ENVIRONMENTAL ASSESSMENT

MP 16 LINE RELOCATION TRANSMISSION PROJECT

PUC DOCKETS
E015/TL-14-977

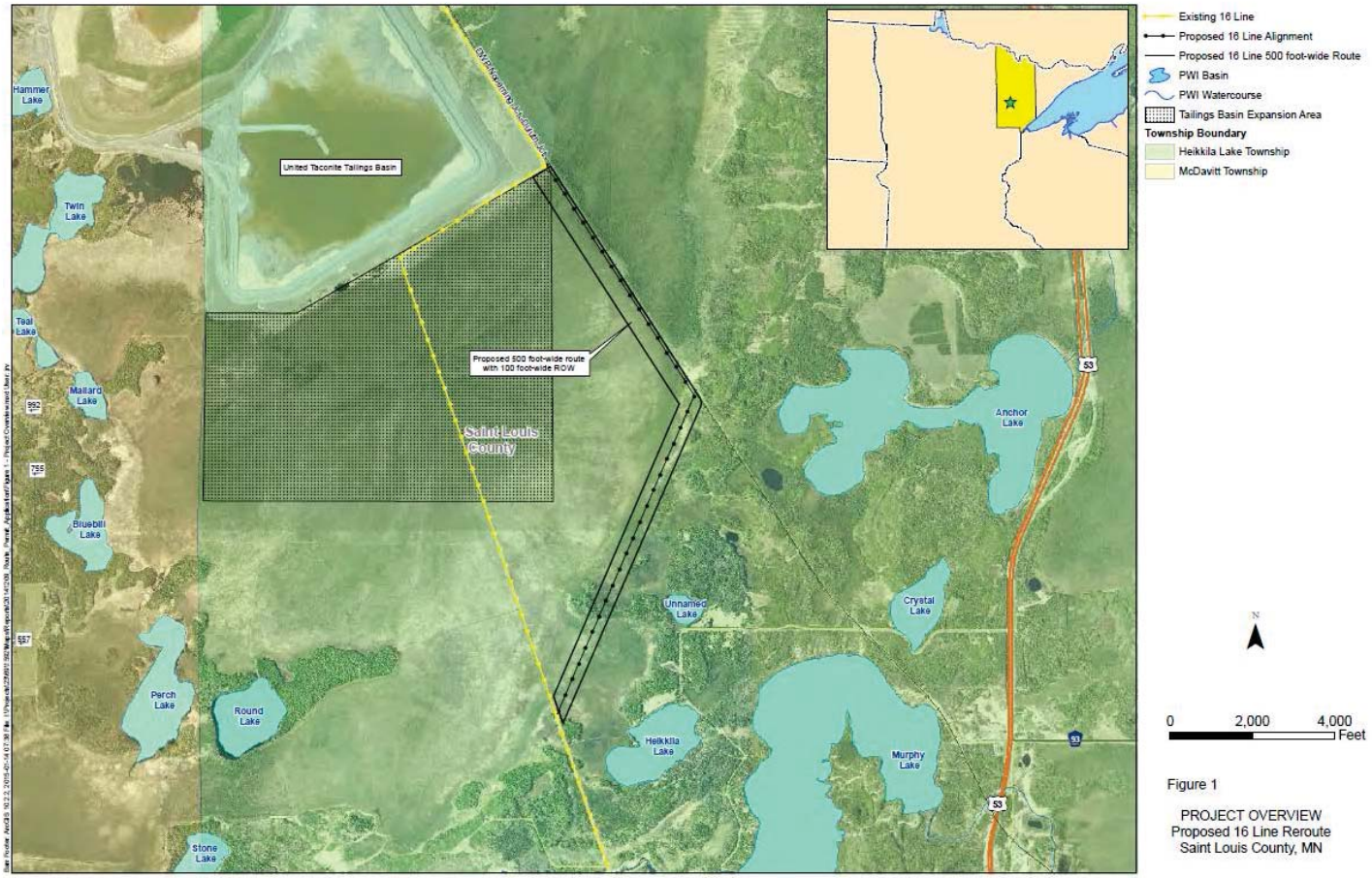


Figure 1

PROJECT OVERVIEW
Proposed 16 Line Reroute
Saint Louis County, MN

October 2015

Prepared by:

MINNESOTA DEPARTMENT OF COMMERCE

85 7TH PLACE EAST, SUITE 500
SAINT PAUL, MINNESOTA 55101-2198
MN.GOV/COMMERCE
651.539.1500 FAX: 651.539.1547
AN EQUAL OPPORTUNITY EMPLOYER

Responsible Government Unit

Department of Commerce
Energy Environmental Review and Analysis
85 7th Place East, Suite 500
Saint Paul, Minnesota
55101-2198

Department Representative
Bill Storm
Environmental Manager
(651) 296-9535

Project Owner

Minnesota Power
30 West Superior Street
Duluth, Minnesota 55802-2093

Project Representative
Daniel McCourtney
Environmental Compliance Specialist
(218) 355-3515

Abstract

Minnesota Power (Applicant) submitted an application to the Minnesota Public Utilities Commission for a high voltage transmission line (HVTL) Route Permit to construct approximately 3.0 miles of new 115 kV transmission line in St. Louis County south of the city of Eveleth, Minnesota.

The Applicant submitted its HVTL route permit application to the Commission on January 16, 2015. The route permit application was accepted as complete by the Commission on March 17, 2015. The docket number for the HVTL Route Permit proceedings is E015/TL-14-977.

Under the Power Plant Siting Act (Minn. Stat. 216E), a route permit from the Commission is required to construct a high voltage transmission line (HVTL). Department of Commerce, Energy Environmental Review and Analysis (EERA) staff is responsible for conducting the environmental review for route permit applications submitted to the Commission (Minn. Rules 7850). Accordingly, EERA staff has prepared this environmental assessment (EA) for the MP 16 Line Relocation project. This EA addresses the issues required in Minnesota Rule 7850.3700, subpart 4, and those identified in the Department's scoping decision of May 19, 2015.

Persons interested in this project can place their names on the project mailing list by registering online at: http://mn.gov/commmerce/energyfacilities/Docket.html?Id=34059 or by contacting Bill Storm, Energy Environmental Review and Analysis, 85 7th Place East, Suite 500, St. Paul, Minnesota 55101, phone: (651) 539-1844, e-mail: bill.storm@state.mn.us. Documents of interest can be found at the above website and on the eDockets system: https://www.edockets.state.mn.us/EFiling/search.jsp (enter the year "14" and the number "977").

Following release of this environmental assessment, a public hearing will be held in the project area. The hearing will be presided over by an administrative law judge from the Office of Administrative Hearings. Upon completion of the environmental review and hearing process, the record compiled on the route permit application will be presented to the Commission for a final decision. A decision on a route permit for the MP 16 Line Relocation project is anticipated in December 2015.

Acronyms, Abbreviations and Definitions

ALJ	Administrative Law Judge
Commission	Minnesota Public Utilities Commission
dBA	A-weighted sound level recorded in units of decibels
DOC	Department of Commerce
EA	Environmental Assessment
EERA	Department of Commerce Energy Environmental Review and Analysis
EMF	electromagnetic field
FEMA	Federal Emergency Management Agency
FHA	Federal Housing Administration
HVTL	high voltage transmission line
kV	kilovolt
MDH	Minnesota Department of Health
mG	milligauss
mg/L	milligrams per liter – equivalent to parts per million (ppm)
MnDNR	Minnesota Department of Natural Resources
MnDOT	Minnesota Department of Transportation
MP	Minnesota Power
MPCA	Minnesota Pollution Control Agency
MSIWG	Minnesota State Interagency Working Group
NAC	noise area classification
NESC	National Electrical Safety Code
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PUC	Minnesota Public Utilities Commission
PWI	Public Waters Inventory
RAPID	U.S. EMF Research and Public Information Dissemination
ROW	Right-of-Way
SHPO	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
USCOE	United States Corp of Engineers
USFWS	United States Fish and Wildlife Service
WHO	World Health Organization

CONTENTS

TABLES

FIGURES

APPENDICES

1.0 Introduction

Minnesota Power (Applicant) has made an application to the Minnesota Public Utilities Commission (Commission) for a high voltage transmission line (HVTL) Route Permit for the construction of a new 115 kV transmission line in the St. Louis County pursuant to Minnesota Statutes Section 216E and Minnesota Rules Chapter 7850.

The Department of Commerce Energy Environmental Review and Analysis (EERA) staff is tasked with conducting environmental review on applications for route permits. The intent of the environmental review process is to inform the public, the applicant, and decision-makers about potential impacts and possible mitigations measures for the proposed project.

This environmental assessment (EA) addresses the issues noted in Minnesota Rule 7850.3700, subpart 4, and those identified in the Department's scoping decision for this project (**Appendix A**), and is organized as follows:

Section 1.0	**Introduction**	The introduction provides an overview of this document and of the proposed project.
Section 2.0	**Regulatory Framework**	Section 2.0 describes the regulatory framework associated with the project, including certificate of need criteria, route permit requirements, and the alternative permitting process.
Section 3.0	**Proposed Project**	Section 3.0 describes the project as proposed by Minnesota Power, including rights-of-way, structures, and conductors.
Section 4.0	**Other Routes**	Section 4.0 describes routes considered and rejected, and any alternative routes or route segments that were developed through the EA scoping process.
Section 5.0	**Potential Impacts and Mitigation Measures**	Section 5.0 details the potential impacts of the proposed project to human and natural environments and identifies measures that could be implemented to avoid, minimize, or mitigate potential adverse impacts.
Section 6.0	**Potential Impacts Comparison of Alternatives Routes**	Section 6.0 compares the potential impacts of the proposed route and the alternative routes to human and natural environments and identifies measures that could be implemented to avoid, minimize, or mitigate potential adverse impacts.

Section 7.0	**Unavoidable Impacts**	Section 7.0 describes the unavoidable impacts, and the irreversible and/or irretrievable commitment of resources resulting from the project.
Section 8.0	**Relative Merits Analysis**	Section 8.0 analyzes the merits of each routing alternative to those factors described in Minnesota Rule 7850.4100.

1.1 Project Description

The proposed project covers a total of approximately 3.0 miles (**Figure 1**) of new 115 kV HVTL and rights-of-way (ROW), and the removal of approximately 3.0 miles of existing HVTL (current 16 Line) that runs through the future expansion of United Taconite's tailings basin.

1.2 Project Location

The project is located in St Louis County, south of Fayal Township and approximately four miles east of McDavitt Township.

Table 1 below summarizes the proposed project location.

Table 1. Project Location

Township	Range	Section	County
56N	17W	16	St. Louis
56N	17W	17	St. Louis
56N	17W	20	St. Louis
56N	17W	21	St. Louis
56N	17W	28	St. Louis
56N	17W	29	St. Louis

1.3 Project Purpose

United Taconite has requested that Minnesota Power remove an existing 115 kV HVTL to accommodate United Taconite's plans to expand its tailings basin to southeast. The project (i.e., installation of 3.0 miles of HVTL) is needed to allow this existing line to be removed without degrading the area's high voltage transmission system.

In order to accommodate the future expansion, Minnesota Power will remove the portion of existing transmission line located in Sections 17, 20, and 29 of Township 56 North, Range 17 West. The area to be temporarily disturbed will be limited to within the existing MP right-of-way. After that portion of the line is removed, the area will be available for expansion of the tailings basin.

1.4 Sources of Information

Much of the information used in this Environmental Assessment is derived from documents prepared by Minnesota Power, including the HVTL Route Permit Application, January 16, 2015. Discussion of Electromagnetic Field (EMF) issues came primarily from the white paper developed by the Interagency Task Force led by the Minnesota Health Department, the National Institute for Environmental Health, and the World Health Organization. Additional information comes from earlier DOC environmental review documents in similar dockets, other state agencies, such as the Department of Natural Resources, and additional research. Firsthand information was gathered by site visits along the proposed line.

Environmental review is guided by the understanding that for a given proposed project and each alternative there shall be a thorough but succinct discussion of potentially significant adverse or beneficial effects generated, be they direct, indirect, or cumulative. Data and analyses shall be commensurate with the importance of the impact and the relevance of the information to a reasoned choice among alternatives and to the consideration of the need for mitigation measures; the environmental reviewer shall consider the relationship between the cost of data and analyses and the relevance and importance of the information in determining the level of detail of information to be prepared for the environmental review document. Less important material may be summarized, consolidated, or simply referenced.

For the MP 16 Line Relocation project issues of potential subsurface soil conditions and constructability, and there impact on route selection were raised during the application review and acceptance portion of the process. The need to gather further information (i.e., field data) was evaluated. For a more detailed discussion of this topic see **Appendix B**.

2.0 Regulatory Framework

Persons seeking to construct and operate a high voltage transmission line in Minnesota must seek permission(s) to do so from the Minnesota Public Utilities Commission (Commission).

2.1 Certificate of Need

No person may construct a large energy facility in Minnesota without a certificate of need from the Commission (Minn. Stat. 216B.243). A transmission line is a large energy facility if it (1) has a capacity of 200 kV or more and is greater than 1,500 feet in length, or (2) has a capacity of 100 kV or more with more than 10 miles of its length in Minnesota, or (3) has a capacity of 100 kV or more and crosses a state line (Minn. Stat. 216B.2421).

For the Minnesota Power 16 Line relocation project a Certificate of Need is not required because the project is not classified as a large energy facility under Minnesota Statutes Sections 216B.243 and 216B.2421, subdivision 2(3). While the project is a HVTL with a capacity of 100 kV or more, it is not more than 10 miles long in Minnesota and it does not cross a state line.

Therefore, the project is exempt from the Certificate of Need requirements.

2.2 Route Permit

Minnesota Statutes Section 216E.03, subd. 2, provides that no person may construct a HVTL without a route permit from the Commission. An HVTL is defined as a transmission line of 100 kV or more and greater than 1,500 feet in length in Minnesota Statutes Section 216E.01, subd. 4. The proposed transmission lines are HVTLs and therefore a route permit is required prior to construction.

The Applicant submitted the HVTL route permit application for the proposed MP 16 Line relocation pursuant to the provisions of the Alternative Permitting Process outlined in Minnesota Rules 7849.2900. The alternative permitting process includes environmental review and public hearings, and typically takes six months.

A copy of the HVTL route permit application, along with other relevant documents, can be reviewed at the Energy Facility Permitting web page at:

http://mn.gov/commerce/energyfacilities/Docket.html?Id=34059

The EERA staff is responsible for evaluating the HVTL route permit application and administering the environmental review process. The Commission is responsible for selecting the transmission lines routes and issuing the HVTL route permit.

Environmental Review

Environmental review under the alternative permitting process includes public information/scoping meetings and the preparation of an environmental review document, the Environmental Assessment (EA) (Minn. R. 7850.3700). The environmental assessment is a written document that describes the human and environmental impacts of the transmission line project (and selected alternative routes) and methods to mitigate such impacts.

The Deputy Commissioner of the Department of Commerce (Commissioner) determines the scope of the EA. The EA must be completed and made available prior to the public hearing.

