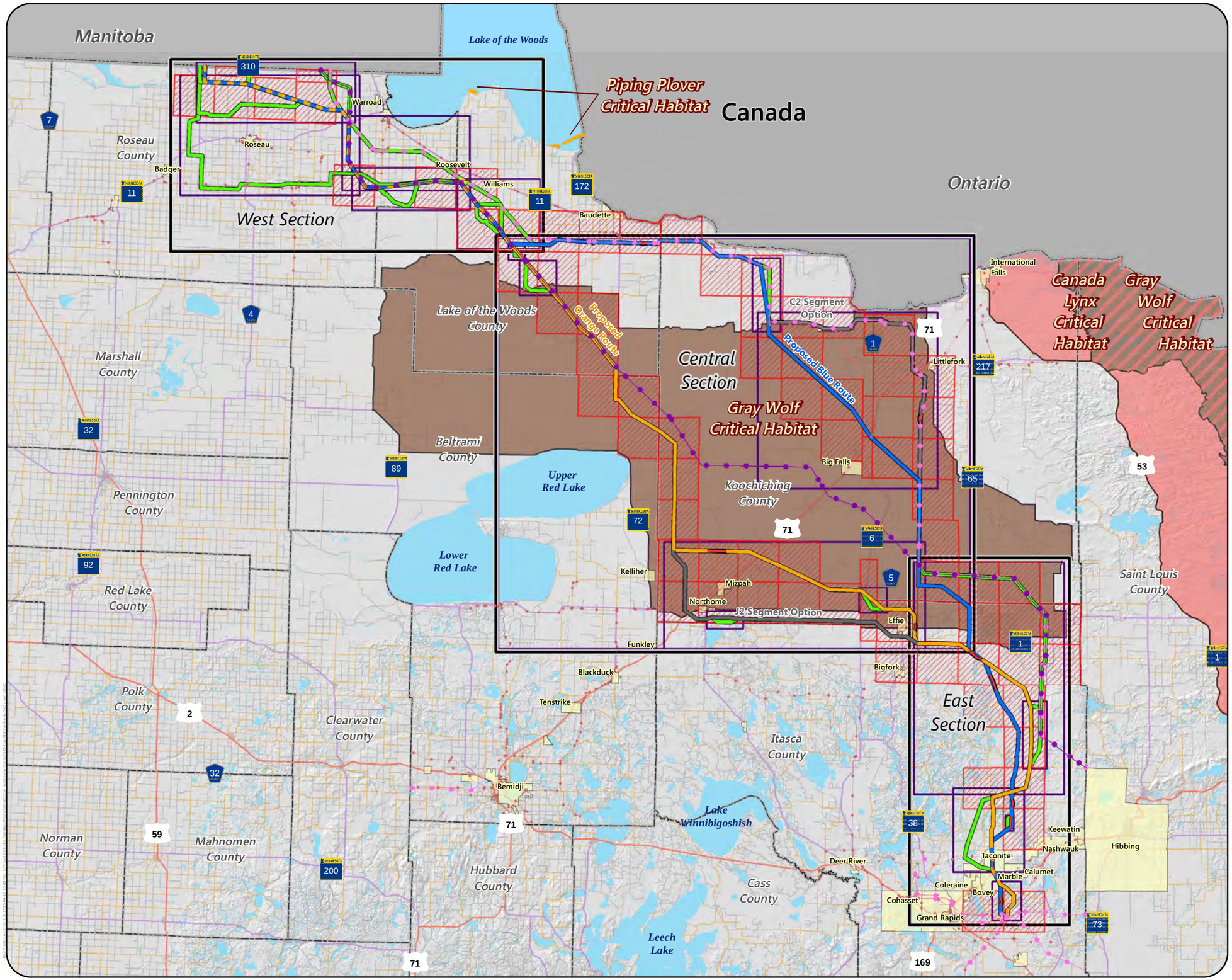
The USFWS issued a ruling on October 24, 2014 listing the Poweshiek skipperling as endangered (79 Federal Register 63671-63748). Current populations are believed to be at very low numbers and it is possible the species is no longer present in Minnesota, Iowa, and the Dakotas (USFWS 2014a).

In 2014, the USFWS proposed 61 units of critical habitat for the Poweshiek skipperling, 18 of which occur in Minnesota (78 Federal Register 63625-63745).

4.1.1 Behavior and Life History

The Poweshiek skipperling is a small, dark butterfly measuring about one inch. The wing margins have light orange coloring and the underside of the wings have distinct white veins (USFWS 2014a).

Adult butterflies feed on a variety of prairie flowers and lay their eggs on leaf blades. Larvae overwinter on the plants, usually near the base and resume activity in the spring until they pupate and emerge as adult butterflies. The species has one flight period and adults live for one to two weeks in mid-June to mid-July.



Proposed Routes
- Blue/Orange Route
- Blue Route
- Orange Route
- Segment Option

Alternatives
- Route Variation
- Route Variation Hop
- Alignment Modification

Existing Transmission Lines
- 69 or 115 kV
- 230 kV
- 500 kV

Streets and Highways
- US Highway
- State Trunk Highway
- County State Aid Highway
- Local Road
- Variation Area
- Project Section
- Municipal Boundary
- County Boundary
- International Boundary
- Wolf-Occupied Township

Critical Habitat Extents
- Canada Lynx
- Gray Wolf Critical Habitat
- Piping Plover Critical Habitat

Miles
14 7 0 14

Map 5

CRITICAL HABITAT AREAS
Great Northern Transmission Line
Biological Assessment

U.S. DEPARTMENT OF ENERGY
MINNESOTA DEPARTMENT OF COMMERCE

4.1.2 Distribution and Habitat

Historically, the Poweshiek skipperling's range covered several states including North Dakota, South Dakota, Minnesota, Wisconsin, Michigan, Iowa, Illinois, and Indiana (USFWS 2014a) as well as Manitoba. Despite the large historic range, as of 2014, this species is known only to occur in Wisconsin, Michigan, and Manitoba and may very well be extirpated from Minnesota, the Dakotas, and Iowa.

The Poweshiek skipperling occupies high-quality tallgrass prairie in upland and low, moist areas. Suitable habitat for the Poweshiek skipperling is present in the Study Area; however, this habitat is limited and is only present in the far western portion of the Study Area.

4.1.3 Threats

The two primary threats to the Poweshiek skipperling are habitat loss and habitat fragmentation. Additionally, of the remaining habitat, the majority of it is not managed in ways that can support this species.

4.1.4 Occurrence in the Proposed Project Area

According to the MnDNR Natural Heritage Information System (NHIS) database, the nearest documented record of a Poweshiek skipperling is in southwest Roseau County, approximately 20 miles southwest of the westernmost variation in the Roseau Lake WMA Variation Area in the West Section.

No designated critical habitat has been finalized for this species; however, the nearest proposed designated critical habitat for the Poweshiek skipperling is located in Mahnomen County, Minnesota, which is over 60 miles from the Study Area.

4.1.5 Determination of Effects

Since the Poweshiek skipperling has not been documented in the Study Area and proposed critical designated habitat is not present in the Study Area, DOE has concluded that the proposed Project would have no effect on this species.

4.2 Gray Wolf

The gray wolf was federally listed as an endangered species in 1974 and was reclassified as threatened in 1977 (42 Federal Register 29527-29532). In 2011, the wolf was delisted by the USFWS (76 Federal Register 57943-57944). However, in 2014, a federal court reversed the USFWS decision to delist the gray wolf, restoring federal threatened status and designated critical habitat in Minnesota.

In April 2003, gray wolf populations in the United States were separated into three DPSs to more effectively manage the species. The Minnesota population was a designated portion of the Eastern DPS.

Critical habitat was designated for the gray wolf in 1978. Designated critical habitat was identified in Isle Royale National Park, Michigan, and Minnesota wolf management zones 1, 2, and 3. In northeastern and northcentral Minnesota, wolf management zones 1, 2, and 3 comprise approximately 9,800 square miles.

Much of the proposed Project area, including the Central Section and the northern part of the East Section, is located in wolf management zone 3 (Map 5).

While no specific primary constituent elements have been formalized for the gray wolf, the USFWS has identified five main factors critical to the long-term survival of gray wolf (USFWS 1992), these include:

- Large tracts of wild land with low human densities and minimal accessibility by humans;
- Ecologically sound management;
- Availability of adequate wild prey;
- Adequate understanding of wolf ecology and management, and
- Maintenance of populations that are either free of, or resistant to, parasites and diseases new to wolves or are large enough to successfully contend with their adverse effects.

4.2.1 Behavior and Life History

Gray wolves are the largest wild members of the canid family (*Canidae*) with adults ranging from 40 to 175 pounds, depending on sex and subspecies (Mech 1974). Wolves are carnivorous predators that prefer a diet of medium and large mammals. The primary prey species in Minnesota include white-tailed deer (*Odocoileus virginianus*) and moose (*Alces alces*), with smaller mammals, such as beaver (*Castor canadensis*) and snowshoe hare (*Lepus americanus*) as important secondary prey sources; small mammals and birds are also occasionally consumed (MnDNR 2015a).

Gray wolves are social animals, typically living in packs of 2 to 30 wolves, with packs in Minnesota ranging in size from four to eight wolves (Fuller 1989). Packs are primarily family groups consisting of a breeding pair, their pups from the current year, offspring from the previous year, and occasionally an unrelated wolf.

Gray wolves breed between February and March in Minnesota and normally only the top-ranking (alpha) male and female in each pack breeds (MnDNR 2015a). Litters are born from early April to May and range from four to seven pups (MnDNR 2015a).

4.2.2 Distribution and Habitat

Gray wolves are habitat generalists that depend on distribution of their prey, rather than the type, age, or structure of vegetation present. Gray wolves occupy a diversity of habitats, including forests, prairies, and swamps, reflecting their adaptability as a species (USFWS 2012). Wolf territory size is highly variable; in Minnesota, territory sizes range between 25 and 150 square miles (MnDNR 2015a).

Surveys of the Minnesota wolf population in Minnesota have been carried out since 1979. These surveys estimated that in Minnesota there were 1,235 wolves in 1979; 1,500 to 1,750 in 1989; 2,440 in 1998; 3,020 in 2004; 2,920 in 2008; 2,200 in 2012; and 2,420 in 2014 (Berg and Kuehn 1982, Fuller et al. 1992, Erb 2008, Erb and Samson 2013, 2014). From 1998 to present, the Minnesota wolf population is well above the

MnDNR minimum population threshold of 1,600 individuals to ensure long-term survival (MnDNR 2001). At present there are very few suitable areas in Minnesota that remain unoccupied by gray wolves (MnDNR 2015a).

4.2.3 Threats

The primary long-term threat to gray wolves in Minnesota is habitat reduction and destruction (MnDNR 2015a).

4.2.4 Occurrence in the Proposed Project Area

Gray wolves are known to be present throughout the vicinity of the proposed Project area, as indicated in the gray wolf occupied township data on Map 5 (Erb 2008, Erb and Samson 2013, 2014).

Much of the proposed Project area, including the Central Section and the northern part of the East Section, is located in designated critical habitat for gray wolf, specifically wolf management zone 3 (Map 5).

4.2.5 Determination of Effects

See Section 6.1, Section 8.1, and Section 8.2 of this BA for information on determination of effects.

4.3 Piping Plover

On December 11, 1985, the USFWS issued a final ruling listing the Great Plains and Atlantic populations of piping plover as threatened and the Great Lakes population of piping plover as endangered (50 Federal Register 50726-50734). The piping plovers nesting in Lake of the Woods, north of the Study Area, are part of the Great Plains Population.

Piping plover nesting surveys, which were conducted in 2006, reported 2,959 adult individuals in the Great Plains population (Elliot-Smith et al. 2009); however, only four adults were observed in Minnesota during the 2006 surveys (MnDNR 2015b). Nearly all of the Great Plains population breeds in North Dakota, Montana, and Southern Canada. Piping plover nesting surveys conducted in 2007 reported 63 breeding pairs in the Great Lakes population, which includes pairs nesting along and near the shores of Lake Superior in St. Louis County (USFWS 2014b). The Atlantic Coast population of piping plover is located well outside of the region in which the proposed Project is located.

The USFWS issued a final ruling designating critical habitat for the Great Plains piping plover on September 11, 2002. The critical habitat includes Rocky Point Wildlife Management Area, Morris Point, and Pine and Curry Island Scientific and Natural Area (SNA) (Map 5; 67 Federal Register 57638-57717).

4.3.1 Behavior and Life History

The piping plover is a small, stocky shorebird averaging 6 to 7 inches in length and weighing 2 ounces (National Geographic Society 1983). Adult males are distinguished by a dark band between eyes and a distinct single breast band. The color of the species is described as dry sand with light underparts and yellow or orange legs (Peterson 2008).

Piping plovers begin their breeding season in mid to late-April when males arrive at the breeding grounds and establish territories. These territories are defended, and when females arrive at the breeding grounds several weeks later, males engage in elaborate courtship rituals including aerial displays, whistling songs, and drumming of the feet (Hull 1981). Plovers exhibit site fidelity, returning to the same nesting location in consecutive years (Wilcox 1959). Nests are simple scrape depressions in sand and are often lined with pebbles, shells, or other debris thought to improve the camouflage (Wilcox 1959). The majority of breeding adults migrate south by mid to late summer, with juveniles remaining as late as mid-August (Cuthbert and Weins 1982).

4.3.2 Distribution and Habitat

The Northern Great Plains population range includes southern Alberta, southern Saskatchewan, and southern Manitoba, south to eastern Montana, North Dakota, South Dakota, southeastern Colorado, Iowa, Nebraska, and east to Lake of the Woods in north-central Minnesota. Most of the United States' pairs are in the Dakotas, Nebraska, and Montana (67 Federal Register 57638-57717). In Minnesota, the Northern Great Plains population is limited to one population in Lake of the Woods (Elliot-Smith, Haig, and Powers 2009).

Piping plovers primarily occupy open, sandy, sparsely vegetated areas (Peterson 2008). The physical primary constituent elements of critical habitat in Lake of the Woods include "sparsely vegetated and windswept sandy to gravelly islands, beaches, and peninsulas, and their interface with the water body" (67 Federal Register 57638-57717). No suitable piping plover habitat is present in the Study Area.

4.3.3 Threats

The primary threats to the piping plover are nesting habitat loss and degradation and human nest disturbance and animal predation (USFWS 1991).

4.3.4 Occurrence in the Proposed Project Area

According to the NHIS database, there is a breeding population of piping plover in Lake of the Woods, which is approximately 11 miles north of the northernmost variation in the Cedar Bend WMA Variation Area in the West Section.

Designated critical habitat for piping plover is present in Lake of the Woods, in three locations, including Rocky Point Wildlife Management Area and two locations in the Pine and Curry Island Scientific and Natural Area. All three areas of designated critical habitat for piping plover are located approximately 11 miles north/northeast of the Study Area.

4.3.5 Determination of Effects

Since the piping plover has not been documented in the Study Area and critical designated habitat is not present in the Study Area, DOE has concluded that the proposed Project would have no effect on this species.

4.4 Canada Lynx

The Canada lynx was listed as a federally threatened species in several states in the Northeast, Great Lakes Region (including Minnesota), and Southern Rockies in 2000 (65 Federal Register 16052-16086).

In 2006, the USFWS designated 317 square miles as critical habitat in Voyageurs National Park (71 Federal Register 66008-66061). In 2009, the USFWS re-designated lynx critical habitat to include portions of Cook, Koochiching, Lake, and St. Louis counties (74 Federal Register 8616-8702). A total of 8,065 square miles were designated as critical habitat in 2009 (74 Federal Register 8616-8702). Critical habitat designated for Canada lynx is not present in the proposed Project area; the nearest designated critical lynx habitat to the proposed Project area is identified on Map 5.

4.4.1 Behavior and Life History

The Canada lynx is a solitary forest-dwelling feline, 30 to 35 inches long and 14 to 31 pounds, similar in size and appearance to bobcats (*Lynx rufus*) (USFWS 2013). Snowshoe hare (*Lepus americanus*) represents the primary prey for Canada lynx. Canada lynx have long hind legs and large paws, which makes them highly adapted to hunting in deep snow typical of its range (USFWS 2013).

Canada lynx typically mate in March and April, and kittens are born from late April to mid-June. Litter sizes, ranging from one to six, and kitten survival correlate with snowshoe hare abundance. Litters of four or five and high kitten survival are common when hare numbers are high; when they are low, little or no reproduction may occur and few or no kittens survive to be recruited into the population.

4.4.2 Distribution and Habitat

The historical and present range of the Canada lynx, north of the contiguous U.S., includes Alaska and the portion of Canada extending from the Yukon and Northwest Territories south to the U.S. border and east to New Brunswick and Nova Scotia. In the contiguous U.S., Canada lynx historically occurred in Washington, Oregon, Montana, Wyoming, Idaho, Utah, and Colorado, Minnesota, Wisconsin, Michigan, New York, Vermont, New Hampshire, and Maine (USFWS 2013). The U.S. Forest Service (USFS) divides Canada lynx populations in the 48 contiguous states into the western Great Lakes population, eastern U.S. population, and the western U.S. population. Historically, Minnesota had the highest numbers of Canada lynx in the western Great Lakes population. In Minnesota, the majority of Canada lynx reports are from the northeastern portion of the state (MnDNR 2006). However, given the low densities of Canada lynx in Minnesota, it may be impossible to obtain an accurate population estimate (Moen 2009).