2.3 Scoping Process

On February 27, 2015, Commission staff sent notice of the place, date and times of the Public Information and Scoping meeting to those persons on the General List maintained by the Commission, the agency technical representatives list and the project contact list.[1]

Additionally, mailed notices were sent to those persons on Minnesota Power's property owners list and to the local units of government. Notice of the public meeting was also published in the local newspapers.[2]

On Monday, March 23, 2015, Commission staff and EERA staff jointly held a public information/scoping meeting at the Eveleth City Hall in Eveleth. The purpose of the meeting was to provide information to the public about the proposed project, to answer questions, and to allow the public an opportunity to suggest alternatives and impacts (i.e., scope) that should be considered during preparation of the environmental review document.

One person attended the public information and scoping meeting; no individuals took the opportunity to speak on the record. A court reporter was present to document oral statements.

Since only one member of the public (a Ms. Julie Marinucci from the consulting firm Short, Elliott, Hendrickson) attended the meeting, an informal question and answer period was held in lieu of a formal presentation. A variety of topics were discussed during this conversation, including project description, environmental review and schedule.

Written comments were due no later than Friday, April 3, 2015.

Three written comments were received: two from state agencies (Department of Natural Resources and Department of Transportation) and one from the Applicant.

The Department of Natural Resources (MnDNR) in its comment letter acknowledged that the MnDNR had previously reviewed a request from the Applicant regarding state listed species.

[1] Notice of Public Information/Scoping Meeting, eDocket No. 20153-107733-01
[2] Notice of Public Information/Scoping Meeting (Newspaper and Landowner List). eDocket No. 21052-107515-01

The MnDNR's response to that request was that the proposed project would not be likely to negatively affect any know rare features.[3]

The Department of Transportation (MnDOT) in its letter recognized that it appears that the project area does not directly abut any state trunk highway; however, the agency did request that it be made aware of any changes to the proposed HVTL that may bring the project area close enough to occupy a portion of current MnDOT rights-of-way (ROW). Additionally, MnDOT requested that it be informed if the transportation and/or storage of structures have the potential to affect any MnDOT ROW.[4]

The Applicant took this opportunity to clarify an alignment question that was raised during deliberations at the Commission's meeting on application completeness; that is, why the proposed route did not follow a straighter line between the portions of the existing 16 Line. The Applicant explained in its letter that the area between the existing 16 Line and the proposed route is comprised of wetland and peat soils. Along the proposed route, the project's heavy angle structures are located in mineral soils. If the project's heavy angle structures were installed in wetland and peat soils rather than the mineral soils found along the proposed route, foundation costs as well as maintenance would increase. Additionally, the proposed route for the project follows existing linear infrastructure, specifically an existing railroad grade in sections 16, 17 and 21 T56N, R17W.[5]

No alternative routes were put forth during the EA scoping comment period.

Commission's Consideration of Alternatives

Under Minn. Rules, part 7850.3700, subp. 3, the scope of the environmental assessment must be determined by the Department within 10 days after close of the public comment period (March 21, 2013, in this case). However, Minn. Stat. § 216E.04, subd. 5, anticipates Commission input into the identification of routes, in addition to the applicant's proposed route, for inclusion in the environmental review of a project. Since the rule's 10-day timeline for determining the scope of the environmental assessment after the close of the public comment period constrains the Commission's ability to provide input, the Commission varied the 10-day timeline. The Commission extended the 10-day timeline to 40 days (which would be May 13, 2015), subject to the Executive Secretary's authority to seek additional time from the Commission.

In its briefing paper dated April 22, 2015 (eDocket No. 20154-109540-01), PUC staff recommended the inclusion of two additional alternatives (AR2 & AR3) to the proposed route for evaluation in the environmental assessment, stating that "all things being equal, the most direct route between two points should be the first route alternative[s] considered."

On April 30, 2015, the Commission at its regularly scheduled meeting considered what action, if any, the Commission should take in regards to the alternatives put forth during the scoping

[3] DNR Comment Letter, April 1, 2015. eDocket No. 20154-108834-01
[4] MnDOT Comment Letter, April 2, 2015. eDocket No. 20154-108882-01
[5] Minnesota Power Comment Letter, April 27, 2015. eDocket No. 20154-109708-01

process. The Commission elected to add the two alternative routes, AR2 and AR3, put forth by PUC staff for evaluation in the environmental assessment.[6]

Scoping Decision

After consideration of the comments, the Deputy Commissioner issued his Scoping Decision on May 19, 2015. A copy of this order is attached in the Appendix A. The items and issues bought forth during the scoping process, along with the typical HVTL routing impacts, were incorporated into the Scoping Decision.

2.4 Public Hearing

The Commission is required by Minn. Rule 7849.5710 subp 1, and Minn. Rule 7850.3800 subp 1, to hold a public hearing once the EA has been completed. It is anticipated that this hearing will be held in late October 2015, in the project area; the hearing will be conducted by an Administrative Law Judge (ALJ).

The hearing will be noticed separately and details can be found online at http://mn.gov/commerce/energyfacilities/Docket.html?Id=34059 Interested persons may comment on the EA at the public hearing. Persons may testify at the hearing without being first sworn under oath. The ALJ will ensure that the record created at the hearing is preserved and will provide the Commission with a report setting forth findings, conclusions, and recommendations on the merits of the proposed transmission line project applying the routing criteria set forth in statute and rule.

Comments received on the Environmental Assessment become part of the record in the proceeding, but EERA staff is not required to revise or supplement the EA document. A final decision on the route permit will be made by the Commission at an open meeting following the public hearing and filing of the ALJ's report.

2.5 Final Decision

Minnesota Statutes, section 216E.03, subdivision 7 identifies considerations that the Commission must take into account when designating transmission line routes, including minimizing environmental impacts, and minimizing conflicts with human settlement and other land uses. Minnesota Rules, part 7850.4100 lists 13 factors for the Commission to consider when making a decision on a Route Permit:

- A. Effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation and public services;
- B. Effects on public health and safety;
- C. Effects on land-based economies, including, but not limited to, agriculture, forestry, tourism and mining;
- D. Effects on archaeological and historic resources;

[6] Commission Order, Alternative Routes. May 14, 2015. eDocket No. 20155-110416-01

- E. Effects on the natural environment, including effects on air and water quality resources and flora and fauna;
- F. Effects on rare and unique natural resources;
- G. Application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity;
- H. Use or paralleling of existing ROW, survey lines, natural divisions lines and agricultural field boundaries;
- I. Use of existing large electric power generating plant sites;
- J. Use of existing transportation, pipeline and electrical transmission systems or ROWs;
- K. Electrical systems reliability;
- L. Costs of constructing, operating and maintaining the facility which are dependent on design and route;
- M. Adverse human and natural environmental effects which cannot be avoided; and
- N. Irreversible and irretrievable commitments of resources.

The EA addresses each of these factors by evaluating the potential impacts to individual components or "elements" of each factor. For example, effects on human settlement (the first factor in Minnesota Rules, part 7850.4100) are assessed by evaluating potential impacts to 12 different components or "elements" of human settlement including displacement, noise, property values, air quality, electronic interference, transportation and public services, environmental justice, socioeconomics, aesthetics, land use compatibility, cultural values, and recreation and tourism. Similarly, effects on the natural environment (the fifth factor in Minnesota Rules, part 7850.4100) from the proposed project are assessed by evaluating potential impacts to three distinct components or "elements" of natural environment including, water resources, vegetation, and wildlife. For each element, a number of "indicators"—data sources that provide an indication of potential impacts—are analyzed. For example, proximity to residences is used as one "indicator" of potential aesthetic impacts that residents may experience. Similarly, the evaluation of the water resources element of the natural environment relies on data about the acres and type of wetlands impacted by a proposed route. The acres of wetland impact are used as one "indicator" of potential impacts on water resources.

Route permits contain conditions specifying construction and system operation standards (see a sample Route Permit in **Appendix C**).

The commission must make specific findings that it has considered locating a route for a high-voltage transmission line on an existing high-voltage transmission route and the use of parallel existing highway right-of-way and, to the extent those are not used for the route, the commission must state the reasons.

At the time the commission makes a final decision on the permit application, the commission shall determine whether the EA and the record created at the public hearing address the issues identified in the scoping decision.

The commission shall make a final decision on a site permit or a route permit application within 60 days after receipt of the record from the hearing examiner. A final decision must be made within six months after the commission's determination that an application is complete. The commission may extend this time limit for up to three months for just cause or upon agreement of the applicant.

If issued a HVTL route permit by the Commission, Minnesota Power may exercise the power of eminent domain to acquire the land necessary for the project pursuant to Minnesota Statute 216E.12 and Minnesota Statute 117.

2.6 Other Permits

The Public Utilities Commission HVTL route permit is the only State permit required for routing of high voltage transmission lines, but other permits may be required for certain construction activities, such as river crossings. **Table 2** includes a list of potential permits that may be required for Minnesota Power Energy to complete this project.

Table 2. Potential Required Permits

Jurisdiction and Permit	Requirement
Federal	
USCOE, Clean Water Act, Section 404 Permit	Required if dredging and filling activities will occur within jurisdictional wetlands. If the proposed activities are not eligible for coverage under the General Permit or Letter of Permission, an Individual Permit will be obtained from the USCOE.
State	
MPUC, Route Permit	Required for any high voltage transmission line.
MnDNR, License to Cross Public Waters	Required if any work is necessary in public waters.
MnDOT, Utility Permit	Required if placing utilities on or across a Minnesota trunk highway right-of-way.
MPCA, NPDES/SDS General Stormwater Permit for Construction Activity	Required under the NPDES/SDS General Stormwater Permit for Construction Activity where construction activities will cause more than one acre of ground disturbance.
MPCA, Section 401 Water Quality Certification	If the USCOE authorizes the Project under its GP/LOP permitting program as expected, the MPCA waives its Section 401 Water Quality Certification authority.
Local	
Moving Permit (Hauling)	Required whenever legal dimensions and/or axle weights are exceeded per county regulations.
Oversize/Overweight Vehicle Permit	Required on all county highways. May be required to move over-width loads on county, township, or city roads.
Railroad Crossing Permit	Required if crossing a railroad.

Once the Commission issues a Route Permit, local zoning, building and land use regulations and rules are preempted per Minn. Statute 216E.10, subd 1. However, the Applicant is still required to obtain relevant permissions, such as road crossing permits.

2.7 Applicable Codes

The transmission line, regardless of route location, must meet all requirements of the National Electrical Safety Code (NESC) for High Voltage Transmission Lines. These standards are designed to protect human health and the environment. They also ensure that the transmission line and all associated structures are built from high quality materials that will withstand the operational stresses placed upon them over the expected lifespan of the equipment provided normal routine operational and maintenance is performed.

Utilities must comply with the most recent edition of the National Electric Safety Code, as published by the Institute of Electrical and Electronics Engineers, Inc., and approved by the American National Standards Institute, when constructing new facilities or reinvesting capital in existing facilities. See Minn. Statute 326B.35 and Minn. Rule 7826.0300 subp 1.

The NESC is a voluntary utility developed set of standards intended to ensure that the public is protected. The NESC covers electric supply stations and overhead and underground electric supply and communication lines, and is applicable only to systems and equipment operated by utilities or similar systems on industrial premises. For more information, go to standards.ieee.org/faqs/NESCFAQ.html#q1. The Rural Utilities Service provides leadership and capital to "upgrade, expand, maintain, and replace America's vast rural electric infrastructure." For more information, go to http://www.usda.gov/rus/electric/index.htm.

2.8 Issues Outside the Scope of the EA

The following issues will not be considered or evaluated in the EA:

- No build alternative.
- Issues related to project need, size, type, or timing.
- Any route alternative(s) not specifically identified in the scoping decision.
- The impacts of specific energy sources, such as carbon outputs from coal-generated facilities.
- The manner in which landowners are paid for transmission rights-of-way easements.

3.0 Proposed Project

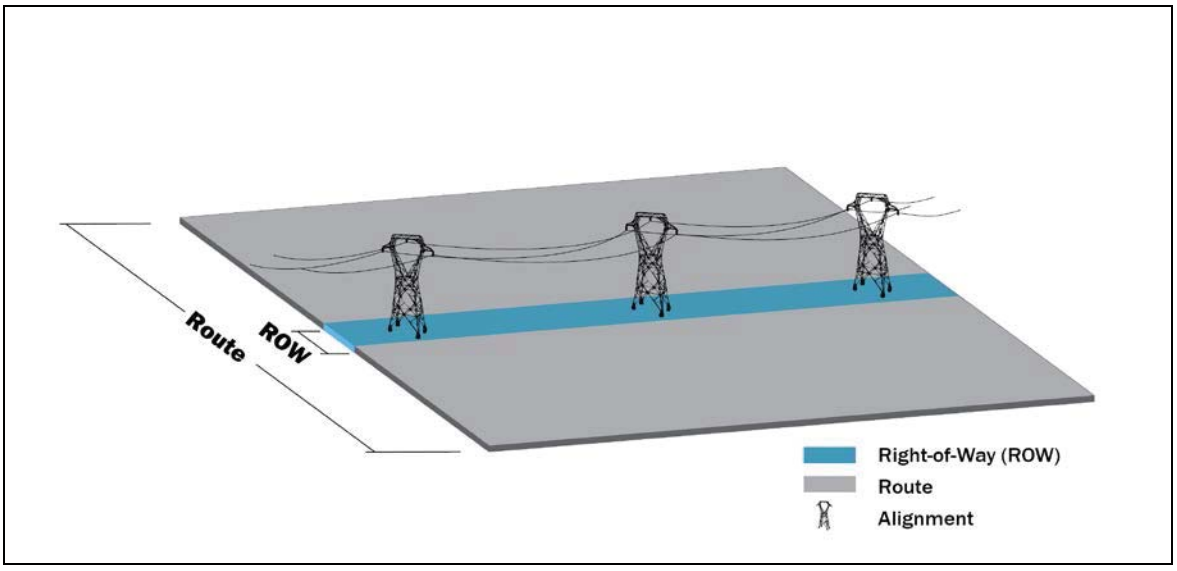
Minnesota Power proposes to construct an approximately 3.0-mile-long, 115 kV HVTL in St. Louis County. The project is located in St Louis County, south of Fayal Township and approximately four miles east of McDavitt Township.

In addition, three miles of existing transmission line will be taken out of service and removed. United Taconite requested that Minnesota Power remove the existing 115 kV HVTL (portion of the 16 Line) to accommodate United Taconite's plans to expand its tailings basin located south of Fayal Township. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 1.25 miles. The line would then proceed southwest for approximately 1.75 miles where it would connect to the existing 16 Line.[7]

Figure 2 illustrates the proposed HVTL replacement project on an aerial photograph.

3.1 Right-of-Way Requirements

When the Commission issues a Route Permit, the Commission approves a route, a route width, and an anticipated alignment within that route.



The transmission line must be constructed within the HVTL Route Permit's designated route and along the anticipated alignment unless subsequent permissions are requested and approved by the Commission.

[7] RPA at p 9

The applicable regulations allow the Applicant to request a route that is wider than the actual ROW needed for the transmission line. A "right-of-way" is defined in the regulations as "the land interest required within a route for the construction, maintenance, and operation of a high voltage transmission line."

A "route" is defined as "the location of a high voltage transmission line between two end points. A route may have a variable width of up to 1.25 miles within which a ROW for a high voltage transmission line can be located."