Based on a limited number of studies in northeastern Minnesota, the average home range for Canada lynx varies between 11 and 201 square miles for males, and 2 and 37 square miles for females (Burdett 2007). Male home ranges expand during the breeding season, perhaps due to males searching for females, while female home ranges contract (Moen et al. 2008).

Canada lynx inhabit boreal and mixed coniferous and deciduous forests, where snowshoe hare, their preferred prey, are present (USFWS 2013). Within these general forest types, Canada lynx are most likely to persist in areas that receive deep snow, for which the lynx is highly adapted. In the Great Lakes states,

Canada lynx records predominantly occur in boreal, coniferous, and mixed coniferous/deciduous vegetation types dominated by pine, balsam fir, black and white spruce, northern white cedar, tamarack, aspen, paper birch, conifer bogs and shrub swamps (USFWS 2000). Canada lynx denning habitat appears to be associated more with the availability of structural components of forests, such as blowdown, deadfalls and root wads, rather than forest cover type (USFWS 2000).

4.4.3 Threats

The Canada Lynx Conservation Assessment and Strategy (USFWS 2000) identifies the primary threats to Canada lynx productivity, mortality, and movement as follows:

Factors affecting productivity:

- Timber management practices, such as management for sawtimber production;
- Loss of habitat due to conversion to agriculture;
- Decline in fire disturbance, which has altered the spatial distribution of early successional habitats and the composition and structure of the mature forests.

Factors affecting mortality:

- Trapping;
- Increase in gray wolf population;
- Incidental or illegal shooting;
- Mortality due to vehicle collisions.

Factors affecting movement:

- Conversion to agriculture or forest types less suitable for lynx.

4.4.4 Occurrence in the Proposed Project Area

Although the majority of Canada lynx sighting in Minnesota have been found in St. Louis, Cook, and Lake counties (76 percent), Canada lynx sightings have also been documented in north-central Minnesota, including Roseau, Lake of the Woods, Koochiching, Itasca, and Beltrami counties, where the proposed Project is located (MnDNR 2006).

There is no designated critical habitat for Canada lynx in the proposed Project area. The nearest designated critical habitat for Canada lynx is approximately 11 miles east of the Study Area (Map 5).

4.4.5 Determination of Effects

See Section 6.2 and Section 8.1 of this BA for information on determination of effects.

4.5 Northern Long-Eared Bat

The northern long-eared bat was proposed for listing as a federally endangered species in 2013 (78 Federal Register 61046-61080). On April 2, 2015, the USFWS listed the northern long-eared bat as federally threatened under the ESA. Along with the listing, the USFWS announced an interim Section 4(d) rule, which exempts certain activities with no federal nexus from the ESA take prohibitions, provided certain conditions protective of northern long-eared bat hibernacula and roost trees are met (80 Federal Register 17974-18033).

4.5.1 Behavior and Life History

The northern long-eared bat is a medium-sized bat with a body length of 3 to 3.7 inches and a wingspan of 9 to 10 inches. The northern long-eared bat is distinguished from other bat species by its long ears (USFWS 2015c). Northern long-eared bats have delayed fertilization, with mating occurring prior to hibernation in the late summer or early fall and females storing sperm during hibernation until the following spring. Female bats then migrate to summer maternity sites and give birth to a single pup between late May and late July (USFWS 2015c). Young northern long-eared bats start flying 18 to 21 days after birth (USFWS 2015c).

Similar to other bat species, northern long-eared bats feed at dusk, primarily by flying through the understory of forested areas feeding on moths, flies, leafhoppers, caddisflies, and beetles.

4.5.2 Distribution and Habitat

The northern long-eared bat's range includes much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia.

Northern long-eared bats hibernate in caves and mines (hibernacula) during winter months (USFWS 2015c). In summer, northern long-eared bats roost singly (males and non-reproductive females) or in small groups (reproductive females) in live and dead trees with exfoliating bark, crevices, or hollows (USFWS 2015c). Northern long-eared bats appear to be flexible in selecting a roost, having been found in a variety of tree species with differing heights and diameters.

Linear corridors (i.e., edge habitat and forested riparian corridors) are important for northern long-eared bats as they use corridors to travel and forage (Wisconsin Department of Natural Resources 2013). Bats will migrate in the spring from hibernacula to summer roosts and return again in the fall, or fly from their roosts to feeding grounds following the linear corridors to maintain protection from wind and predation. In addition to the protection that linear corridors provide, this behavior may also allow bats more feeding opportunities because food is generally more abundant around these habitats.

The USFWS has not identified designated critical habitat for the northern long-eared bat at this time.

4.5.3 Threats

The primary threat to the northern long-eared bat is white-nose syndrome, caused by the fungus *Pseudogymnoascus destructans*, which infects skin of the muzzle, ears, and wings of bats during hibernation (USFWS 2015c; U.S. Geological Survey (USGS) 2015). Symptoms of white-nose syndrome were first documented in 2006 in New York and since then the disease has spread from the Northeast to the Midwest and Southeast. Based on hibernacula counts, numbers of northern long-eared bats have declined by up to 99 percent in the Northeast (USFWS 2015c).

Additional potential threats on northern long-eared bat populations include impacts to hibernacula, loss or degradation of summer habitat, and development and operation of wind farms (USFWS 2015c).

4.5.4 Occurrence in the Proposed Project Area

According to the NHIS database, the nearest documented record of a northern long-eared bat is in St. Louis County in the Soudan Underground Mine State Park, which is approximately 45 miles east of the Study Area. The Soudan Underground Mine State Park represents the largest hibernating colony of northern long-eared bats in Minnesota and contains at least 2,000 individuals (Nordquist et al. 2006). The April 2, 2015 USFWS announcement of the listing decision and interim 4(d) rule states that there are eleven documented hibernacula in Minnesota. One is the Sudan Mine, and the other is Mystery Cave in Fillmore County (80 Federal Register 17974-18033). The USFWS and the MnDNR have not published the locations of the other nine hibernacula in Minnesota.

The USFWS has deferred designation of critical habitat for the northern long-eared bat at this time. The northern long-eared bat is a habitat generalist, and identification of Primary Constituent Elements (PCEs) required for designation of critical habitat will require further research and effort by the USFWS.

Several recent studies have been conducted in Minnesota to further determine the abundance and distribution of the species in the state. These studies were summarized in the April 2, 2015 USFWS Federal Register announcement of the northern long-eared bat listing as follows:

In 2014, passive acoustic surveys conducted at a proposed new mining area in central St. Louis County detected the presence of northern long-eared bats at each of thirteen sites sampled, accounting for approximately 14 percent of all recorded bat calls. In addition, mist-net surveys conducted in 2014 at seven sites on Camp Ripley Training Center in Morrison County resulted in the capture of 24 northern long-eared bats, which was 55 percent of the total captures. In an additional field study, acoustic and mist-net data were collected in 2014 by a pipeline project proponent along a 300-mile corridor through the northern third of the state. Positive detections were recorded for Hubbard, Cass, Crow Wing, Aitkin and Carlton counties, and northern long-eared bats were the most common mist-netted species. Finally, mist-net surveys conducted in 2013 on the Kawishiwi District of the Superior National Forest resulted in the capture of 13 northern long-eared bats, or 38 percent of the total captures, over nine nights at eight sites (80 Federal Register 17974-18033).

4.5.5 Determination of Effects

See Section 6.3 and Section 8.1 of this BA for information on determination of effects.

4.6 Western Prairie Fringed Orchid

The USFWS issued a final ruling on September 28, 1989 listing the western prairie fringed orchid (*Platanthera praeclara*) as threatened (54 Federal Register 39858).

No critical habitat has been designated for the western prairie fringed orchid.

4.6.1 Behavior and Life History

The western prairie fringed orchid emerges between early May and mid-June in the northwestern part of Minnesota. Western prairie fringed orchid senesces in late September or earlier if soil moisture is low. This species flowers between early to mid-July. Flower stalks are up to 47 inches tall and each stalk has up to 40 white flowers that are approximately one inch long (USFWS 2004). This orchid produces a bud in late summer on its fleshy rhizome, which will remain dormant until the following spring when it will develop into the aerial stem. If the bud is damaged or fails to develop, no stem will be produced that spring. Rhizomes may survive and produce another bud in late summer, depending on nutrient reserves.

Western prairie fringe orchid pollinators in the northern part of the species' range include the bedstraw hawk moth (*Hyles gallii*), the wild cherry sphinx (*Sphinx drupiferarum*) the Achemon sphinx (*Eumorpha achemon*), and the non-native spurge hawk moth (*Hyles euphorbiae*). Not all flowers are pollinated every year, with 8 percent and 30 percent of flowers pollinated in Minnesota.