The Applicant has requested a route width of 500 feet and a right-of-way (ROW) width of 100 feet.[8]

Right-of-Way Acquisition

This project will require approximately 3.0 miles of new right-of-way. The evaluation and acquisition process would include title examination, initial owner contacts, survey work, document preparation and purchase. Most of the time, utilities are able to work with the landowners to address their concerns and an agreement is reached for the utilities' purchase of land rights.

In some instances, a negotiated settlement cannot be reached and the landowner may choose to have an independent third party determine the value of the rights taken. Such valuation is made through the utility's exercise of the right of eminent domain pursuant to Minn. Statute 117.

3.2 Technical Description

The proposed project would use H-Frame and Pole Angle structure types as appropriate.

All structures will meet or exceed clearance and strength requirements given in the 2012 edition of the National Electrical Safety Code (NESC). Illustrations of the proposed structure types are shown below. The specifications of these structures are included in **Table 3**.

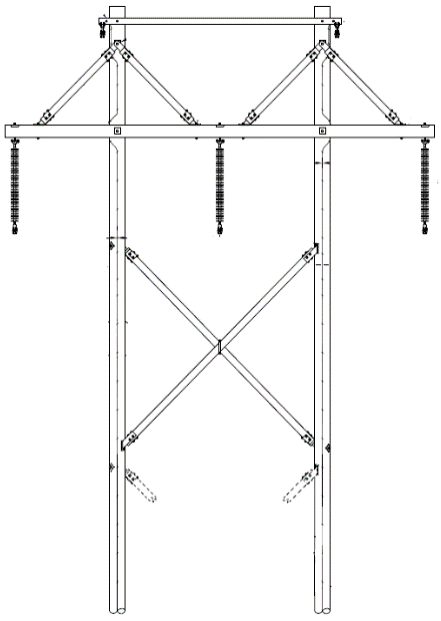
The proposed HVTL would be equipped with protective devices (circuit breakers and relays located in the substation where the transmission lines terminate) to safeguard the public if an accident occurs, such as a structure or conductor falling to the ground. The protective equipment would de-energize the transmission line should such an event occur. The facilities will be posted with signage to warn the public about the risk of coming into contact with the energized equipment. With implementation of safeguards and protective measures, the proposed project is not anticipated to result in adverse or significant impacts on public health and safety.

[8] RPA at p11

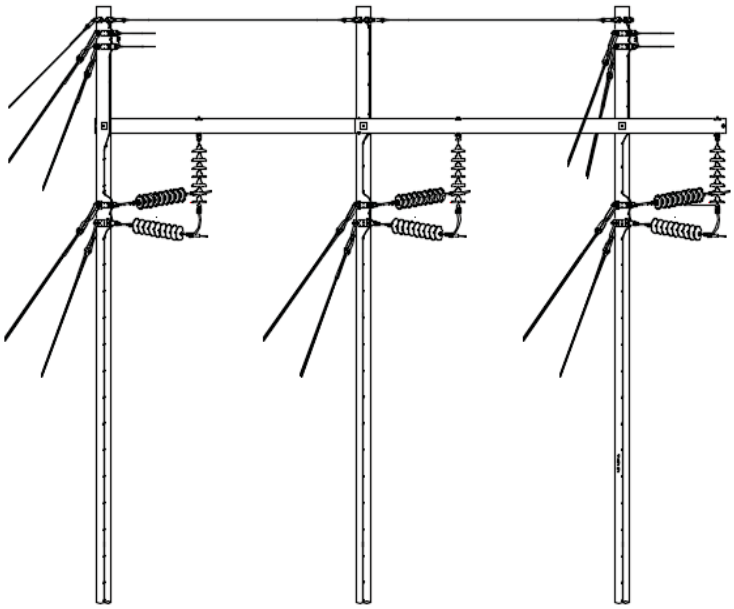
Table 3. Summary of Transmission Structures

Line Type	Structure Type	Structure Material	Typical ROW Width (feet)	Approximate Structure Height (feet)	Structure Base Diameter (inches)	Foundation Diameter (feet)	Span Between Structures (feet)
Single Circuit 115 kV	Angle Structures	Wood	100	Ranges from 60-75	Ranges from 16-32	Wood: direct embed	NA
Single Circuit 115 kV	H-Frame	Wood	100	Ranges from 60-75	Ranges from 16-32	Wood: direct embed	Ranges from 600-7 00

The structures will typically range in height from 60 to 75 feet, depending on the structure type and the terrain. The structures would be placed approximately 500 to 800 feet apart. The angle structures would be equipped with guy wires for support.



Typical H-Frame Structure



Typical Three Pole Angle Structure

3.3 Project Construction and Maintenance

Minnesota Power's proposed 3.0 miles of 115 kV HVTL will be constructed with H-Frame direct embedded wood structures. Monopole angle structures will also be used that will utilize suspension insulators and may require guying.

After land rights have been secured, landowners will be notified prior to the start of the construction phase of the project, including an update on the project schedule and other related construction activities.

The first phase of construction activities will involve survey staking of the transmission line centerline and/or pole locations, followed by removal of trees and other vegetation from the ROW. As a general practice, low-growing brush or tree species are allowable at the outer limits of the easement area. Taller tree species that endanger the safe and reliable operation of the transmission facility will be removed. In developed areas and to the extent practical, existing low growing vegetation that will not pose a threat to the transmission facility or impede construction may remain in the easement area, as agreed to during easement negotiations.

The NESC states that "vegetation that may damage ungrounded supply conductors should be pruned or removed." Trees beyond the easement area that are in danger of falling into the energized transmission line (danger trees) will be removed or trimmed to eliminate the hazard, based on the terms in the easement that is acquired. Danger trees generally are those that are dead, weak or leaning towards the energized conductors. In special circumstances, tree trimming agreements may be possible to minimize tree removal based on negotiations with individual landowners.

All biomass materials resulting from the clearing operations will be chipped on site and spread on the ROW, stacked in the ROW for use by the property owner, or removed and disposed of as agreed to with the property owner during easement negotiations.

The final survey staking of pole locations may again occur after the vegetation has been removed and just prior to the structure installation.

The second phase of construction will involve structure installation and stringing of conductor wire. During this phase, underground utilities are identified through the required One-Call process to minimize conflicts with the existing utilities along the routes.

If temporary removal or relocation of fences is necessary, installation of temporary or permanent gates would be coordinated with the landowner. During the construction process, it may be necessary for the property owner to remove or relocate equipment and livestock from the ROW.

Transmission line structures are generally designed for installation at existing grades. Therefore, structure sites will not be graded or leveled unless it is necessary to provide a reasonably level area for construction access and activities. If vehicle or installation equipment cannot safely

access or perform construction operations properly near the structure, minor grading of the immediate terrain may be necessary.

The Applicant will employ industry-specific best management practices (BMPs). BMPs address ROW clearance, erecting transmission line structures and stringing transmission lines. BMPs for each specific project are based on the proposed schedules for activities, prohibitions, maintenance guidelines, inspection procedures and other practices. In some cases these activities, such as schedules, are modified to incorporate BMP construction that will assist in minimizing impacts for sensitive environments. Any contractors involved in construction of the transmission line will be advised of these BMP requirements.[9]

The new structures are installed directly in the ground, by augering or excavating a hole typically 7 to 10 feet deep and 2 to 3 feet in diameter for each pole. Any excess soil from the excavation will be spread and leveled near the structure or removed from the site, if requested by the property owner or regulatory agency.

The new structures will then be set and the holes back-filled with the excavated material, native soil, or crushed rock. In poor soil conditions, a galvanized steel culvert is sometimes installed vertically with the structure set inside. The Applicant does not anticipate the use of concrete foundations, but if it were to be required, the size of the hole for concrete foundations depends largely on soil type. Based on the known soil types in northeastern Minnesota, it is anticipated that the average structure depth of a typical 65 foot long pole would be approximately 8.5 feet deep. Drilled pier foundations may vary from 4 to 8 feet in diameter. Concrete trucks are normally used to bring the concrete in from a local concrete batch plant.

After a number of new structures have been erected, the Applicant will begin to install the new static wire by establishing stringing setup areas within the ROW. Conductor stringing operations require brief access to each structure to secure the conductor wire to the insulators or to install shield wire clamps once final sag is established. Temporary guard or clearance structures are installed, as needed, over existing distribution or communication lines, streets, roads, highways, railways or other obstructions after any necessary notifications are made or permits obtained. This ensures that conductors will not obstruct traffic or contact existing energized conductors or other cables and also protects the conductors from possible damage.

Environmentally sensitive areas (e.g., wetlands) may require special construction techniques, which may vary according to conditions at the time of construction. During construction, impacts on wetland areas will be minimized by Minnesota Power to the extent possible. Additionally, Minnesota Power will use construction practices that help prevent soil erosion and will take measures to ensure that equipment fueling and lubricating will occur at a distance from waterways.

[9] RPA at p16

The principal operating and maintenance costs for transmission facilities are the costs of inspections and vegetation management. Inspection costs include 1 to 2 annual helicopter inspections, annual fixed wing patrol inspection, ground line inspections every 8 years, and pole climbing inspections as necessary. For wood structure HVTLs with voltages ranging from 115 kV through 230 kV, experience shows that the scheduled maintenance cost is approximately $585 per mile per year; pole climbing inspections are budgeted and scheduled as necessary.

Vegetation management is performed on a 7-year cycle at an approximate average annual cost of $480 per mile. Annual operating and maintenance costs for HVTLs in Minnesota and the surrounding states vary. Actual line-specific maintenance costs depend on the setting, the amount of vegetation management necessary, storm damage occurrences, structure types, materials used, and the age of the line.

Vegetation Removal and Management

The purpose of vegetation removal and management is to keep transmission facilities clear of tall growing trees, brush, and other vegetation that could grow close to the conductors, and to allow for construction vehicle access to and between structures.

BMPs attempt to limit ground disturbance during construction wherever possible. However, disturbance will occur during the normal course of work, which can take several weeks in any one location. As construction is completed, Minnesota Power will restore disturbed areas to their original condition to the maximum extent practicable. Right-of-way agents will attempt to contact each property owner after construction is completed to assess if any remaining damage has occurred as a result of the project. If damage has occurred to the property, Minnesota Power will fairly reimburse the landowner for the damages sustained that are not repaired or restored by Minnesota Power or its representatives.

In some cases, Minnesota Power may engage an outside contractor to restore the damaged property as nearly as possible to its original condition. Portions of vegetation that are disturbed or removed during construction of HVTLs will naturally reestablish to pre-disturbance conditions. Resilient species of common grasses and shrubs typically reestablish with few problems after disturbance. Areas with significant soil compaction and disturbance from construction activities along the proposed HVTL may require assistance in reestablishing the vegetation stratum and controlling soil erosion. Commonly used methods to control soil erosion and assist in reestablishing vegetation include re-seeding and mulching, erosion control blankets, silt fence installation, and minimizing soil disturbance during construction.

To avoid adversely impacting reptile and bird species, Minnesota Power will not use plastic mesh erosion control materials and will adhere to the MnDNR's wildlife friendly erosion control guidance.[10]

[10] RPA at p19

These erosion control and vegetation establishment practices are regularly used in construction projects and will be incorporated in the Applicant's construction plans. These construction techniques typically minimize long-term impacts that may result from the project. The Minnesota Noxious Weed Law (Minnesota Statutes Section 18.75-18.91) defines a noxious weed as an annual, biennial, or perennial plant that the Commissioner of Agriculture designates to be injurious to the public health, the environment, public roads, crops, livestock, or other property.

The Minnesota Department of Agriculture's Noxious & Invasive Weed Program assists local governments and landowners with resources for managing noxious and invasive weeds throughout Minnesota. Minnesota Power will attempt to limit the spread of noxious and invasive weeds by cleaning construction equipment before it enters the construction work area and using only invasive-free mulches, topsoil, and seed mixes. Permanent vegetation will be established in areas disturbed within the construction work area except in actively cultivated areas and standing water wetlands. Seed used will be purchased on a "Pure Live Seed" basis for seeding revegetation areas. The seed tags on the seed sacks will also certify that the seed is "Noxious Weed Free."[11]

Minnesota Power may use both herbicides and/or mechanical methods to control the spread of noxious weeds. Minnesota Power will only use herbicides approved by the U.S. Environmental Protection Agency and the State of Minnesota Department of Agriculture. These herbicides are to be applied by commercial pesticide applicators that are licensed by the Minnesota Department of Agriculture. If during post-construction monitoring of the restored right-of-way a higher density and cover of noxious weeds on the right-of-way is noted when compared to adjacent off right-of-way areas, Minnesota Power will obtain landowner permission and work to mitigate noxious weed concerns.

3.4 Project Implementation

The Applicant anticipates a first quarter 2016 in-service date. Construction would be expected to begin in the winter of 2015 (**Table 4**).

Table 4. Estimated Project Schedule

Project Task	Date
File Route Permit Application (Application) with the Commission	1st Quarter 2015
Route Permit Review Process Complete	3rd Quarter 2015
Begin Transmission Line Construction	4th Quarter 2015
In-Service Date	1st Quarter 2016

[11] RPA at p19

This schedule is based on information known as of the date of the application filing and upon planning assumptions that balance the timing of implementation with the availability of crews, material and other practical considerations. This schedule may be subject to adjustment and revision as further information is developed.

Project Costs

The Applicants have estimated that the installation of the new transmission line and removal of the existing transmission line would cost approximately $4.7 million (**Table 5**), depending on final route selection and mitigation.

Table 5. Estimated Project Costs

Project Item	Cost
Construction of 115 kV Transmission Line Facilities	$ 4,300,000
Removal of Existing 115 kV Line Facilities	$ 400,000
Total Project Cost	$ 4,700,000

4.0 Other Routes and Route Segments

In developing its proposed route, Minnesota Power rejected consideration of an alternative HVTL route due to the small geographical area involved and perceived engineering constraints.

The process for individuals to request that specific alternative routes, alternative route segments, and/or alignment modifications be included in the scope of the environmental review document was discussed at the public information and EA Scoping meeting.

No alternative routes, alternative route segments, and/or alignment modifications were put forth during the EA scoping period.

In the PUC staff's briefing paper on what action the Commission should take regarding route alternatives to be evaluated in the environmental assessment, PUC staff recommended the inclusion of two additional alternatives (AR2 & AR3) for evaluation in the environmental assessment.[12]

Further, PUC staff requested a more complete evaluation (characterization/classification) of the surficial and subsurface soil types and estimated costs of construction for all alternatives (see Appendix C).

On April 30, 2015, the Commission elected to add the two alternative routes, AR2 and AR3, put forth by PUC staff for evaluation in the environmental assessment.

This environmental assessment addresses the human and environmental impacts associated with the proposed transmission line and alternative routes AR-2 and AR-3 (as depicted in **Figure 3**).

Alternative Routes - Description

The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. All three routes (the Proposed, AR-2 and AR-3) share a common connection point to the existing MP 16 Line, a point on the east side of United Taconite's existing tailings basin (**Figure 4**).

Route alternative AR-2 proceeds southeast from this common point, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.10 miles and then it would proceed west for approximately 0.60 miles where it would again connect to the existing MP 16 Line.

Route alternative AR-3 proceeds southeast from this common point, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.30 miles and then it would proceed southwest for approximately 0.75 miles where it would connect to the existing MP 16 Line.