4.6.2 Distribution and Habitat

The western prairie fringed orchid occurs in the following ten counties in western and southern Minnesota: Clay, Dodge, Freeborn, Houston, Kandiyohi, Kittson, Mower, Norman, Pennington, Polk, and Rock (MnDNR 2015c). However, this species has not been documented in Houston, Freeborn, or Kandiyohi counties for several years and has possibly been extirpated from those areas (MnDNR 2015c). In Minnesota, the current distribution of western prairie fringed orchid closely corresponds with the distribution of specific habitat types based on geological and hydrological formations known as land type associations (LTA), namely, the Barnesville Beach Complex LTA in Clay, Norman, and Polk Counties; the Beach Ridges LTA in Pennington, Polk, and Red Lake Counties; the Gentilly Lake Plain LTA in Polk and Red Lake Counties; the Bronson Lake Plain LTA in Kittson County; the Trosky Till Plain LTA in Lincoln, Nobles, Pipestone, and Rock Counties; and the Blue Mounds LTA in Pipestone and Rock Counties (USFWS 2007).

The western prairie fringed orchid inhabits mesic to wet unplowed tallgrass prairies and meadows but have been found in old fields and roadside ditches (MnDNR 2015c, USFWS 2004).

4.6.3 Threats

The primary threat to this species is habitat loss, especially through conversion to cropland. Habitat degradation in the form of intensive haying, fire suppression, overgrazing, filling of wetlands, and associated increased competition from invasive plants also pose a significant threat to this species. Other

threats include human plant collection and environmental pollutants that impact the plant and its pollinating insects (USFWS 2004).

4.6.4 Occurrence in the Proposed Project Area

According to the MnDNR NHIS database, the nearest documented record of a western prairie fringed orchid is in Kittson County, approximately 27 miles west of the southwestern most variation in the Roseau Lake WMA Variation Area in the West Section.

4.6.5 Determination of Effects

Since the western prairie fringed orchid has not been documented in the Study Area and proposed critical designated habitat is not present in the Study Area, DOE has concluded that the proposed Project would have no effect on this species.

4.7 Sprague's Pipit

The USFWS announced a 12-month finding on a petition to list the Sprague's pipit as threatened or endangered on September 15, 2010. Although the USFWS determined listing was warranted, the agency elected to add the species to the list of candidate species until listing actions are taken on other, higher priority species (75 Federal Register 56028-56050). As a federal candidate species, Sprague's pipit is afforded no legal protection under the ESA.

As a candidate species, there is currently no critical habitat designated for this species.

4.7.1 Behavior and Life History

The Sprague's pipit is a pale, slender, secretive bird with a heavily-streaked back, white outer tail feathers, a thin bill, pinkish legs, and a buffy face and underparts (Peterson 2008). Sprague's pipit begins migrating north to breeding habitat in April, initiating breeding season in late April or early May. Male Sprague's pipits engage in towering, conspicuous display flights during the breeding season, often remaining in the air for hours at a time (Robbins 1998). Nests consist of a circle or cup of interwoven grasses in a slight depression (Baicich and Harrison 2005). Eggs have been found as early as June, and as late as August and September. It is widely believed that this species commonly double-broods in parts of its range. In September, Sprague's pipits gather in large flocks with horned larks and longspurs and begin southward migration (Bent 1950).

4.7.2 Distribution and Habitat

The breeding range of Sprague's pipit includes nearly all of North Dakota, northeastern Montana, northern South Dakota, and northwestern Minnesota. Breeding populations in Canada exist extensively in southeastern Alberta, southern Saskatchewan, and southwest Manitoba. An extrapolation of Breeding Bird Survey data indicates a range-wide estimated Sprague's pipit population of 870,000 (Rich, et al. 2004). Both the Breeding Bird Survey and the Christmas Bird Count indicate a long-term, sustained population decline.

Sprague's pipits prefer large patches of native grassland of intermediate height and sparse to intermediate vegetation density (Sutter 1996). Most research indicates Sprague's pipit is an area dependent species that requires tracts of suitable grasslands at least 145 hectares in size for nesting (Davis 2004).

4.7.3 Threats

Primary threats to the Sprague's pipit include habitat conversion and fragmentation (75 Federal Register 56025-56050).

4.7.4 Occurrence in the Proposed Project Area

According to the MnDNR NHIS database, the Sprague's pipit has been documented in the Study Area, in Roseau County. This record occurs within one mile of the proposed routes and/or variations in the Border Crossing and Roseau Lake WMA variation areas in the West Section.

As a candidate species, there is currently no critical habitat designated for this species.

4.7.5 Determination of Effects

See Section 6.4 and Section 8.1 of this BA for information on determination of effects.

5.0 Environmental Baseline Conditions

As discussed above in Section 2.1, the proposed Project was divided into three geographical sections for the EIS, including the West Section, Central Section, and East Section (Map 1). The boundaries of the three geographic sections were largely based on general ecological characteristics and population densities. In addition, the points at which the Proposed Route and variations were closely aligned to create common starting and ending points for comparison purposes was used to further define the geographic sections and the variation areas within those sections.

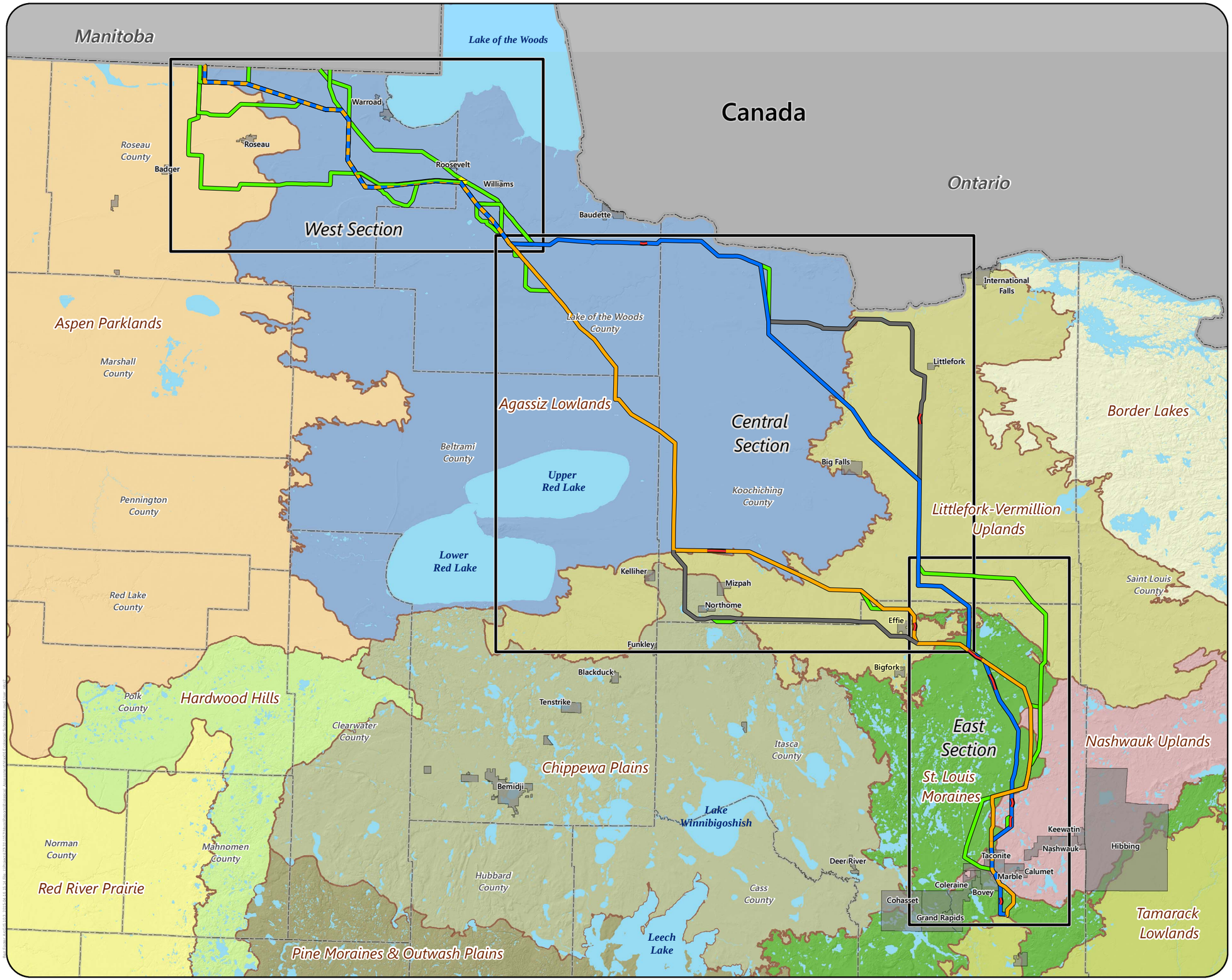
5.1 West Section

The West Section is located in Roseau and Lake of the Woods counties and consists of larger cities, rural residences, and privately-owned agricultural areas. In general, the West Section consists of agricultural land in the far western portion and transitions to forested peatlands/wetlands in the remainder of the section. Based on the USGS National Landscape Conservation System Gap Analysis Program (GAP), the dominant land cover types in the West Section include herbaceous agricultural vegetation, upland forests, and lowland swamps (Map 2). Upland forests are primarily dominated by aspen and birch, with lowland forests dominated by black spruce, tamarack, and/or northern white cedar.