[12] Commission Staff Briefing Paper, April 22, 2015 (eDocket No. 20154-109540-01)

Irrespective of which route is selected, the same existing three-mile section of 115 kV transmission line would be taken out of service and removed.

The route width used for all routes would be 500-feet and the ROW width would be 100 feet, to allow for adequate flexibility in developing a final alignment.

The same structure (H-Frame and Monopole Angle) configuration options are anticipated to be utilized regardless of route selection. The transmission line for all routes would be designed to meet or exceed relevant local and state codes including the National Electric Safety Code (NESC) and Minnesota Power standards. Appropriate standards will be met for construction and installation, and applicable safety procedures will be followed during and after installation.

Certain aspects of this project, such as ROW acquisition, construction procedures, operation and maintenance, vegetation management, and schedule, are not specific to the route selected. These characteristics are covered in Chapter 3 of the EA and are detailed in the RPA.

5.0 Potential Impacts of the Proposed Route

The construction of a transmission line involves both short and long-term impacts. Some impacts may be avoidable; some may be unavoidable but can be mitigated; others may be unavoidable and unable to be mitigated. In general, impacts can be avoided and mitigated by prudent routing – i.e., by placing the transmission line away from human and environmental resources – and by design and construction measures.

Short-term impacts of the project are anticipated to be similar to those of a construction project – noise, dust, soil disturbance and compaction, clearing of vegetation. The project would require the use of equipment to clear land, place structures, and string conductors. The impacts of this equipment use are anticipated to be fairly independent of the route selected for the project. They would occur wherever the project is located; thus, they are not mitigated by prudent routing. However, these impacts can be mitigated by construction measures, for example using best management practices to control soil erosion and minimizing the removal of vegetation.

Long-term impacts can exist for the life of the project and may include aesthetic impacts, health impacts, economic impacts, land use restrictions and impacts to flora and fauna. Long-term impacts are generally not well mitigated by construction measures – these impacts do not flow from how the project is constructed but rather where it is placed and its operational characteristics over time. Long-term impacts can be mitigated by prudent routing and design measures. Thus, long-term impacts can be avoided or mitigated, to a greater or lesser extent, based on the route, alignment, and pole placements for the project.

Through the HVTL route permit the Commission can require route permit applicants to use specific techniques to mitigate impacts or require certain mitigation thresholds or standards to be met through permit conditions.

This section discusses the resources, potential impacts, and mitigation measures associated with the proposed MP 16 Line Relocation project. Section 6 of this EA discusses and compares the potential impacts and mitigation measures associated with the two alternative routes.

Potential Impacts and Regions of Influence

Potential impacts to human and environmental resources are analyzed in this EA within specific spatial bounds or regions of influence (ROI). The ROI for each resource is the geographic area within which the project may exert some influence; it is used in this EA as the basis for assessing the potential impacts to each resource as a result of the project. Regions of influence may vary from project to project given the differences in the setting (i.e., natural and/or built environments) and will vary between the resources being analyzed (from the Human Settlement factor to the Archaeological/Historic Resources factor). The ROI for resources analyzed in this EA are summarized in **Table 6**.

The ROI for most human and environmental resources is the transmission line ROW. Resources within the ROW could be impacted by the construction and operation of the project. For

example, soils could be compacted; trees could be removed. Other resources may be impacted at a greater distance from the project. In this EA, the following ROI was used for these resources:

- **Fifteen hundred feet.** A distance of 1,500 ft. from the anticipated alignment for the project was used as the ROI for analyzing potential Human Settlement (aesthetic and property value) impacts. Impacts may extend outside of a transmission line ROW, but are anticipated to diminish relatively quickly such that potential impacts outside of this distance would be minimal.

- **Right-of-way**. The ROW width (in this case 100 feet) or 50 feet either side of the anticipated alignment for the project was used as the ROI for analyzing potential impact to those resources which potentially could be directly impacted. These include: Human Settlement (Displacement), Land-Based Economies (Agriculture, Forestry, and Mining), Public Health and Safety (Electric and Magnetic Fields, and Implantable Medical Devices), and Natural Environment (Water Resources, Soils, Flora, Fauna).

- **Route Width**. The route width (in this case 500 feet) or 250 feet either side of the anticipated alignment for the project was used as the ROI for analyzing potential impact to those resources which potentially could be indirectly impacted, or whose impact may be felt outside of the Applicant's easement. These include: Human Settlement (Noise, Electronic Interference, and Zoning and Land Use Compatibility), and Public Health and Safety (Stray Voltage and Induced Voltage).

- **One mile.** A distance of up to one mile from the project was used as the ROI for analyzing potential impacts to Archaeological and Historic resources and to Rare and Unique Species.

  Direct impacts to archaeological and historic resources are anticipated to occur, if at all, within the ROW. However, indirect impacts may extend beyond the ROW. For example, a historic resource may be impacted by a transmission line near, but not directly next to, the resource. Direct impacts to rare habitats are anticipated to occur, if they occur, within the ROW. However, indirect impacts to rare and unique species may extend beyond the ROW, particularly for wildlife species. Wildlife may move throughout a project area and may be impacted by limitations on their movement and their ability to access cover, food, and water.

- **Project area.** The project area, defined generally as the county through which the project passes, was used as the ROI for analyzing potential impacts to Human Settlement (Cultural Values, Socioeconomics, Public Utilities, Airports, and Emergency Services), Land-Based Economies (Tourism and Recreation), and Public Health and Safety (Air Quality). These are resources for which impacts may extend throughout communities in the project area.

Table 6. Regions of Influence for Human and Environmental Resources

Type of Resource	Specific Resource / Potential Impact to Resource	Region of Influence (ROI)
Human Settlements	Displacement	Right-of-Way
	Aesthetics, Properties Values	1,500 feet
	Noise, Electronic Interference, Zoning and Land Use Compatibility	Route Width
	Socioeconomics, Cultural Values, Public Utilities, Airports, Emergency Services	Project Area
Public Health and Safety	Stray Voltage, Induced Voltage	Route Width
	Electric and Magnetic Fields, Implantable Medical Devices	Right-of-way
	Air Quality	Project Area
Land-Based Economies	Agriculture, Forestry, Mining	Right-of-Way
	Tourism and Recreation	Project Area
Archaeological and Historic Resources	---	One Mile
Natural Environment	Water Resources, Soils, Flora, Fauna	Right-of-Way[13]
Rare and Unique Species	---	One Mile

[13] Avian species can move easily throughout the project area and are susceptible to collision with transmission line conductors. Thus, impacts to avian species will be considered and discussed with a ROI larger than the right-of-way.

5.1 Description of Environmental Setting

The Minnesota Department of Natural Resources (MnDNR) and the U.S. Forest Service have developed an Ecological Classification System (ECS) for ecological mapping and landscape classification. There are eight levels of ECS units in the United States. Map units for six of these levels occur in Minnesota: Provinces, Sections, Subsections, Land Type Associations, Land Types, and Land Type Phases.

The project is located in St. Louis County, Minnesota, south of the cities of Eveleth and Leonidas; this area lies within the *Laurentian Mixed Forest Province* under the ECS. This classification extends from northern Minnesota, Wisconsin, and Michigan, southern Ontario, and the less mountainous portions of New England.

In Minnesota, this Province covers a little more than 23 million acres (9.3 million hectare) of the northeastern part of the state and is characterized by broad areas of conifer forest, mixed hardwood and conifer forests, and conifer bogs and swamps. The landscape ranges from rugged lake-dotted terrain with thin glacial deposits over bedrock, to hummocky or undulating plains with deep glacial drift, to large, flat, poorly drained peatlands.

Based on U.S. Geological Survey topographic maps, the project will be located in an area whose topography has been significantly altered by mining activities.

The project lies within the ECS *Tamarack Lowlands Subsection* of the Northern Minnesota Drift and Lake Plains Section, near the transition between the St. Louis Moraines and Toimi Uplands Subsections. The Tamarack Lowlands Subsection is characterized by level to gently rolling topography. The largest landform is a lake plain. Around the edges of the old glacial lake is a till plain (Aurora Till Plain) formed in Superior lobe sediments. There is also a small piece of end moraine north of Sandy Lake that is related to the St. Louis moraines. The most common forest communities include lowland hardwoods and conifers. Additionally, northern hardwood and aspen-birch forests were common on the other portions of this region. Presently, much of the land is in public ownership. Forestry and tourism, along with some agriculture are the most common land uses.

This Section has high relief, reflecting the rugged topography of the underlying bedrock. The upland vegetation is remarkably uniform relative to that of other sections in the Laurentian Mixed Forest Province, consisting mostly of fire-dependent forests and woodlands. Forests with red and white pine were widespread in the past, mixed with aspen, paper birch, spruce, and balsam fir; much of the pine was cut in the late 1800s and early 1900s, leaving forests dominated mostly by aspen and paper birch. Jack pine forests are present on droughty ridges and bedrock exposures, as well as on local sandy outwash deposits.

The underlying geology and topography near Eveleth and Leonidas have been altered over time as a result of mining operations. Further, the surface topography and natural drainage ways have been impacted by the man-made development of public infrastructure (e.g., buildings, roads).

The northern forest habitats and associated wetlands of this Section support bald eagles, Canada lynx, spruce grouse, American bitterns, bobolinks, Connecticut warblers, gray jays, northern goshawks, ospreys, trumpeter swans, and northern brook lampreys.

5.2 Socioeconomic

According to the 2012 Census data, St. Louis County is 93.0 percent Caucasian; minority groups in the area constitute a very small percentage of the total population, averaging 7 percent in the county and between 2 and 5.5 percent in cities near the project.[14]

Approximately 24 to 30 workers will be required by Minnesota Power for transmission line construction over an approximately 5 month time period.

The proposed route does not contain disproportionately high minority populations or low-income populations. Population and economic characteristics based on the 2012 U.S. Census are presented in **Table 7.**

There will be short-term impacts to community services as a result of construction activity and an influx of contractor employees during construction of the various segments of the project. Both utility personnel and contractors will be used for construction activities. The communities near the project should experience short-term positive economic impacts through the use of the hotels, restaurants and other services by the various workers.

Table 7. Population and Economic Profile, 2012

Location	Population	Minority Population (Percent)	Caucasian Population (Percent)	Median Household Income	Percentage of Individuals Below Poverty Level
State of Minnesota	5,344,861	13.1	86.9	57,243	10.6
St. Louis County	200,255	7.0	93.0	44,941	15.1
Gilbert	1,799	1.4	98.6	45,292	13.2

[14] http://quickfacts.census.gov/qfd/states/27/27137.html

Eveleth	3,718	5.5	94.5	30,239	18.2
Leonidas	55	2.0	98.0	19,167	14.3

Source: RPA and http://www.city-data.com/

It is not expected that additional permanent jobs will be created by the project. The construction activities will provide a seasonal influx of economic activity into the communities during the construction phase, and materials such as concrete may be purchased from local vendors. Long-term beneficial impacts from the project include increased local tax base resulting from the incremental increase in revenues from utility property taxes and extended mining activities.

Potential Impacts

Socioeconomic impacts resulting from the project will be primarily positive with an influx of wages and expenditures made at local businesses during the construction of the project, increased tax revenue and increased opportunities for business development.

Short-term impacts to existing socioeconomic resources would be relatively minor. The project construction would not cause permanent impacts to leading industries within the project area.

The relatively short-term nature of the project construction and the number of workers who would be hired from outside of the project area should result in short-term positive economic impacts in the form of increased spending on lodging, meals and other consumer goods and services. It is not anticipated that the project would create new permanent jobs during construction, but would create temporary jobs that would provide a short-term influx of income to the area.

If local contractors are used for portions of the construction, total wages and salaries paid to contractors and workers in St. Louis County would contribute to the total personal income of the region. Additional personal income would be generated for residents in the county and the state by circulation and recirculation of dollars paid out by the applicant as business expenditures and state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies and other products and services would benefit businesses in the counties and the state. Indirect impact may occur through the increased capability of the applicant to supply energy to commercial and industrial users, which would contribute to the economic growth of the region.

There is no indication that any minority or low-income population is concentrated in any one area of the project, or that the transmission line would cross through an area occupied primarily by any minority group.

Long-term beneficial impacts to the county's tax base, as a result of the construction and operation of the transmission line, would be the incremental increase in revenue from utility property taxes which is based on the value of the project. The continued availability of reliable

power in the area would have a positive effect on local businesses and the quality of service provided to the general public.

Property Values

Large electric generation facilities have the potential to impact property values. Because property values are influenced by a complex interaction between factors specific to each individual piece of real estate as well as local and national market conditions, the effect of one particular project on the value of one particular property is difficult to determine.

One of the first concerns of many residents near existing or proposed transmission lines is how the proximity to the line could affect the value of their property. Research on this issue does not identify a clear cause and effect relationship between the two. Rather, the presence of a transmission line becomes one of several factors that interact to affect the value of a particular property.

In the Final Environmental Impact Statement (EIS) on the Arrowhead-Weston Electric Transmission Line Project, the Wisconsin Public Service Commission addressed the issue of property value changes associated with high voltage transmission lines[15]. This document looked at approximately 30 papers, articles and court cases covering the period from 1987 through 1999.

> *In general there are two types of property value impacts that can be experienced by property owners affected by a new transmission line. The first is a potential economic impact associated with the amount paid by a utility for a right-of-way (ROW) easement. The second is the potential economic impact involving the future marketability of the property.*
>
> *However, substantial differences may exist between people's perceptions about how they would behave and their actual behavior when confronted with the purchase of property supporting a power line.*
>
> *The presence of a power line may not affect some individual's perceptions of a property's value at all. These people tend to view power lines as necessary infrastructure on the landscape, similar to roads, water towers and antenna. They generally do not notice the lines nor do they have strong feelings about them.*

The Final EIS provides six general observations from the studies it evaluated. These are:

- The potential reduction in sale price for single family homes may range from 0 to 14 percent.

[15] Final Environmental Impact Statement , Arrowhead –Weston Electric Transmission Line Project, Volume I, Public Service Commission of Wisconsin Docket 05-CE-113, October 2000, pg 212-215

- Adverse effects on the sale price of smaller properties could be greater than effects on the sale price of larger properties.
- Other amenities, such as proximity to schools or jobs, lot size, square footage of a house and neighborhood characteristics, tend to have a much greater effect on sale price than the presence of a power line.
- The adverse effects appear to diminish over time.
- Effects on sale price are most often observed for property crossed by or immediately adjacent to a power line, but effects have also been observed for properties farther away from the line.
- The value of agricultural property is likely to decrease if the power line poles are placed in an area that inhibits farm operations.

Later, the Final EIS stated, "In coastal states, such as California and Florida, the decrease in property values can be quite dramatic; in states within the Midwest (Minnesota, Wisconsin and the Upper Peninsula of Michigan), the average decrease appears to be between 4 and 7 percent."

Finally, the EIS succinctly summarizes the dilemma in its closing paragraph which stated, "It is very difficult to make predictions about how a specific transmission line will affect the value of specific properties."