According to the MnDNR and USFS ecological classification system, the West Section is primarily located in the Agassiz Lowlands subsection, which is located in the Northern Minnesota and Ontario Peatlands section of the Laurentian Mixed Forest Province (Map 6; MnDNR 2015d). This subsection is comprised of vast peatlands dominated by black spruce or tamarack and upland sand ridges dominated by aspen and birch or jack pine. 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 (MnDNR 2015d).

The western portion of the West Section is located in the Aspen Parklands subsection, which is located in the Lake Agassiz, Aspen Parklands section of the Tallgrass Aspen Parklands Province (Map 6; MnDNR 2015d). This subsection is considered a transitional landscape between prairies to the west and forests to the east and contains a mosaic of vegetation types including prairie, brushland, woodland, and forest. Peatlands are a common component in the subsection where the water table is near the ground surface (MnDNR 2015d).

Several state forests, including the Lost River State Forest, Beltrami Island State Forest, and Lake of the Woods State Forest, are located within or adjacent to variation areas in the West Section (Map 2). In addition, several sensitive ecological resources, such as SNAs, MnDNR-designated 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 variation areas in the West Section.



Proposed Routes

- Blue/Orange Route
- Blue Route
- Orange Route
- Segment Option

Alternatives

- Route Variation
- Route Variation Hop
- Alignment Modification
- Project Section
- Municipal Boundary
- County Boundary
- International Boundary

Ecological Subsections

- Agassiz Lowlands
- Aspen Parklands
- Border Lakes
- Chippewa Plains
- Hardwood Hills
- Littlefork-Vermillion Uplands
- Nashwauk Uplands
- Pine Moraines & Outwash Plains
- Red River Prairie
- St. Louis Moraines
- Tamarack Lowlands

Miles

14 7 0 14

Map 6

ECOLOGICAL SUBSECTIONS

Great Northern Transmission Line
Biological Assessment

U.S. DEPARTMENT OF ENERGY

MINNESOTA DEPARTMENT OF COMMERCE

5.2 Central Section

The Central Section is located in southern Lake of the Woods County, northern Beltrami County, and Koochiching County and is characterized by low population densities, with large tracts of federal, state, and county owned lands present throughout the section. The economies of the Central Section include forestry and recreation, with little agriculture or manufacturing. In general, the Central Section is largely comprised of vast, flat, poorly drained peatlands and upland forested ridges. Based on USGS GAP data, the dominant land cover types in the Central Section include upland forests and lowland swamps (Map 3). Upland forests are primarily dominated by aspen and birch or white spruce, balsam fir, and hardwoods, with lowland forests dominated by black spruce, tamarack, and/or northern white cedar.

According to the MnDNR and USFS ecological classification system, the Central Section is primarily located in the Agassiz Lowlands and Littlefork-Vermillion Uplands subsections, which are located in the Northern Minnesota and Ontario Peatlands section of the Laurentian Mixed Forest Province (Map 6). A small part of the southern portion of this section is located in the Chippewa Plains subsection, which is located in the Northern Minnesota Drift and Lake Plains section of the Laurentian Mixed Forest Province (Map 6).

As indicated above for the West Section, the Agassiz Lowlands subsection is comprised of vast peatlands dominated by black spruce or tamarack and upland sand ridges dominated by aspen and birch or jack pine. The subsection is generally very flat and poorly drained.

The Littlefork-Vermillion Uplands subsection is a transition zone between the vast peatlands to the west and the shallow bedrock controlled, clayey soils to the east. Vegetation types include forests dominated by aspen-birch trending toward white pine, white spruce, and balsam fir. Forests in the eastern portion of the subsection are dominated by white pine, red pine, and jack pine. Poor and rich fens, black spruce bogs, and cedar-black ash swamps are typical in lowlands (MnDNR 2015d).

The Chippewa Plains subsection is comprised of level to gently-rolling till plain and lake plain settings, which form a mosaic of vegetation communities. Outwash plain settings tend toward sandy soils and support dry forest communities dominated by upland conifers. Vegetation communities in this subsection include upland conifer forest, shrub and woodland uplands, and non-forested wetlands (MnDNR 2015d).

Several state forests are located within or adjacent to variation areas in the Central Section, including the Beltrami Island State Forest, Lake of the Woods State Forest, Pine Island State Forest, Red Lake State Forest, Big Fork State Forest, Smokey Bear State Forest, George Washington State Forest, and Koochiching State Forest (Map 3). The Chippewa National Forest is located in the southern part of the Central Section (Map 3). In addition, several sensitive ecological resources, such as WMAs, SNAs, Ecologically Important Lowland Conifer Forests, and MBS Sites of Biodiversity Significance are located within or adjacent to variation areas in the Central Section.

5.3 East Section

The East Section is located in Itasca and Koochiching counties and has the highest population densities across the proposed Project. Large population centers such as Grand Rapids and the Iron Range cities

contain much of the population in this section. The economies of the communities in the East Section are centered on mining, tourism, and manufacturing, with relatively little agriculture. In general, the East Section transitions to steeper sloped forested landscapes with bogs, swamps, and lakes common. This area intersects the Mesabi Range, which is a narrow bedrock ridge trending from southwest to northeast and rising 200 to 400 feet above the surrounding land. Based on USGS GAP data, the dominant land cover types in the East Section include upland forests and lowland swamps (Map 4). Upland forests are primarily dominated by aspen and birch or white spruce, balsam fir, and hardwoods, with lowland forests dominated by black spruce, tamarack, and/or northern white cedar.

According to the MnDNR and USFS ecological classification system, the East Section is primarily located in three subsections of the Laurentian Mixed Forest Province (MnDNR 2015d). The Littlefork-Vermillion Uplands subsection, which is in the Northern Minnesota and Ontario Peatlands section, is located across the northern portion of the East Section (Map 6). The St. Louis Moraines subsection, which is in the Northern Minnesota Drift and Lake Plains section, covers the majority of the East Section (Map 6). The Nashwauk Uplands subsection, which is in Northern Superior Uplands section, covers the eastern portion of the East Section (Map 6).

As discussed above for the Central Section, the Littlefork-Vermillion Uplands subsection is a transition zone between the vast peatlands to the west and the shallow bedrock controlled, clayey soils to the east. Vegetation types include forests dominated by aspen-birch trending toward white pine, white spruce, and balsam fir. Forests in the eastern portion of the subsection are dominated by white pine, red pine, and jack pine. Poor and rich fens, black spruce bogs, and cedar-black ash swamps are typical in lowlands (MnDNR 2015d).

The St. Louis Moraines subsection is dominated by steep slopes on end moraine settings. White and red pine forests historically dominated the northern portions of the subsection, whereas northern hardwood and aspen forest dominated moraines to the south. Mixed deciduous and coniferous forests were common on moraines. Quaking aspen is currently the most dominant tree species in the subsection (MnDNR 2015d).

The Nashwauk Uplands subsection is dominated by Giant's Ridge, a narrow 200- to 400-foot-high bedrock feature extending northeast to southwest through the subsection. Glacial outwash plains, rolling till plains, and moraines of the Rainy Lobe glacier are the predominant landforms. Quaking aspen is currently the most dominant tree species in the subsection (MnDNR 2015d).

Several state forests are present in the East Section, including the Koochiching State Forest in the northern portion of the East Section, the George Washington State Forest in the central portion of the East Section, and a small part of the Bowstring State Forest in the western portion of the East Section (Map 4). The Chippewa National Forest is also located in the western part of the East Section; however none of the proposed routes or variations would come within a mile of it (Map 4). In addition, sensitive ecological resources, such as WMAs, Important Bird Areas, and MBS Sites of Biodiversity Significance are located within or adjacent to variation areas in the East Section.

6.0 Potential Effects on Federally-Listed Species

As discussed in Section 1 of this BA, the DOE has the responsibility under the ESA to determine whether or not the proposed Project would adversely affect federally-listed endangered or threatened species and/or their designated critical habitat.

Potential impacts on federally-listed species and designated critical habitat that could occur during construction and operation of the proposed Project are discussed in the subsections below. The Applicant has proposed measures to reduce potentially adverse impacts during construction and operations; these are described in Section 2.7.1 of this BA. DOE's determinations of effects are discussed throughout Section 6 of this BA and are summarized in Section 8. Section 7 of this BA presents a cumulative effects analysis of the proposed Project combined with other reasonably foreseeable actions on federally-listed species.

General Construction Impacts

During construction of the proposed Project, activities that generate noise and dust in the Action Area may cause disturbance to federally-listed species. Federally-listed species within or adjacent to the Action Area may be temporarily displaced and forced to utilize other habitats during construction. The proposed Project would require expansion of existing cleared corridors or the creation of new corridors in areas that are currently forest and shrubland. Clearing of woody vegetation could have adverse impacts on federally-listed species through loss, conversion, or fragmentation of habitat.