Based on the research that has been ongoing since at least the 1950s, several generalizations about the effect of transmission lines on property values can be made:[16]

- Studies have found a potential reduction of sale price for single-family homes of between 0 to 14 percent. Studies conducted in the upper Midwest (Minnesota, Wisconsin, and the Upper Peninsula of Michigan) have shown an average decrease of 4 to 7 percent.
- Although proximity to a transmission line does not appear to affect appreciation of a property, it can sometimes result in increased selling time.
- Property characteristics such as the neighborhood, proximity to schools, lot size, square footage of the house, and other amenities, tend to exert a greater effect on sales place than the presence of a power line.
- High-value properties are more likely than lower-value properties to experience a reduction in sales price.
- The sales price of smaller properties could be more adversely affected than for larger properties.
- For upgrade projects, the level of opposition may affect the size and duration of any reduction in sales price.
- Adverse effects on property prices tend to be greatest immediately after a new transmission line is built and diminish over time.

[16] Final Environmental Impact Statement , Arrowhead –Weston Electric Transmission Line Project, Volume I, Public Service Commission of Wisconsin Docket 05-CE-113, October 2000, pg 212-215

- The sales price for properties crossed by or immediately adjacent to a transmission line appear to be more adversely affected than prices for homes that are not adjacent to the transmission line right-of-way or are greater than 200 feet from the transmission line right-of-way.
- Mitigation measures such as setback distance, landscaping and integration of the right-of-way into the neighborhood, and visual and noise shielding have been shown to reduce or eliminate the impact of transmission structures on sales price.
- Impacts to the value of agricultural property can be reduced by placing structures to minimize disruption to farm operations.[17]

Interviews with residents along existing transmission lines show that a high proportion of residents were aware of the lines at the time they purchased their home and between one-half and three-fourths expressed concerns about the lines. The concerns were related to health effects, aesthetics, and effects on property values. Despite the concerns expressed, 67 to 80 percent of survey respondents with negative feelings about transmission lines reported that their decision to purchase the property and the price they offered to pay was not affected by the lines.[18]

Although results of the studies have not been able to provide a basis for accurately predicting the effect of a particular transmission line on a particular property, researchers have attributed the effects of HVTLs on property values to an interaction between five factors:[19]

- Proximity to the transmission towers and lines
- The view of the towers and lines
- Size and type of HVTL structures
- Appearance of easement landscaping
- Surrounding topography

Federal Housing Administration Regulations

The Federal Housing Administration (FHA) provides mortgage insurance on home loans made by FHA-approved lenders throughout the United States. In order to qualify for FHA mortgage insurance, a property must go through an appraisal and property condition assessment performed by an FHA-qualified appraiser. FHA qualified underwriters and appraisers are responsible for adhering to current the policies contained in the FHA's *Homeownership Center (HOC) Reference Guide.* With respect to overhead HVTLs, FHA guidance requires appraisers to review properties under consideration for FHA loans for presence of utility easements. The US Department of Housing and Economic Development provides the following guidance:

[17] Adapted from Wisconsin Public Service Commission, June 2001. *Environmental Impacts of Transmission Lines*. http://psc.wi.gov/thelibrary/publications/electric/electric10.pdf, p. 17.
[18] Chalmers, James A. and Frank A. Voorvaart. "High-Voltage Transmission Lines: Proximity, Visibility, and Encumbrance Effects." *The Appraisal Journal.* Summer, 2009. http://www.analysisgroup.com/uploadedFiles/Publishing/Articles/2009_HVTLs_and_Property_Values.pdf
[19] Pitts, Jennifer M. and Thomas O. Jackson. 2007. "Power Lines and Property Values Revisited." *The Appraisal Journal. Fall, 2007.*

- *The appraiser must indicate whether the dwelling or related property improvements is located within the easement serving a high-voltage transmission line, radio/TV transmission tower, cell phone tower, microwave relay dish or tower, or satellite dish (radio, TV cable, etc).*
- *If the dwelling or related property improvement is located within such an easement, the DE Underwriter must obtain a letter from the owner or operator of the tower indicating that the dwelling and its related property improvements are not located within the tower's (engineered) fall distance in order to waive this requirement.*
- *If the dwelling and related property improvements are located outside the easement, the property is considered eligible and no further action is necessary. The appraiser, however, is instructed to note and comment on the effect on marketability resulting from the proximity to such site hazards and nuisances*.[20]

Mitigative Measures

Socioeconomic impacts resulting from construction activities associated with the project would be primarily positive with an influx of wages and expenditures made at local businesses during the project construction. Mitigative measures are not necessary.

In the matter of property values (for those properties receiving an easement) potential impact would typically be a negotiated settlement in an easement agreement between the Applicant and the landowner.

Locating the line away from homes to the extent possible and using line design and landscaping to minimize visual intrusions from the line can be used to minimize impacts to property values from the transmission line.

The presence of an HVTL easement on a property does not preclude qualification for FHA mortgage insurance, although the location of an easement on the property does require further documentation than would be required on properties without such easements.

5.3 Displacement

The Applicant does not anticipate that any existing structures along the proposed alignment would fail to meet the NESC safety codes; the proposed project will not require displacement of residences or commercial businesses.

Construction of the proposed HVTL is primarily located in open wetland areas and wetlands adjacent to railroad tracks. A small portion of the proposed HVTL route (1.6 acres) crosses an area zoned residential. **Table 8** summarizes the number of residences located within the proposed ROW and within 1,500 feet of the proposed route.

[20] U.S. Department of Housing and Urban Development. *Is a Property eligible for FHA if there are overhead or high voltage power lines nearby?* http://portalapps.hud.gov/FHAFAQ/controllerServlet?method=showPopup&faqId=1-6KT-2009

Table 8. Proximity to Residential and Non-residential Buildings

Structure Type	Proposed Route	Number of Structures within Various Distances	
		Within ROW	Within 1,500 feet of Proposed Route
Residence	115 kV Route	0	0
Commercial Structure	115 kV Route	0	0

The nearest structure to the Proposed Route is a dwelling located approximately 1,950 feet from the Proposed Route (**Figure 5**).

Potential Impacts

Displacement of residential homes or businesses is not anticipated. Additionally, there are no residential or commercial facilities within the proposed route or anticipated ROW that could be impacted by the FHA issues discussed above (i.e., "fall zone" of a structure).

Mitigative Measures

Since no relocations would occur, no mitigative measures are required.

HVTL permits issued by the Commission anticipate that the right-of-way will generally conform to the anticipated alignment described in the permit, unless changes are requested by individual landowners or unforeseen conditions are encountered. Any alignment modifications within the designated route shall be located so as to have comparable overall impacts relative to the factors in Minn. Rules, part 7850.4100, as does the alignment identified in the HVTL permit, and shall be specifically identified and documented in and approved as part of the plan and profile review required by said permit.

5.4 Anticipated Noise Impacts

Noise is measured in units of decibels (dB) on a logarithmic scale. The A weighted decibel (dBA) scale corresponds to the sensitivity range for human hearing. For example, a noise level change of 3 dBA is barely perceptible to average human hearing while a 5 dBA change in noise level is noticeable. Two sources of noise would be associated with the completed Project: conductors and substations.

Land use activities associated with residential, commercial, and industrial land are grouped together into Noise Area Classifications (NAC). Residences, which are typically considered

sensitive to noise, are classified as NAC 1. Each NAC is assigned both daytime (7 a.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) noise limits for land use activities within the NAC. Table 8 shows the Minnesota Pollution Control Agency (MPCA) daytime and nighttime limits in dBA for each NAC (**Table 9**). The limits are expressed as a range of permissible dBA within a 1-hour period; L50 is the dBA that may be exceeded 50 percent of the time within an hour, while L10 is the dBA that may be exceeded 10 percent of the time within 1 hour.

Typical noise sensitive receptors along the route would include residences, churches, and schools; however, most of the land use along the route is rural agricultural land. Current average noise levels in these areas are typically in the 30 to 40 dBA range and are considered acceptable for residential land use activities. Ambient noise in rural areas is commonly made up of rustling vegetation and infrequent vehicle pass-bys. Higher ambient noise levels, typically 50 to 60 dBA, would be expected near roadways, urban areas and commercial and industrial properties in the project area. Conductor and substation noise would comply with state noise standards.

Noise concerns for this project may be associated with both the construction and operation of the energy transmission system. Construction noise is expected to occur during daytime hours as the result of heavy equipment operation and increased vehicle traffic associated with the transport of construction personnel to and from the work area. Any exceedences of the MPCA daytime noise limits would be temporary in nature and no exceedences of the MPCA nighttime noise limits are expected for this project.

Table 9. MPCA Daytime and Nighttime Noise Limits

Noise Area Classification	Daytime		Nightime	
	L50	L10	L50	L10
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

Operational noise would be associated with the transmission conductors and transformers at substations that may produce audible noise under certain operational conditions. The level of noise depends on conductor conditions, voltage level and weather conditions. Noise emission from a transmission line occurs during heavy rain and wet conductor conditions. In foggy, damp or rainy weather conditions, transmission lines can create a subtle crackling sound due to the small amount of electricity ionizing the moist air near the wires. During heavy rain, the general background noise level is usually greater than the noise from a transmission line and few people are in close proximity to the transmission line in these conditions. For these reasons, audible noise is not noticeable during heavy rain. During light rain, dense fog, snow and other times when there is moisture in the air, the proposed transmission lines may produce audible noise higher than rural background levels. During dry weather, audible noise from transmission lines is an imperceptible, sporadic crackling sound.

The nearest receptor to the proposed project is a dwelling located approximately 2,200 feet from the anticipated alignment. Noise levels produced by a 115 kV transmission line are generally less than outdoor background levels and are therefore not usually audible.

The EPRI "Transmission Line Reference Book, 345kV and Above", Chapter 6, provides empirically-derived formula for predicting audible noise from overhead transmission lines. Computer software produced by the Bonneville Power Administration (BPA) is also frequently used to predict the level of audible noise from power transmission lines that is associated with corona discharge. Audible noise is predicted for dry and wet conditions, with wet conditions representing a worst case. These procedures are considered to be reliable and represent International best practice.

Computer modeling performed by Applicant using the BPA 1977 software under the worst case wet conditions scenario indicated that the audible L5 and L50 noise levels (discussed above) measured at the edge of the right-of-way would be at 18.89 (H-frame) and 15.39 (H-frame) dBA, respectively, well below the MPCA nighttime L50 limit of 50 dBA for Noise Area Classification 1.

These findings are shown in **Table 10**.

Table 10. Predicted Audible Noise from HVTL

Structure Type	Noise L5 (Edge of ROW) (Decibels A- weighted)	Noise L50 (Edge of ROW) (Decibels A-weighted)
115kV H-Frame	18.89	15.39

Potential Impacts

Noise levels produced by 115 kV transmission lines are usually not audible and have not been demonstrated to approach even the most stringent state standards. Additionally, the majority of the project is located adjacent to railways, and mining activity; sounds from these sources would overpower any project-related noise emissions. Noise impacts from the project are not anticipated.

Mitigative Measures

The Applicant has stated that in an effort to mitigate noise levels associated with construction activities, work would be limited to daytime hours between 7 a.m. and 10 p.m. on weekdays. Occasionally there may be construction outside of these hours or on a weekend if the company is required to work around customer schedules, line outages, or has been significantly impacted due to other factors. Heavy equipment would also be equipped with sound attenuation devices such as mufflers to minimize the daytime noise levels.

No mitigation measures are required for the operational phase of the line as operational noise levels are not predicted to exceed the state noise limits.

5.5 Radio and Television Interference

Corona on transmission line conductors can generate electromagnetic noise at frequencies at which radio and television signals are transmitted. This noise can cause interference (primarily with AM radio stations and the video portion of TV signals) with the reception of these signals depending on the frequency and strength of the radio and television signal. However, this interference is often due to weak broadcast signals or poor receiving equipment.

The most significant factor with respect to radio and television interference is not the magnitude of the transmission line induced noise, but how the transmission line induced noise compares with the strength of the broadcast signal. Very few radio noise problems have resulted from existing 115 kV transmission lines, as broadcast signal strength within a radio station's primary coverage area is great enough that adequate signal to noise ratios are maintained.

If radio interference from transmission line corona does occur with AM radio stations presently providing good reception, satisfactory reception can be obtained by appropriate modification of (or addition to) the receiving antenna system.

Interference with FM broadcast station reception is generally not a problem because:

- corona generated radio frequency noise currents decrease in magnitude with increasing frequency and are quite small in the FM broadcast band (88-108 megahertz (MHz)), and
- the excellent interference rejection properties inherent in FM radio systems make them virtually immune to amplitude type disturbances.

A two-way mobile radio located immediately adjacent to and behind a large metallic structure (such as a steel tower) may experience interference because of signal blocking effects. Movement of either mobile unit so that the metallic structure is not immediately between the two units should restore communications. This would generally require a movement of less than 50 feet by the mobile unit adjacent to a metallic tower. Noise in the frequency range of cellular type phones is almost non-existent and the technology used by these devices is superior to that used in two-way mobile radio.

As in the case with AM radio interference, corona-generated noise could cause interference with TV picture reception because the picture is broadcast as an AM signal. The level of interference depends on the TV signal strength for a particular channel (TV audio is an FM signal that is typically not impacted by transmission line radio frequency noise).

Due to the higher frequencies of the TV broadcast signal (54 MHz and above), 115 kV transmission lines seldom result in reception problems within a station's primary coverage area. In the rare situation that the proposed transmission line would cause TV interference within a

broadcast station's primary coverage area where good reception is presently obtained, Xcel Energy has stated that it would work with the affected party to correct the problem. Usually any reception problem can be corrected with the addition of an outside antenna.

Mitigative Measures

No interference issues are anticipated with this project, however, should such interferences be identified, the Applicant would be required to resolve the problem as a condition of the HVTL Route Permit.

5.6 Aesthetics

Aesthetic, or visual resources, are generally defined as the natural and built features of a landscape that may be viewed by the public and contribute to the visual quality and character of an area. Aesthetic resources form the overall impression that an observer has of an area or its landscape character.

Distinctive landforms, water bodies, vegetation, and human-made features that contribute to an area's aesthetic qualities are elements that contribute to an area's visual character. Visual quality is generally defined as the visual significance or appeal of a landscape based on cultural values and the land scape's intrinsic physical elements.

Visual sensitivity is a measure of viewer interest and concern for the visual quality of the landscape and potential changes to it. Visual sensitivity is determined based on a combination of viewer sensitivity and viewer exposure. Viewer sensitivity varies for individuals and groups depending on the activities viewers are engaged in, their values and expectations related to the appearance and character of the landscape, and their potential level of concern for changes to the landscape. High viewer sensitivity is typically assigned to viewer groups engaged in: recreational or leisure activities; traveling on scenic routes for pleasure or to or from recreational or scenic areas; experiencing or traveling to or from protected, natural, cultural, or historic areas; or experiencing views from resort areas or their residences.

Low viewer sensitivity is typically assigned to viewer groups engaged in work activities or commuting to or from work. Viewer exposure varies for any particular view location or travel route depending on the number of viewers and the frequency and duration of their views. Viewer exposure would typically be highest for views experienced by high numbers of people, frequently, and for long periods. Other factors, such as viewing angle and viewer position relative to a feature or area, can also be contributing factors to viewer exposure.

Potential Impacts

The existing landscape character provides the context for assessing the effects of changes to the landscape. Major components of landscape character that define the appearance of the landscape include landform, water, vegetation, and human or cultural modifications.

The proposed project area is zoned as industrial, residential, and forest agricultural management (**Figure 6**). The landowners include United Taconite, Canadian National Railroad, State of Minnesota, and one private landowner. There are no residential structures located within the vicinity of the proposed route. The closest dwelling to the proposed route is approximately 1,950 feet to the southeast in a forested area. Given the distance and tree cover, it is anticipated that the aesthetics of the property would not be adversely affected by the proposed transmission line.

Additionally, the existing segment of overhead electric line would be decommissioned and removed, resulting in no net gain or loss in visual encumbrance due to overhead power infrastructure.

Although the transmission line would be visible throughout most of its length, it is not incompatible with its setting among existing transmission lines, transportation corridors and mining development in the area.

Mitigative Measures

No mitigation measures are required.

5.7 Public Health and Safety Including EMF

The project will be designed to comply with local, state, NESC and Minnesota Power standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials and ROW widths. Minnesota Power construction crews and/or contract crews would comply with local, state, NESC and Minnesota Power standards regarding installation of facilities and standard construction practices. Established industry safety procedures would be followed during and after installation of the transmission line. This would include clear signage during all construction activities.

The transmission line must be equipped with protective devices to safeguard the public from the transmission line if an accident occurs and a structure or conductor falls to the ground. The protective devices are breakers and relays located where the transmission line connects to the substation. The protective equipment would de-energize the transmission line, should such an event occur.

Electric and Magnetic Fields

Voltage transmitted through any conductor produces both an electric field and a magnetic field in the area surrounding the wire. The electric field associated with HVTLs extends from the energized conductors to other nearby objects. The magnetic field associated with HVTLs surrounds the conductor. Together, these fields are generally referred to as electromagnetic fields, or EMF. These effects decrease rapidly as the distance from the conductor increases.

Electric Fields

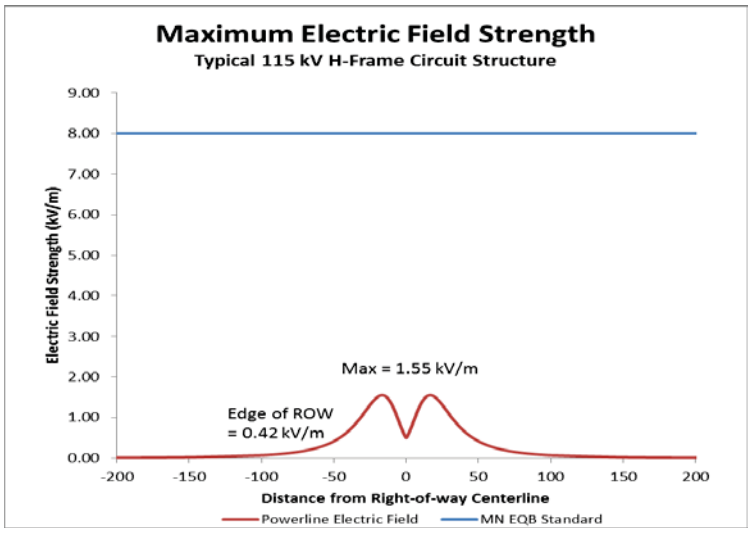
Voltage on any wire (conductor) produces an electric field in the area surrounding the wire. The electric field associated with a high voltage transmission line extends from the energized conductors to other nearby objects such as the ground, towers, vegetation, buildings and vehicles. The electric field from a transmission line gets weaker as one moves away from the transmission line. Nearby trees and building material also greatly reduce the strength of transmission line electric fields.

The intensity of electric fields is associated with the voltage of the transmission line and is measured in kilovolts per meter (kV/M). Transmission line electric fields near ground are designated by the difference in voltage between two points (usually 1 meter). **Table 11** provides the electric fields at maximum conductor voltage for the proposed transmission lines. Maximum conductor voltage is defined as the nominal voltage plus five percent.

Table 11. Calculated Electric Fields (kV/m)

Structure Type	Maximum Operating Voltage (kV)	Distance to Proposed Centerline (feet) of ROW												
		-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
115 kV H-Frame	126.5	0.00	0.01	0.07	0.15	0.42	1.31	0.50	1.31	0.42	0.15	0.07	0.01	0.00

Due to the conductor configuration of the single circuit 115 kV H-Frame type structure, the maximum EF for this configuration actually occurs at approximately 16 feet from the centerline of the ROW, as depicted below. The maximum EF was calculated to be 1.55 kV/m at one meter above ground.



There is no federal standard for transmission line electric fields. The Commission, however, has imposed a maximum electric field limit of 8 kV/m measured at one meter above the ground. *In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota,* Docket No. ET-2/TL-08-1474, Order Granting Route Permit (*adopting* ALJ Findings of Fact, Conclusions and Recommendation at Finding 194 (April 22, 2010 and amended April 30, 2010)) (September 14, 2010). The standard was designed to prevent serious hazards from shocks when touching large objects parked under AC transmission lines of 500 kV or greater.

Magnetic Fields

Current passing through any conductor, including a wire, produces a magnetic field in the area around the wire. The magnetic field associated with a high voltage transmission line surrounds the conductor and decreases rapidly with increasing distance from the conductor. The magnetic field is expressed in units of magnetic flux density, expressed as milligauss (mG).

Table 12. Calculated Magnetic Flux Density (milligauss)

Structure Type	Current (Amps)	Distance to Proposed Centerline (feet) of ROW												
		-300	-200	-100	-75	-50	-25	0	25	50	75	100	200	300
Magnetic Field Profile at Conductor Thermal Limits														
115 kV H-Frame	461.9	0.64	1.43	5.61	9.73	20.41	56.21	104.90	56.21	20.41	9.73	5.61	1.43	0.64
Magnetic Field Profile at Expected Peak Loading														
115 kV H-Frame	311.3	0.43	0.97	3.78	6.56	13.75	37.88	70.69	37.88	13.75	6.56	3.78	0.97	0.43

The magnetic field profiles around the proposed HVTL for each structure and conductor configuration being considered for the project is shown in **Table 12**. Magnetic fields were calculated at the conductor's thermal limit based on the design of the HVTL. The peak magnetic field values are calculated at a point directly under the HVTL and where the conductor is closest to the ground. The same method is used to calculate the magnetic field at the edge of the right-of-way. The magnetic field profile data show that magnetic field levels decrease rapidly as the distance from the centerline increases.

Because the actual power flow on a transmission line could potentially vary widely throughout the day depending on electric demand, the actual magnetic field level could also vary widely from hour to hour. In any case, the typical loading of the transmission line will be far below the thermal limit of the line, resulting in typical magnetic fields well below those indicated in the table.

It can be noted that magnetic fields are not singularly associated with power lines. Every person has exposure to these fields to a greater or lesser extent throughout each day, whether at home or in schools and offices. The following table (**Table 13**) contains field readings for a number of

selected, commonly encountered items. These reading represent median readings, meaning one might expect to find an equal number of readings above and below these levels.

Table 13. Magnetic Fields (milligauss) From Common Home and Business Appliances

Type	Distance From Source in Feet			
	0.5	1	2	4
Computer Display	14	5	2	-
Fluorescent Lights	40	6	2	-
Hairdryer	300	1	-	-
Vacuum Cleaners	300	60	10	1
Microwave Oven	200	40	10	2
Conventional Electric Blanket	39.4 peak 21.8 average			
Low EMF Electric Blanket	2.7 peak .09 average			

Source: EMF In Your Environment, EPA 1992

Stray Voltage

Stray voltage encompasses two phenomena: Neutral to Earth Voltage and Induced Voltage. In general, stray voltage describes any case of elevated potential, but more precise terminology gives an indication of the source of the voltage.

Neutral to Earth Voltage (NEV) refers to a condition that can occur at the electric service entrances to structures, that is, where distribution lines enter structures. It is the phenomena most commonly referred to as "stray voltage." NEV is an extraneous voltage that appears on metal surfaces in buildings, barns and other structures, which are grounded to earth. NEV can be experienced, for example, by livestock who simultaneously come into contact with two metal objects (e.g., feeders, waterers, stalls). If there is a voltage between these objects, a small current will flow through the livestock. The fact that both objects are grounded to the same place (earth) would seem to prevent any voltage from existing between the objects. However, this is not the case – a number of factors determine whether an object is, in fact, grounded. These include wire

size and length, the quality of connections, the number and resistance of ground rods, and the current being grounded.[21]

Neutral to Earth Voltage can result from damaged, corroded or poorly connected wiring or damaged insulation. Thus, NEV can exist at any business, house or farm which uses electricity, independent of whether there is a transmission line nearby. NEV is largely an issue associated with electrical distribution lines and electrical service at a residence or on a farm. Transmission lines do not create NEV as they do not directly connect to businesses, residences or farms.

NEV can be reduced in three ways: reducing the current flow on the neutral wire entering a home or building, reducing the resistance of the neutral system, or improving the grounding of the neutral system. Making good electrical connections and making sure that these connections have the proper wiring materials for wet and corrosive locations will reduce the resistance of grounded neutral system and thereby reduce NEV levels.

Induced Voltage refers to situations where an electric field extends to a nearby conductive object, thereby "inducing" a voltage on the object. The electric field from a transmission line in some instances can reach a nearby conductive object, such as a vehicle or a metal fence, which is in close proximity to the transmission line. This may induce a voltage on the object, which is dependent on many factors, including the weather conditions, object shape, size, orientation, capacitance and location along the right-of-way. If these objects are insulated or semi-insulated from the ground and a person touches them, a small current would pass through the person's body to the ground. This touch may be accompanied by a spark discharge and mild shock, similar to what can occur when a person walks across a carpet and touches a grounded object or another person.

The major concern with induced voltage is the current that flows through a person to the ground when touching the object, not the level of the induced voltage. Most shocks from induced current are considered more of a nuisance than a danger, but to ensure the safety of persons in the proximity of high-voltage transmission lines, the NESC requires that any discharge be less than 5 milliAmperes. In addition, the Commission's electric field limit of 8 kV/m was designed to prevent serious hazard from shocks due to induced voltage under high-voltage transmission lines. Proper grounding of metal objects under and adjacent to the transmission line is the best method of avoiding these shocks.

While transmission lines do not, by themselves, create NEV because they do not connect to businesses or residences, they can induce voltage on a distribution circuit that is parallel and immediately under the transmission line. This induced voltage only occurs in the immediate vicinity of the distribution circuit; it does not travel along the transmission or distribution line. Standard industrial designs can mitigate potential for stray voltage to impact distribution lines.

[21] Stray Voltage, NDSU Extension Publication #108, http://www.ag.ndsu.edu/extension-aben/epq/files/epq108.pdf.

Induced voltage can be reduced or eliminated using cancellation, separation or enhanced grounding. Cancellation can be achieved by configuring the conductors of the transmission line to minimize EMF levels. Separation literally increases the distance between the transmission and distribution lines by physically placing the lines in different locations or by increasing the vertical distance between transmission and distribution lines collocated on the same poles. Enhanced grounding connects counterpoises to the distribution neutral wire and the transmission shield wire.

Potential Impacts

Electric and Magnetic Fields

There are no federal or Minnesota state regulations for the permitted strength of a magnetic field on a transmission line; however both Florida and New York have standards ranging from 150 to 250 mG. **Table 14** summarizes the international and state guidelines for ELF and EMF that current exist.

Table 14. ELF EMF International and State Guidelines

ELF-EMF Guidelines Established by Health & Safety Organizations		
Organization		**Magnetic Field**
American Conference of Governmental and Industrial Hygienists (ACGIH) (Occupational)		10,000 mG (for general worker) 1,000 mG (for workers with cardiac pacemakers)
International Commission on Non-Ionizing Radiation Protection (ICNIRP) (General Public, Continuous Exposure)		833 mG
Non-Ionizing Radiation Committee of the American Industrial Hygiene Association		4,170 mG
Institute of Electrical and Electronics Engineers (IEEE) Standard C95.6 (General Public, Continuous Exposure)		9,040 mG
U.K., National Radiological Protection Board (NRPB)		833 mG
Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)		3,000 mG
State Standards and Guidelines		
State	**Line Voltage**	**Magnetic Field (Edge of ROW)**
Florida	69-230 kV	150 mG
	230-500 kV	200 mG
	>500 mG	250 mG
Massachusetts		85 mG
New York		200 mG

Source: EPRI, 2003; Union of the Electric Industry – EUROELECTRIC, 2003.

The effect of EMF on human health has been the subject of study for over 25 years. Of particular concern is the link between EMF exposure and cancer. Numerous panels of experts have convened to review research data on whether EMF is associated with adverse health effects. The studies have been conducted by the National Institute of Environmental Health Sciences (NIEHS), the USEPA, the World Health Organization (WHO), and the Minnesota State

Interagency Working Group (MSIWG) on EMF issues. Studies regarding EMF exposure and childhood leukemia and other cancer risks have had mixed results. Some organizations have determined that a link between EMF and cancer exists while others have found this link to be weak or nonexistent.

In 1992, Congress initiated U.S. EMF Research and Public Information Dissemination (EMF RAPID). EMF RAPID program studied whether exposure to electric and magnetic fields produced by the generation, transmission, or use of electric power posed a risk to human health. Program conclusions were presented to Congress on May 4, 1999 as follows:

- The scientific evidence suggesting that EMF-EMF exposures pose any health risk is weak.
- Epidemiological studies have serious limitations in their ability to demonstrate a cause and effect relationship whereas laboratory studies, by design, can clearly show that cause and effect are possible. Virtually all of the laboratory evidence in animals and humans and most of the mechanistic work done in cells fail to support a causal relationship between exposure to ELF-EMF at environmental levels and changes in biological function or disease status. The lack of consistent positive findings in animals or mechanistic studies weakens the belief that this association is actually due to ELF-EMFs, but it cannot completely discount the epidemiological findings.
- The NIEHS concludes that ELF-EMF exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. In our opinion, this finding is insufficient to warrant aggressive regulatory concern. However, because virtually everyone in the Unite States uses electricity and therefore is routinely exposed to ELF-EMF, passive regulatory action is warranted such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. The NIEHS does not believe that other cancers or non-cancer health outcomes provide sufficient evidence of a risk to currently warrant concern (NIEHS, 1999).