Conversion of vegetation structure alters species use by changing plant community composition and structure. When forested plant communities are converted to open communities, there are corresponding changes in wildlife communities. Federally-listed species that rely on well-developed forest canopies for nesting, foraging, or shelter may be permanently displaced from the portion of the landscape where this alteration occurs.

Habitat fragmentation reduces the size of contiguous blocks of vegetation, such as forest; this reduces the total area of contiguous habitat available to federally-listed species. 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 would be greatest where large contiguous blocks are broken up into smaller patches that reduce interior forest habitat necessary for some species. The effects of fragmentation would generally be greatest where new corridor is created, rather than where the transmission line parallels an existing corridor.

Operations and Maintenance Impacts

During operation and maintenance of the proposed Project, cleared areas would be permanently maintained to support low-stature vegetation in order to insure safe operation of the transmission line.

Routine clearing of vegetation in the Action Area may cause temporary displacement of federally-listed species foraging, breeding, or nesting in the Action Area or its vicinity.

Summary of Effects

Based on the analysis and the discussion of cumulative effects presented in Section 6 of this BA, DOE has concluded that any effects on the gray wolf, Canada lynx, and Sprague's pipit would be insignificant or discountable, and that the proposed Project may affect but is not likely to adversely affect, these species. DOE has concluded that any effects on northern long-eared bat would be negative, and that the proposed Project may adversely affect this species. DOE has concluded that any effects on gray wolf designated critical habitat would be negative, and that the proposed Project may affect and likely adversely affect gray wolf designated critical habitat. Table 5 provides a summary of potential impacts on federally-listed species potentially resulting from the proposed Project.

Table 5 Determination of Effect for Federally- Listed Species and Designated Critical Habitat Potentially Affected by the Proposed Project

Scientific Name	Common Name	ESA Status(1)	Determination of Effect
Canis lupus	Gray wolf	T	May affect, but not likely to adversely affect
Lynx canadensis	Canada lynx	T	May affect, but not likely to adversely affect
Myotis septentrionalis	Northern long-eared bat	T	May affect, likely to adversely affect
Anthus spragueii	Sprague's pipit	Can.	May affect, but not likely to adversely affect
Designated Critical Habitat			**Determination of Effect**
Canis lupus (gray wolf)			May affect, likely to adversely affect

(1) "E" refers to federally-listed as endangered, "T" refers to federally-listed as threatened, "Can" refers to federal candidate species.

6.1 Gray Wolf

As previously mentioned, gray wolves have been documented within the vicinity of the Study Area and designated critical habitat for gray wolf is present throughout the Central Section and in the northern portion of the East Section of the proposed Project.

6.1.1 Construction Impacts

No direct impacts on gray wolf individuals or populations are anticipated from construction of the proposed Project. Potential temporary indirect impacts associated with construction of the proposed Project could include displacement resulting from construction activities that generate disturbances such as noise and dust. It is likely that gray wolves and their prey would temporarily abandon habitats adjacent to where construction activity is occurring. Construction activity occurring adjacent to wolf dens during the breeding season could lead to reproductive failure or abandonment of offspring.

Potential long-term indirect impacts on gray wolves could result from loss, conversion, and fragmentation of habitat. The proposed Project would require permanent removal of forest within the 200-foot ROW (Action Area). At a maximum, approximately 2,100 acres of critical habitat designated for gray wolf would

be directly impacted during construction of the proposed Project; this represents approximately 0.04 percent of the critical habitat designated for gray wolf in the state of Minnesota. The removal of forest in the Action Area would reduce the amount of habitat available for wolves and their prey; however, given the abundance of forested habitat within and adjacent to the Study Area, the loss of forested habitat would not be significant.

Removal of forested land in the Action Area would result in habitat fragmentation, which could reduce the quality of gray wolf habitat, particularly in designated critical habitat in the Central Section and the northern portion of the East Section. The effects of fragmentation on gray wolves would generally be greatest where new corridors are created, rather than where the transmission line would parallel an existing corridor, where the forest has already been fragmented. However, the creation of corridors could create open habitat patches which may be favorable to deer and other gray wolf prey sources.

6.1.2 Operations and Maintenance Impacts

No direct impacts on wolf individuals or populations are anticipated from operation and maintenance of the proposed Project. Potential indirect impacts associated with operation and maintenance of the proposed Project could include temporary displacement of wolves and their prey until maintenance activities are completed. Human access would be limited to construction and maintenance activities.

6.2 Canada Lynx

According to the MnDNR Lynx Sightings Database (MnDNR 2006), Canada lynx have been documented within the counties where the proposed Project is located. As mentioned above, no designated critical habitat for Canada lynx is present in the Study Area (Map 5).

6.2.1 Construction Impacts

No direct impacts on Canada lynx individuals or populations are anticipated from construction of the proposed Project. Potential temporary indirect impacts associated with construction of the proposed Project could include displacement resulting from construction activities that generate disturbances such as noise and dust. It is likely that lynx and their prey would temporarily avoid habitats adjacent to construction areas. Construction activity occurring adjacent to Canada lynx dens during the breeding season could lead to reproductive failure or abandonment of offspring.

Potential long-term indirect impacts on Canada lynx could result from loss, conversion, and fragmentation of habitat. The proposed Project would require permanent removal of forest within the 200-foot ROW (Action Area). The removal of forest in the Action Area would reduce the amount of habitat available for Canada lynx and their primary prey, snowshoe hare; however, given the abundance of forested habitat within and adjacent to the Study Area, the loss of forested habitat would not be significant.

Removal of forested land in the Action Area would result in habitat fragmentation, which could reduce the quality of Canada lynx habitat and its primary prey, snowshoe hare. The effects of fragmentation on Canada lynx would likely be greatest where new corridors are created, rather than where the transmission line would parallel an existing corridor, where the forest has already been fragmented. In addition,

creation of new corridors may lead to an influx of coyotes, wolves, and other wildlife that would not typically inhabit these areas, which could lead to an increase in competition with Canada lynx for a limited supply of winter prey.

6.2.2 Operations and Maintenance Impacts

No direct impacts on Canada lynx individuals or populations are anticipated from operation and maintenance of the proposed Project. Potential indirect impacts associated with operation and maintenance of the proposed Project could include temporary displacement of Canada lynx and snowshoe hare until maintenance activities are completed. Human access would be limited to construction and maintenance activities.

6.3 Northern Long-Eared Bat

As mentioned above, according to the NHIS database, the nearest documented record of a northern long-eared bat is in St. Louis County in the Soudan Underground Mine State Park, which is approximately 45 miles east of the Study Area.

6.3.1 Construction Impacts

In order to avoid potential direct impacts to roosting northern long-eared bats and their pups, the Applicant has made a commitment to avoid tree clearing during the pup season in June and July. The Applicant intends to clear trees in the winter months, outside of the bat's maternal roosting period from April 1 through September 30, to the extent practicable, but will likely need to conduct tree clearing during other times of the year.

The Applicant has committed to conducting acoustical surveys to determine the utilization of potential northern long-eared bat habitat for clearing trees during the maternal roosting period, but outside of the pup season. The Applicant would conduct surveys for three nights for every one kilometer of suitable forested habitat. If no northern long-eared bats are detected during the surveys, forest clearing would be permitted in this area; if northern long-eared bats are detected, then a three mile buffer would be placed around the survey area and cutting would be prohibited outside of the winter months in this area.

6.3.2 Operations and Maintenance Impacts

There would be no direct impacts to northern long-eared bats anticipated from the operations or maintenance of the proposed Project. This is because tree clearing that may potentially affect northern long-eared bat would have occurred during construction, and would not expand during operations and maintenance. Woody vegetation encroaching upon the ROW between maintenance events would not be expected to reach the minimal tree diameter criteria (less than or equal to 3 inches diameter at breast height) for suitable northern long-eared bat summer roost habitat.

6.4 Sprague's Pipit

As mentioned above, the MnDNR database indicates that there is one documented sighting of a Sprague's pipit in the western part of the Study Area. Suitable habitat for Sprague's pipit is generally not present in the Central and East Sections. There is no designated critical habitat for Sprague's pipit.

6.4.1 Construction Impacts

No direct impacts on Sprague's pipit individuals or populations are anticipated from construction of the proposed Project. Potential temporary indirect impacts associated with construction of the proposed Project could include displacement resulting from construction activities that generate disturbances such as noise and dust. The impacts of noise and dust on wildlife are largely unknown. It is likely that Sprague's pipits would temporarily avoid habitats adjacent to construction areas. Construction activities occurring during the nesting season (April through August), could disturb Sprague's pipit nest sites within or adjacent to the Action Area. If an active Sprague's pipit nest is found during construction, the appropriate agencies would be contacted before any actions are taken to determine appropriate avoidance or minimization measures.