In October 1996, a National Research Council Committee of the National Academy of Sciences released a report which corroborated the findings of EMF RAPID. The report concluded:

> *Based on comprehensive evaluation of published studies relating to the effects of power-frequency electric and magnetic fields on cells, tissues, and organisms (including humans), the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human-health hazard.*

Currently the USEPA states the following viewpoint of the associated health effects of EMF on its website (USEPA: Electric and Magnetic Fields (EMF) Radiation form Power Lines, 2009):

> *Much of the research about power lines and potential health effects is inconclusive. Despite more than two decades of research to determine whether elevated EMF exposure, principally due to magnetic fields, is related to an increased risk of childhood*

> *leukemia, there is still no definitive answer. The general scientific consensus is that, thus far, the evidence available is weak and is not sufficient to establish a definitive cause-effect relationship (USEPA, 2009).*

In 2001, the World Health Organization (WHO) International Agency for Research on Cancer classified power-frequency EMF as a "possible carcinogenic to humans." Currently the WHO states the following viewpoint of the associated health effects of EMF on its website (WHO, 2009):

> *Extensive research has been conducted into possible health effects of exposure to many parts of the frequency spectrum. All reviews conducted so far have indicated that exposures below the limits recommended in the INNIRP (1998) EMF guidelines, covering the full frequency range from 0-300 GHz, do not produce any known adverse health effect. However, there are gaps in knowledge still needing to be filled before better health risk assessments can be made (WHO, 2009).*

In September of 2002, the MSIWG on EMF Issues, published "A White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options," referred to as the "White Paper." The MSIWG was formed to examine the potential health impacts of EMFs and to provide useful, science-based information to policy makers in Minnesota. Work Group members included representatives from the Department of Commerce, the Department of Health, the Pollution Control Agency, the Public Utilities Commission, and the Environmental Quality Board (MSIWG, 2002). The White Paper concluded the following findings:

- Some epidemiological results do show a weak but consistent association between childhood leukemia and increasing exposure to EMF (see the conclusion of IARC and NIEHS). However, epidemiological studies alone are considered insufficient for concluding that a cause and effect relationship exists, and the association must be supported by data from laboratory studies. Existing laboratory studies have not substantiated this relationship (see NTP, 1999; Takebe et al., 2001), nor have scientists been able to understand the biological mechanism of how EMF could cause adverse effects. In addition, epidemiological studies of various other diseases, in both children and adults, have failed to show any consistent pattern of harm from EMF.
- The Minnesota Department of Health concludes that the current body of evidence is insufficient to establish a cause and effect relationship between EMF and adverse health effects. However, as with many other environmental health issues, the possibility of a health risk from EMF cannot be dismissed. Construction of new generation and transmission facilities to meet increasing electrical needs in the State is likely to increase exposure to EMF and public concern regarding potential adverse health effects.
- Based upon its review, the Work Group believes the most appropriate public health policy is to take a prudent avoidance approach to regulating EMF. Based upon this approach, policy recommendations of the Work Group include:

- Apply low-cost EMF mitigation options in electric infrastructure construction projects;
- Encourage conservation;
- Encourage distributed generation;
- Continue to monitor EMF research;
- Encourage utilities to work with customers on household EMF issues; and
- Provide public education on EMF issues (MSIWG, 2002).

As noted above, research has not been able to establish a cause and effect relationship between exposure to EMFs and adverse health effects. However, a general consensus has been formed to continue research on the health effects of EMFs. At this time, there are no federal standards in the United States to limit EMF exposure.

Continued Research

It is important to note that although expert panels and agencies, such as the ones discussed above, have not yet identified any viable cause and effect relationships between exposure to EMFs and adverse health effects, hypotheses have existed and continue to be researched.

For example, Dr. David O. Carpenter during the recent public hearing proceedings for the proposed 345 kV transmission line from Brookings County, South Dakota, to Hampton, Minnesota, provided pre-filed direct testimony regarding his findings on health effects associated with EMF. Dr. Carpenter is a public health physician and Director of the Institute for Health and the Environment at the University of Albany, SUNY. He researched and wrote a document titled, *Setting Prudent Public Health Policy for Electromagnetic Field Exposures*. Carpenter concludes "there is strong scientific evidence that exposure to magnetic fields from power lines greater than 4 milligauss (mG) is associated with an elevated risk of childhood leukemia" and that some studies have indicated that there is scientific evidence to suggest that exposures above 2 mG could increase leukemia risks. Carpenter goes on to suggest that "lifetime exposure to magnetic fields in excess of 2 mG is associated with an increased risk of neurodegenerative diseases in adults, including Alzheimer's disease and amyotrophic lateral sclerosis (ALS)." Additionally, during his recent testimony on the proposed 345 kV HVTL in response to whether EMF similar to power line exposure can affect biological tissue, he states the following:

> *Any one of these actions [actions that alter cell tissue] might be responsible for the carcinogenic and/or neurodegenerative actions of EMFs. As with many environmental agents, however, assuming that only one mechanism of action exists would be a mistake, particularly where more than one disease is involved. It is more likely that multiple mechanisms of action would contribute to disease.*

EMF as it relates to public health and safety continues to be researched and reviewed.

Stray Voltage

Stray voltage has been raised as a concern on some dairy farms because it can impact operations and milk production. Problems are usually related to the distribution and service lines directly serving the farm or the wiring on a farm. In those instances when transmission lines have been shown to contribute to stray voltage, it was found that the electric distribution system directly serving the farm or the facilities themselves were directly under and parallel to the transmission line. These circumstances are considered in modern day routing/installing of transmission lines and can be readily avoided.

Mitigative Measures

As per the MDH White Paper recommendations concerning "prudent avoidance," utilities routinely use structure designs that minimize magnetic field levels and, where practicable, site facilities in locations affecting the fewest number of people.

5.8 Recreation

The project is located in a region that is known for its outdoor recreation opportunities. The region includes vast areas of forest, lakes, rivers, and streams, making it a destination for outdoor recreation. The area offers opportunities for walleye and northern pike fishing, kayaking, boating, cycling, hiking, hunting, cross country skiing, and snowmobiling.

No known federal, state, or county parks, forests, recreational areas, wildlife refuges, wildlife protection areas, trails, or natural areas are directly impacted by the project. The proposed project is not located in the immediate vicinity of any recognized recreational area; however, Hiekkila and Murphy Lakes are located within one mile to the east of the proposed project as shown in Figure 1. Several properties have shoreline property on these water bodies. These property owners and the general public may use the lakes for a variety of recreational activities; including boating, fishing, and watersports. The proposed project is not anticipated to impact activities on these lakes.

Potential Impacts

Direct impacts on existing recreational opportunities and public services within the project location will be avoided because the proposed route will not cross these areas.

The project is not anticipated to result in adverse or significant impacts on recreation.

Mitigative Measures

Since impacts to recreation are not anticipated, no mitigation is required.

5.9 Land-based Economies

Transmission lines have the potential to impact land-based economies. Transmission lines and poles are a physical presence on the landscape. This presence can prevent or otherwise limit use of the landscape for other purposes. In general, and for safe operation of the line, buildings and tall growing trees are not allowed in transmission line rights-of-way. This limitation can create impacts for commercial businesses and forestry. Additionally, transmission line poles take up space on the ground that could be used for other purposes, e.g., agriculture, mining.

Impacts to land-based economies due to the MP 16 Line Relocation project are, in general, anticipated to be minimal. There are no agricultural or forestry operations in the project area. The proposed route does not impact any managed forests or nurseries. No privately-owned forest production industry would be affected by the project.

Areas identified as prime farmland and as prime farmland if drained (soils that have the potential to be prime farmland but would require hydrologic alteration) do not occur within the proposed HTVL route (**Figure 7**).

No formal tourist areas are present within the proposed route. However, nearby lakes, rivers, parks, and forests provide a variety of outdoor recreational activities for tourists visiting the area.

Impacts to United Taconite mining operations are anticipated to be positive, as the project will remove the existing 115 kV line and allow for the expansion of the tailings basin. As previously mentioned, the project area is bounded by the Mesabi Iron Range, a vast deposit of iron ore and the largest of three major iron ranges in Minnesota. Mining activities play a significant role in the area's economy, accounting for 10 percent of the area's industry (compared to less than 1 percent statewide). The project will remove the existing transmission line that crosses the future tailings basin expansion area, thereby providing United Taconite with additional space to conduct operations and be consistent with future plans for the property.

The new HVTL will be located south and east of the future tailings basin expansion and the proposed route has been selected in consultation with United Taconite.

Impacts to land-based economies can be minimized by prudent routing, i.e., by choosing routes and alignments that avoid such economies. Impacts can be mitigated by the use of designs and structures which are, to the extent possible, compatible with land-based economies.

5.10 Commercial, Industrial, Residential Land Use

The vast majority of the proposed route will cross areas zoned for industrial use and as forest agricultural management; a small portion of the proposed HVTL route (1.6 acres) crosses an area zoned residential (Figure 6). The proposed route does parallel an existing railroad (Canadian National Railroad) for approximately 1.25 miles of its length.

Based on a review of recent aerial photography there are no residences or commercial buildings within 1,000 feet of the proposed route (Table 8).

Potential Impacts

The project will require approximately 3.0 miles of new right-of-way. The Applicant will need to acquire easement rights across certain parcels to accommodate the facilities for the HVTL right-of-way if a route permit is granted.

An easement is an interest in land purchased by a utility, which permits the use of that land for a specific purpose. In this case, Minnesota Power's easement would permit construction, operation and maintenance of an overhead transmission power line. The easement also permits the trimming and removal of trees within the easement to prevent them from touching the line.

The existence of a transmission line easement restricts some possible uses for the property. Acceptable uses within the easement areas include planting crops, pasture, roadways, curbs and gutters. The two most common restrictions would include prohibiting construction of permanent structures or buildings within the easement area and restrictions on planting trees that may grow into the lines; properties with existing structures very close to or within the ROW may have further restrictions placed on them.

The project would be design to meet or exceed the clearance standards provided in NESC Section 232 for a 115 kV transmission line, which require a 9’ 1’’ horizontal distance between the conductor and a building; a 15’ 1’’ vertical distance between the conductor and a roof/balcony accessible by people; and a 20’ 1’’ vertical distance between the conductor and a roadway or parking lot.

Another concern associated with transmission lines includes potential effects on the availability of federal assistance mortgage loan insured by the Federal Housing Administration (FHA) as well as the availability of the Housing and Urban Development (HUD) backed mortgages for development of high density residential and/or mixed use developments. See *Section 5.2 Socioeconomics*, for a detailed discussion on this matter.

Mitigative Measures

Given that the construction of the proposed HVTL is primarily located in open wetland areas and wetlands adjacent to railroad tracks, land use conflicts are not anticipated..

Measures to minimize impacts to existing land uses would be developed through final design; such measures may include placing the conductors on a single side of the support towers, adjustments in final alignment within the proposed route, ROW sharing/overlap with existing infrastructure, and selection of span width and tower placement. Such measures may be specified as a condition of the HVTL Route Permit.

The Applicant stated in the application that it would work with county, city staff and business and residential property owners to ensure that impacts to land use from the construction of the line are minimized and addressed.

5.11 Public Services and Transportation

Public services generally include emergency services provided by government entities, including hospitals, fire departments, and police departments, water supply or wastewater disposal systems, and gas and electricity services, and existing and future transportation corridors and projects.

Minnesota Power will implement proper safeguards during construction and operation to avoid potential impacts public services or to the health and safety of the public. The project will be designed in compliance with local, state, NESC, and Minnesota Power standards for clearance to ground, crossing utilities and buildings, strength of materials, and right-of-way widths.

The Applicant will be responsible for ensuring that construction and contract crews comply with local, state, NESC, and company standards for installation of facilities and standard construction practices. Minnesota Power established and industry safety procedures will also be followed after the transmission line is installed.

This includes proper traffic control, and site security and clear signage during all construction activities.

The proposed HVTL will be equipped with protective devices (circuit breakers and relays located in the substation where the transmission lines terminate) to safeguard the public if an accident occurs, such as a structure or conductor falling to the ground. The protective equipment will de-energize the transmission line should such an event occur. Minnesota Power will post signage to warn the public about the risk of coming into contact with the energized equipment.

The Applicant has stated that it will work within the Minnesota Department of Transportation's (DOT) accommodation policy to position and manage the right-of-way along roadways.[22] MnDOT has adopted a formal policy and procedures for accommodation of utilities on the highway rights-of-way (Utility Accommodation Policy). A copy of MnDOT's policy can be found at:

http://www.dot.state.mn.us/utiIity/files/pdflappendix·b.pdf

Potential Impacts

With implementation of safeguards and protective measures, the project is not anticipated to result in adverse or significant impacts on public services or public health and safety.

[22] RPA at p 37

Construction and operation of the proposed project is not anticipated to impact any public service utilities.

Mitigative Measures

Minimal to no impacts to public services are anticipated to occur as a result of the proposed project; aside from the standard practices stated above no mitigative measures are required.

5.12 Archaeological and Historic Resources

During Minnesota Power's pre-planning phase, the Minnesota State Historic Preservation Office (SHPO) was contacted by the Applicant's representative (Two Pines Resource Group. LLC) and a literature searches were conducted.[23] The purpose of the literature search was to determine if there are any previously recorded cultural resources within the project area (including the proposed route and surrounding 1-mile buffer). A radius of one mile was used in order to determine the types of archaeological and historic resources, both identified and unidentified, that are likely to be found in the area that could be affected by the project.[24]

No archaeological or architecture/historic sites were identified within 1 mile of the project. Additionally, the Two Pines Resource Group concluded that the proposed route had a low potential for containing archaeological resources due to its location in a drained yet still partially inundated tamarack bog.

Potential Impacts

The potential to impact any undiscovered archaeological site is low; also there are no high potential locations for discovery of prehistoric archaeological sites, such as lakes, or perennial rivers or streams in the proposed project location. Similarly, the potential for unknown historic architectural resources to be affected by the proposed construction of the transmission line is low because the historic landscape and surroundings have been compromised due to attempts to drain the area and the dynamic changes resulting from mine activities and its supporting infrastructure.

Mitigative Measures

Avoidance of archaeological and historic architectural properties is the preferred mitigative policy for construction of infrastructure projects.

While not anticipated, there may be impacts to unidentified archaeological properties in previously undisturbed portions of the project. As a standard HVTL Route Permit condition, Minnesota Power would be required to work with SHPO should construction activities encounter such items. The permit condition would also require the Applicant would carry out the appropriate field identification or construction monitoring as deem necessary.

[23] RPA, Appendix F
[24] RPA, Appendix F

5.13 Natural Environment

The consideration of the impacts of a transmission line project on natural environment, including air quality, water resources, and flora and fauna are required as part of the environmental review. The impacts of high voltage transmission projects on the natural environment are a function of the spatial alignment of the grid, the structures and conductors required for various voltages, the extent to which pre-existing corridors are used, and how the transmission line is operated and maintained. The range of potential impacts and their significance depend on the area and the design and construction of individual lines.

Air Quality

There are minimal air quality impacts associated with transmission line construction and operation. The only potential air emissions from a transmission line result from corona. Corona can produce ozone and oxides of nitrogen in the air surrounding the conductor. Corona consists of the breakdown or ionization of air in a few centimeters or less immediately surrounding conductors. For 115/115 kV double-circuit, 115 kV single-circuit and 161 kV single-circuit transmission lines, the conductor gradient surface is usually below the air breakdown level.

Calculations done for a 345 kV project showed that the maximum one hour concentration during foul weather (worst case) would be 0.0007 parts per million (ppm) ozone. This is well below both the federal (0.075 ppm 8 hour) and state standards (0.08 ppm 8 hour) for ozone.

The Henshaw Effect is a theory that fine particulates already present in the air surrounding HVTLs may become ionized from HVTL corona. Ionization of the particulate matter (PM) is believed by Dr. Denis Henshaw, HH Wills Physics Laboratory, University of Bristol, United Kingdom, to increase the deposition of the fine particulates within the lungs. Fine particulates may be comprised of polycyclic aromatic hydrocarbons. The increased deposition may lead to increased lung disease and cancer rates.[25]

Temporary fugitive dust emissions from construction activities may occur. Along the proposed route, clearing vegetation and driving the utility poles may create exposed areas susceptible to wind erosion. In addition, tailpipe emissions may generate exhaust from the construction vehicles.