Potential permanent impacts on Sprague's pipit habitat could occur in areas where transmission line structures are placed in prairie or grassland habitat. Because Sprague's pipits inhabit prairie and grassland habitats, generally devoid of woody vegetation, removal of forested and shrubland in the Action Area is not likely to adversely affect this species. In contrast, creation of corridors could benefit Sprague's pipit by increasing available habitat, especially in the Central and East Sections, where prairie and grassland vegetation is not abundant.

6.4.2 Operations and Maintenance Impacts

No direct impacts on Sprague's pipit individuals or populations are anticipated from operation and maintenance of the proposed Project. Potential indirect impacts associated with operation and maintenance of the proposed Project could include temporary displacement of Sprague's pipit until maintenance activities are completed. Human access would be limited to construction and maintenance activities. Because Sprague's pipit is a ground-nesting bird, maintenance activities, such as ROW clearing, should be avoided during the nesting season in areas where suitable Sprague's pipit habitat is present within the ROW.

7.0 Cumulative Effects

Reasonably foreseeable future activities that might occur in the proposed Project area and an assessment of cumulative effects from such when combined with the proposed Project are described in Section 7 of the EIS (DOE 2015). State, local, and private activities (i.e., non-federal activities) that are reasonably certain to occur within the Action Area are provided below. The types of reasonably foreseeable future projects include roadways, railroad lines, industrial facilities, and energy projects such as power plants, transmission lines, and pipelines.

The Minnesota Department of Transportation (MnDOT) Statewide Transportation Improvement Program (STIP) identifies various transportation projects in the vicinity of the proposed Project for the period of 2015-2018 (MnDOT 2014). Review of the planned projects for MnDOT District 1 and District 2 identified that planned transportation projects generally consist of routine maintenance activities such as roadway re-surfacing, asphalt surface treatment, bridge repair, bituminous overlay, mill and overlay, concrete paving, railroad crossings, signage, and pedestrian/bike trail improvements. Based on the STIP, there are no major roadway projects presently planned or reasonably foreseeable within the vicinity of the proposed Project.

The Minnesota DOC project database was reviewed to identify any power plant, transmission line, pipeline, or wind projects currently open or permitted in the vicinity of the proposed Project. One power plant and the associated transmission line and natural gas pipeline (Excelsior Energy's Mesaba Project) and one 230 kV transmission line (Minnesota Power's Nashwauk Project) have been issued route permits by the MN PUC but have not yet been constructed. Sections of the approved routes for both of these projects are within the Applicant's proposed routes, and are reasonably foreseeable projects that could occur in the vicinity of the proposed Project, as described below:

- On March 12, 2010, the MN PUC issued a large electric power generating plant site permit to Excelsior Energy to construct the Mesaba Project in Itasca County. The Mesaba Project was originally proposed as a 1,200 megawatt (net) coal-feedstock integrated gasification combined cycle power plant. In addition to the site permit, the MN PUC also issued a pipeline permit and a route permit for a 345 kV transmission line to connect the proposed power plant into the Blackberry Substation. Construction has not started on the power plant, the natural gas pipeline, or the transmission line.

  On May 31, 2012, the MN PUC received a letter from Excelsior Energy stating that it intends at this time to develop only the combined-cycle power block portion of the project, eliminating the syngas production portions (i.e., gasification island, air separation unit, coal/pet-coke feedstock handling and storage, syngas treating unit, sulfur recovery and tail gas recycle units, etc.) of the project and operating the facility as a natural gas-fueled combined-cycle. Excelsior Energy also indicated that it plans to construct the coal gasification island if and when it becomes feasible to do so from economic and regulatory standpoints. Minnesota Statute 216B.1694, Subdivision 3, states that the site and route permits and water appropriation approvals for an innovative energy project must also be deemed valid for a power plant meeting the requirements of paragraph (a)

and shall remain valid until the earlier of (i) four years from the date the final required state or federal preconstruction permit is issued or (ii) June 30, 2019.

The permitted route for Excelsior Energy's approximately 10-mile long 345 kV transmission line would be located within the Proposed Blue Route and Proposed Orange Route for about 1.2 miles in the Balsam Variation Area and would be within the entire length (approximately 5.5 miles) of the Proposed Blue Route in the Blackberry Variation Area.

- Under an agreement with the Nashwauk Public Utilities Commission, Minnesota Power constructed three of four 230 kV transmission lines and two 230 kV substations to supply electric power to an Essar Steel Minnesota project. A fourth transmission line has been permitted by the MN PUC but has not yet been constructed. This potential fourth transmission line would begin at the existing Minnesota Power 230 kV Blackberry Substation (Township 55 North, Range 23 West, Section 19) and continue northeast and parallel two existing Minnesota Power 115 kV transmission lines (the 63 Line and the 62 Line), terminating at the Essar Steel Minnesota project.

  According to the MN PUC route permit, if this fourth transmission line for the Essar Steel Minnesota project is built, the existing 62 line, located west of the 63 Line, would be dismantled. The potential fourth 230 kV transmission line would then be constructed within the former 62 Line ROW and would, therefore, not result in the creation of a new ROW.

  For this potential fourth 230 kV transmission line, the permitted route would be located within the Proposed Orange Route for approximately two miles, from the Blackberry Substation northeast to near the north end of Little Sand Lake.

There are also areas where iron ore is mined and extracted from previously developed stockpiles, basins, underground workings, or open pits ("scram" mining) near the west side of the Canisteo Pit, located approximately four to six miles west of the proposed routes and variations. The Balsam Variation, which is in the Balsam Variation Area, would cross a 115 kV transmission line recently constructed to serve one of these scram mining facilities. All other proposed routes and variations are located more than four miles east of existing or proposed scram mining facilities in the area.

Finally, the USFS, MnDNR, and counties work together to manage forest resources in the vicinity of the proposed Project, including negotiating private logging contracts on public land. Generally, forestry operations occur on both private and public land and involve harvesting of forests for merchantable timber sales on state land enrolled in MnDNR Forestry Timber Sales Program. Forestry operations on these public lands also include land management activities aimed at improving or maintaining attributes such as water quality, tree species and structural diversity, as well as wildlife habitat enhancement. In addition, Beltrami County and Itasca County, and the other project counties have developed forest management plans that provide the general framework for sustainable forestry, including logging activities.

7.1 Summary of Cumulative Effects

With the exception of scheduled MnDOT road maintenance activities and USFS and MnDNR forest management activities, the reasonably foreseeable future actions would all occur in the southern part of the East Section. In this location there is no designated critical habitat for gray wolf or any other federally-listed species. The Proposed Action when combined with other reasonably foreseeable actions would not contribute to cumulative adverse effects on federally-listed species as long as multiple projects are not constructed concurrently. If reasonably foreseeable projects are constructed independent of one another, cumulative adverse effects on gray wolf, Canada lynx, and northern long-eared bat are not expected to be significant because impacts for each project would be localized and forest habitat is abundant in the vicinity.

The proposed Project, when considered with any other project that may involve tree removal, could contribute to cumulative impacts to the gray wolf and Canada lynx, which rely on forested habitat. In addition, while white-nose syndrome is the primary threat to the northern long-eared bat, tree removal contributes to loss of habitat for the species. If trees are cleared simultaneously for multiple projects within close proximity to one another, cumulative impacts to these species could be significant. Avoidance, minimization, and mitigation measures for federally listed species would be coordinated with the USFWS.

The proposed Project when combined with other reasonably foreseeable actions would not contribute to cumulative adverse effects on Sprague's pipit. Prairie and grassland communities, the desirable Sprague's pipit habitat, are generally only present in the West Section and no reasonably foreseeable future actions are planned in this area.

8.0 Conclusions

8.1 Effects Determination for Federally-Listed Species

Based on the description of the proposed Project in Section 2 of this BA and further described in the associated EIS (DOE 2015), the status of species and environmental baseline described in Sections 4 and 5 of this BA, and the analysis of potential impacts in Section 6 of this BA, the DOE concludes the following:

- The proposed Project would have no effect on Poweshiek skipperling, piping plover, or the western prairie fringed orchid.
- The proposed Project may affect but is unlikely to adversely affect, the gray wolf. Clearing of forested land in the Action Area would result in a slight reduction of suitable gray wolf habitat. The habitat that would be lost is not uncommon in the surrounding areas or within northern Minnesota.
- The proposed Project may affect but is unlikely to adversely affect, the Canada lynx. Clearing of forested land in the Action Area would slightly reduce the amount of suitable habitat available for Canada lynx. The habitat that would be lost is not uncommon in the surrounding areas or within northern Minnesota, nor is it designated critical Canada lynx habitat.
- The proposed Project may affect, and is likely to adversely affect, the northern long-eared bat. The Applicant intends to clear trees in the winter months, to the extent practicable, and has made a commitment to avoid tree clearing during the pup season of June and July. As described in Section 6.3 of this BA, the Applicant has agreed to conduct acoustical surveys prior to clearing trees outside of the winter months.
- The proposed Project may affect but is unlikely to adversely affect, Sprague's pipit. There is minimal habitat present for this species within the Study Area and only one record has been documented in the Study Area. Available habitat may increase as a result of creation of open corridors with non-woody vegetation. If an active Sprague's pipit nest is found during construction or maintenance, the appropriate agencies would be contacted before any actions are taken to determine appropriate avoidance or minimization measures.

8.2 Effects Determination for Critical habitat

The proposed Project would travel through critical habitat designated for gray wolf. There is no designated or proposed critical habitat for Canada lynx, northern long-eared bat, or Sprague's pipit in the Study Area.

The proposed Project may affect and is likely to adversely affect critical habitat designated for gray wolf. Clearing forested land in the Action Area would reduce the amount of critical habitat in the region and statewide. The proposed Project would not adversely affect any of the critical factors identified by the USFWS for the long-term survival of gray wolf, as outlined above in Section 4.2 of this BA.

9.0 References

Baicich, P.J., and C.J. Harrison. 2005. Nest, Eggs, and Nestlings of North American Birds. Princeton, NJ: Princeton University Press.

Bent, A.C. 1950. Life histories of North American wagtails, shrikes, vireos, and their allies. US National Museum Bulletin, 197.

Berg, W.E., and D.W. Kuehn. 1982. Ecology of Wolves in North-central Minnesota. Pages 4-11 *in* Wolves of the World: Perspectives of Behavior, Ecology, and Conservation (F.H. Harrington and P.C. Paquet, Editors). Noyes, Park Ridge, New Jersey.

Burdett, C.L. 2007. Hierarchical Structure of Canada Lynx Space Use and Habitat Selection in Northeastern Minnesota. Ph.D. Dissertation, University of Minnesota, St. Paul.

Cuthbert, F.J., and T Weins. 1982. Status and breeding biology of the piping plover in Lake of the Woods County. Report submitted to the Nongame Wildlife Program, Minnesota Department of Natural Resources.

Davis, S.K. 2004. Area sensitivity in grassland passerines: effects of patch size, patch shape, and vegetation structure on bird abundance and occurrence in southern Saskatchewan. Auk 121:1130-1145.

Department of Energy. 2015. Great Northern Transmission Line Draft Environmental Impact Statement

Elliot-Smith, E., S. M. Haig, and B. M Powers. 2009. Data from the 2006 International Piping Plover Census." (USGS) Staff Published Research, no. 662.

Erb, J. 2008. Distribution and abundance of Wolves in Minnesota, 2007-08. Minnesota Department of Natural Resources, Grand Rapids, Minnesota. 11 pp.

Erb, J. and B. Sampson. 2014. Distribution and Abundance of Wolves in Minnesota, 2013-14. Minnesota Department of Natural Resources, St. Paul.

Erb, J. and B. Sampson. 2013. Distribution and Abundance of Wolves in Minnesota, 2012-13. Minnesota Department of Natural Resources, St. Paul.

Fuller, T.K., W.E. Berg, G.L. Radde, M.S. Lenarz, and G.B. Joselyn. 1992. A History and Current Estimate of Wolf Distribution and Numbers in Minnesota. Wildlife Society Bulletin 20:42-54.

Hull, C. 1981. Great Lakes Piping Plover in Trouble. Lansing, MI: Michigan Department of Natural Resources.

Mech, L.D. 1974. *Canis lupus*. American Society of Mammalogists, Mammalian Species No. 37. 6 pp.

Minnesota Department of Natural Resources (MnDNR). 2015a. Rare Species Guide: *Canis lupus* (gray wolf). Accessed April, 2015 at:
http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=AMAJA01030

MnDNR. 2015b. Rare Species Guide, *Charadrius melodus*. Accessed April 2015 at: http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNNB03070

MnDNR. 2015c. Rare Species Guide, *Platanthera praeclara*. Accessed April 2015 at: http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMORC1Y0S0

MnDNR. 2015d. "Ecological Classification System: Ecological Land Classification Hierarchy." Accessed January 2015 at: <http://www.dnr.state.mn.us/ecs/index.html>.

MnDNR. 2001. Minnesota Wolf management plan. Division of Wildlife, Minnesota Department of Natural Resources, St. Paul, Minnesota. 36 pp. + appendices.

MnDNR 2006. Lynx Sightings Database. Accessed April 2015 at: http://www.dnr.state.mn.us/eco/nhnrp/research/lynx_sightings.html

Moen, R. 2009. Canada Lynx of the Great Lakes Region – 2009 Annual Report. Natural Resources Research Institute Technical Report No, NRRI/TR-2009-40. Duluth, Minnesota.

Moen, R. G., Niemi, and C.L. Burdet. 2008. Canada Lynx in the Great Lakes Region: Final Report. Technical Report No. NRRI/TR-2008-14. Report Prepared for the USDA Forest Service, U.S. Geological Survey, and Minnesota Cooperative Fish and Wildlife Research Unit, and MDNR. Duluth, Minnesota.

National Geographic Society. 1983. Field guide to the birds of North America. Washington, DC: National Geographic Society.

Nordquist, G.E., K.A. Lynch, and C.A. Spak. 2006. Timing and Pattern of Bat Activity at Soudan Underground Mine. Minnesota Department of Natural Resources, Biological Report No. 88.

Peterson, Roger Tory. 2008. Peterson Field Guide to Birds of North America. Boston: Hougton Mifflin.

Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Iñigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, T. C. Will. 2004. Partners in Flight North American landbird conservation plan. Ithaca, NY: Cornell Lab of Ornithology.

Robbins, M. B. 1998. Display behavior of male Sprague's Pipits." Wilson Bulletin, 435-438.

Sutter, G.C. 1996. Habitat selection and prairie drought in relation to grassland bird community structure and the nesting ecology of Sprague's Pipit, *Anthus spragueii*. PhD Thesis, Regina: University of Regina, Regina, Saskatchewan.

U.S. Fish and Wildlife Service (USFWS). 2015a. U.S. Fish and Wildlife Service. Endangered Species Program. Accessed February 2015 at: http://www.fws.gov/midwest/endangered/lists/minnesot-cty.html.

USFWS. 2015b. Information, Planning, and Conservation System (IPaC). Accessed April 2015 at: http://www.fws.gov/ipac/

USFWS. 2015c. Northern Long-eared Bat Fact Sheet. Accessed April 2015 at: http://www.fws.gov/midwest/endangered/mammals/nleb/nlebFactSheet.html

USFWS. 2014a Poweshiek Skipperling Fact Sheet. Fact Sheet. Accessed February 2015 at: http://www.fws.gov/midwest/endangered/insects/posk/PoweshiekSkipperlingFactSheet.html

USFWS 2014b. Piping Plover-Great Lakes Population Breeding Pairs. Accessed February 2015 at: http://www.fws.gov/midwest/endangered/pipingplover/pipl2007pop.html

USFWS. 2013. Endangered Species Program. Canada Lynx Fact Sheet. Accessed April 2015 at: http://www.fws.gov/mountain-prairie/species/mammals/lynx/

USFWS. 2012. Endangered Species Program. Gray Wolf Fact Sheet. Accessed April 2015 at: http://www.fws.gov/midwest/wolf/grwofactsheets.htm

USFWS. 2007. Determining whether western prairie fringed orchid (*Platanthera praeclara*) may be present in a project area in Minnesota.

USFWS. 2004. Prairie Fringed Orchids Fact Sheet. Accessed February 2015 at: http://www.fws.gov/midwest/endangered/plants/prairief.html

USFWS. 2000. Canada Lynx Conservation Assessment and Strategy.

USFWS. 1992. Recovery Plan for the Eastern Timber Wolf. Twin Cities, Minnesota. 73 pages.

USFWS. 1991. Endangered Species Facts: Piping Plover. Fact Sheet. Accessed February 2015 at: http://www.fws.gov/midwest/endangered/pipingplover/pipingpl.html

U.S. Geological Survey. 2015. National Wildlife Health Center: White-Nose Syndrome. Accessed April 2015 at: http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/

10.0 Acronyms

AC	alternating current
BA	Biological Assessment
BMP	best management practice
CFR	Code of Federal Regulations
DOC	Minnesota Department of Commerce
DOE	Department of Energy
DPS	Distinct Population Segment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
IPAC	Information, Planning, and Conservation
kV	Kilovolt
MBS	Minnesota Biological Survey
MnDNR	Minnesota Department of Natural Resources
MnDOT	Minnesota Department of Transportation
MN PUC	Minnesota Public Utilities Commission
NESC	National Electric Safety Code
NHIS	Natural Heritage Information System
OSHA	Occupational Safety and Health Administration
ROW	right of way
SNA	Scientific and Natural Area
STIP	Statewide Transportation Improvement Program
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
WMA	Wildlife Management Area