Fugitive dust is considered particulate matter under air quality regulations. The concentrations of fugitive dust that is fine particulate matter (PM less than 2.5 microns or PM2.5) is generally small, or approximately three percent to ten percent of total particulate matter (USEPA's AP-42, Sections 13.2 and 11.9). Since fine particulate matter has the potential to travel further into the lungs, it is of greater concern than larger particle size ranges.

[25] Corona ions from powerlines and increased exposure to pollutant aerosols A P Fews, D L Henshaw, R J Wilding and P A Keitch, . International Journal of Radiation Biology, Vol. 75. No. 12, 1523 - 1531, 1999.

Potential Impacts

Currently, both state and federal governments have regulations regarding permissible concentrations of ozone and oxides of nitrogen. The national standard is 0.08 ppm on an eight-hour averaging period. The state standard is 0.08 ppm based upon the fourth-highest eight-hour daily maximum average in one year. Calculations using the Bonneville Power Administration (BPA) Corona and Field Effects Program Version 3 (US Department of Energy, BPA Undated) for a standard single-circuit 161 kV project, predicted the maximum concentration of 0.007 ppm near the conductor and 0.0003 ppm at one meter above ground during foul weather or worst-case conditions (rain at 4 inches per hour). During a mist rain (rain at 0.01 inch per hour), the maximum concentrations decreased to 0.0003 ppm near the conductor and 0.0001 ppm at one meter above ground level. For both cases, these calculations of ozone levels are well below the federal and state standards. Studies designed to monitor the production of ozone under transmission lines have generally been unable to detect any increase due to the transmission line facility. Given this, there would be no impacts relating to ozone for the project.

There would be limited emissions from vehicles and other construction equipment and fugitive dust from ROW clearing during construction of the transmission line and substation. Temporary air quality impacts caused by the construction-related emissions are expected to occur during this phase of activity. The magnitude of the construction emissions is influenced heavily by weather conditions and the specific construction activity occurring. Exhaust emissions from primarily diesel equipment would vary according to the phase of construction but would be minimal and temporary. Adverse impacts to the surrounding environment would be minimal because of the short and intermittent nature of the emission and dust-producing construction phases.

The National Radiological Protection Board (NRPB) has a statutory responsibility for advising the governmental departments of the United Kingdom on standards of protection for exposure to electric and magnetic fields and radiations in the natural and working environments. The NRPB established an advisory group to review work on biological effects of non-ionizing radiation relevant to human health and to advise on research priorities. The advisory group reviewed the possible effects of corona ions or electric fields on intakes of radioactive particles or other airborne pollutants and made recommendations of future research.[26]

The advisory group concluded that the potential impact of corona ions on health (Henshaw Effect) would depend on the extent to which they increase the dose of relevant pollutants to target tissues in the body and that it was not possible to estimate the impact precisely because of uncertainties involving the extent to which corona increase the charge on particles, the exact impact of charging on particle deposition in the respiratory system, and dose-response health outcomes.[27]

[26] Particle Deposition in the Vicinity of Power Lines and Possible Effects on Health, National Radiological Protection Board, vol 15, No. 1, 2004. Oxfordshire, UK. (http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947415038)
[27] Ibid

Further, the study continues, that it seems unlikely that corona ions would have more than a small effect on the long-term health risks associated with particulate air pollutants, even in the individuals who are most vulnerable. In public health terms, the proportionate impact would be even lower because only a small fraction of the general population live or work close to sources of corona ions.[28]

The advisory group's recommendations were that the possible implications for health of the mechanisms associated with this issue did not provide a strong case for further research in this area.[29]

Mitigative Measures

As a standard HVTL Permit condition, construction activities must follow best management practices (BMPs) to control air emissions (fugitive dust). Petroleum based dust suppressants may not be used. Construction vehicles with excess tailpipe emissions would not be operated until repairs to the vehicle could be made. The disturbed area for each route would be minimized.

There would be no significant impacts to air quality; therefore, no mitigation beyond BMPs would be necessary.

Water Quality - Surface Water and Wetlands

Public waters are wetlands, water basins and watercourses of significant recreational or natural resource value in Minnesota, as defined in Minnesota Statutes Section 103G.005; the DNR has regulatory jurisdiction over these waters

The MnDNR Public Waters Inventory (PWI) identifies lakes, wetlands, and watercourses over which the MnDNR has regulatory jurisdiction. Minnesota law (Minnesota Statutes Section 84.415 administered through Minnesota Rules Chapter 6135) requires that a license be obtained from the MnDNR Division of Lands & Minerals for the passage of any utility over, under, or across any state land or public waters.

Hydrologic features within the vicinity of the proposed project include large wetland complexes ringed by numerous water basins (**Figure 8**). There are no water basins classified as PWI water bodies within the anticipated ROW. There are no designated floodplains within the proposed route.

Wetlands are important resources for flood abatement, wildlife habitat, and water quality. Wetlands that are hydrologically connected to the nation's navigable rivers are protected federally under Section 404 of the Clean Water Act. In Minnesota, wetlands are also protected under the Wetland Conservation Act. The USFWS produced maps of wetlands based on aerial

[28] Particle Deposition in the Vicinity of Power Lines and Possible Effects on Health, National Radiological Protection Board, vol 15, No. 1, 2004. Oxfordshire, UK. (http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947415038)
[29] Ibid

photographs and Natural Resources Conservation Service soil surveys starting in the 1970s; these wetlands are known as the National Wetland Inventory (NWI).

Wetlands that were identified through the NWI system as being located within the requested route width are listed in **Table 15** and shown in Figure 8. Review of the available soils data in the project area indicates that the soils along the existing 16 line segment, which runs through the a large wetland complex, are composed of the Lobo, Waskish and Rifie Series; these soils are characterized by poorly drained organic materials which can range to depths of 20 feet.

Soils along Minnesota Powers' proposed route, the relocation site of the 16 Line, are composed of the Greenwood Series, and the Graycalm-Biwabik and Ellsburg-Baden Complexes. While these soils are also organic in nature, their depths are significantly shallower (**Figure 9**).

Based on NWI data approximately 157.5 acres of Forested/Shrub Wetland have been mapped within the proposed route; this represents approximately 94 percent of the route. Approximately 33.3 acres of Forested/Shrub Wetland have been mapped within the anticipated ROW; this represents approximately 95 percent of the ROW.

The anticipated alignment would require wetland crossings ranging in length from 250 feet to 1.7 miles. Because the maximum span length for this HVTL is 650 feet (+/- 150 feet for H-frame structures; Table 3), it is not possible to span the wetland crossings. Due to the concentration of wetlands in the proposed project area it is anticipated that all (current estimate 24) poles will be placed within wetlands.

Table 15. Wetlands Identified within the Proposed Route/ROW

NWI Wetland Type	Wetland (acres)	
	ROW	Route
Forested/Shrub	33.3	157.5
Total acres	**33.3**	**157.5**

Potential Impacts

During construction, there is the possibility of sediment reaching surface waters and wetlands as the ground is disturbed by excavation, grading and construction traffic. As a standard HVTL Permit condition, the Applicant would be required to employ erosion control best management practices (BMPs); as well as, adherence to the terms and conditions of the National Pollutant Discharge Elimination System (NPDES) permits and Stormwater Pollution Prevention Plan (SWPPP).

Clearing forested wetlands can expose the wetland to invasive and shrubby plants, thus removing habitat for species in the forest interior.

After construction, maintenance and operation activities for the transmission line facilities are not expected to have an adverse impact on surface water quality.

The wetlands crossed by the proposed route are subject to jurisdiction of the US Army Corp of Engineers (USCOE) under Section 404 of the Clean Water Act and current guidance regarding the jurisdictional status of isolated wetlands. Once the route is finalized and permitting requirements determined, Minnesota Power will submit the Minnesota Local/State/Federal Application Form (Joint Application Form) for water/wetland projects to the USCOE's Two Harbors District, MnDNR, and St. Louis County. Application materials will include information necessary for the USCOE to make its jurisdictional determination for impacted wetlands. Minnesota Power anticipates the project will be authorized under the USCOE's RGP-003-MN or LOP-05-MN permitting program.

According to the Clean Water Act, Section 401 water quality certification is required for activities that may result in a discharge to waters of the United States. On non-tribal lands in Minnesota, the MPCA administers Section 401 water quality certification. If the USCOE authorizes the project under its GP/LOP permitting program as expected, the MPCA waives its Section 401 Water Quality Certification authority.

No impacts to groundwater in the project area are anticipated.

Mitigative Measures

BMPs include maintaining sound water and soil conservation practices during construction and operation of the project to protect topsoil and adjacent water resources and minimize soil erosion. Practices can include containing excavated material, protecting exposed soil and stabilizing restored soil. Minnesota Power, through adherence to BMPs, would avoid major disturbance of individual wetlands and drainage systems during construction. This would be done by spanning wetlands and drainage systems where possible. When it is not possible to span the wetland, Minnesota Power will draw on several options during construction to minimize impacts:

- When possible, construction would be scheduled during frozen ground conditions.
- Crews would attempt to access the wetland with the least amount of physical impact to the wetland (e.g., shortest route).
- The structures would be assembled on upland areas before they are brought to the site for installation.
- When construction during winter is not possible, plastic mats would be used where wetlands would be impacted.

The transmission line rebuild may require waters and wetlands permits, letters of no jurisdiction, or exemptions from the USCOE, MnDNR Division of Waters, and St. Louis County. Wetland

and surface water impacts, through adherence to BMPs, will be avoided and minimized to the extent practicable. After coordination and application submission, authorization from the USCOE would likely fall under a Letter of Permission (LOP-05-MN) or the utility line discharge provision of a Regional General Permit (RGP-3-MN).

The MnDNR Division of Waters requires a Public Waters Work Permit for any alteration of the course, current, or cross-section below the ordinary high water level of a Public Water or Watercourse. No such alterations are anticipated.

Flora

The project is located within the Laurentian Mixed Forest Province, which, in Minnesota, is characterized by broad areas of conifer forest, mixed hardwood and conifer forests, and conifer bogs and swamps.

St. Louis County is comprised primarily (over 50 percent) of forest land; the remaining land uses include approximately 23 percent bog/marsh/fen, 9 percent surface water, 0.7 percent urban/industrial, and less than 0.1 percent cultivated (St. Louis County Comprehensive Water Management Plan). Common tree and plant species in central St. Louis County include, but is not limited to, various species of firs, pines, maples, birch, willow, basswood, ash, juneberry, sedge, honeysuckle, pondweed, goldenrod, aster, and rush.

Based on U.S. Geological Survey Land Use, Land Class data (2012) specific to the project, the proposed corridor will cross primarily lowland black spruce and lowland shrub wetlands (**Figure 10, Table 16**).

Table 16. Land Use/Land Cover within the Anticipated ROW

Land Cover Type	Acres	Percent
Aquatic	0.75	2.15
Lowland Shrub	11.02	31.58
Marsh	1.86	5.32
Tamarack	4.89	13.99
Lowland Black Spruce	15.00	42.96
Aspen/White Birch	0.55	1.57
Pine	0.60	1.72
Grassland	0.25	0.71
Total	**34.91**	**100**

Potential Impacts

A transmission line ROW can fragment a larger forest block into smaller tracts. Fragmentation makes interior forest species more vulnerable to predators, parasites, competition from edge species, and catastrophic events. The continued fragmentation of a forest can cause a permanent

reduction in species diversity and suitable habitat. This loss of forested habitat increases the number of common (edge) plants and animals that can encroach into what were the forest interiors. This encroachment can have impacts on the number, health, and survival of interior forest species, including some of which may be rare. Examples of edge species that can encroach into forest interiors via transmission ROWs include raccoons, cowbirds, crows, deer, and box elder trees. Interior forest species include songbirds, wolves, and hemlock trees.

The opening of the forest floor to sunlight through tree clearing of the ROW can further encourage these aggressive, invasive species to proliferate. Their spread can alter the ecology of a forest as they out-compete native species for sunlight and nutrients, further reducing suitable habitat and food sources for local wildlife.

Construction vehicles may inadvertently bring into forest interiors invasive and/or non-native plant species. Transmission line construction causes disturbance of ROW soils and vegetation through the movement of people and vehicles along the ROW, access roads, and laydown areas. These activities can contribute to the spread of invasive species. Parts of plants, seeds, and root stocks can contaminate construction equipment and essentially "seed" invasive species wherever the vehicle travels. Invasive species' infestations can also occur during periodic transmission ROW maintenance activities especially if these activities include mowing and clearing of vegetation. Once introduced, invasive species will likely spread and impact adjacent properties with the appropriate habitat.

Examples of problematic invasive species are buckthorn, honeysuckle, and garlic mustard. Invasive species, once introduced, have few local natural controls on their reproduction and easily spread.

Temporary impacts may occur due to activities associated with pole construction, including minor vegetative clearing for excavation, leveling and heavy equipment traffic. Vegetative clearing would include felling trees along the proposed ROW and temporarily trimming or removing any shrubs or tall grass.

Mitigative Measures

BMPs for control of invasive species include marking and avoidance of invasives, timing construction activities during periods that would minimize their spread, proper cleaning of equipment and proper disposal of woody material removed from the ROW.

Because construction measures may not be completely effective in controlling the introduction and spread of invasives, post-construction activities are required. Sensitive areas such as wetlands and high quality forests and prairies should be surveyed for invasive species following restoration of the construction site. If new infestations are discovered, then measures should be taken to control the infestation. Each exotic or invasive species requires its own protocol for control or elimination.

Techniques to control exotic/invasive species include the use of pesticides, biological agents, hand pulling, controlled burning, and cutting or mowing. The HVTL Route Permit could include, as a standard condition and deliverable, the development of an invasive species control plan; the Applicant would be required to consult the DNR to determine the best methods for control of invasive species.

To minimize forest fragmentation, ROWs that avoid major forest blocks should be selected to the extent practicable.

Fauna

The grasslands, wetlands, and woodlands in the area provide habitat for a variety of wildlife. Wildlife and other organisms that inhabit the project area include small mammals such as mice, voles, and ground squirrels; large mammals such as white-tailed deer; waterfowl and other water birds like pelicans and egrets, songbirds, raptors, upland game birds; and reptiles/amphibians such as frogs, salamanders, snakes, and turtles.

The Anchor Lake MnDNR Wildlife Management Area (WMA) is located approximately 0.75 miles east of the proposed route (Figure 5). While the proposed route crosses a variety of habitat for fauna that are commonly found in Northeast Minnesota, no USFWS Waterfowl Production Areas (WPA) are located within the vicinity of the proposed route.

Potential Impacts

Wildlife that resides within the construction zone will be temporarily displaced to adjacent habitats during the construction process. It is anticipated that fish and mollusks that inhabit the local watercourses will not be affected by transmission line rebuild or new lines.

Because much of the route/alignment is located within and adjacent to a developed and commercial/industrial area, the fauna generally present within the area are adapted to high levels of anthropogenic disturbance. Therefore, it is unlikely that the construction, operation, and maintenance of the project would have a permanent effect on fauna present in the area. Wildlife that inhabits trees that may be removed for the HVTL will likely be displaced. Comparable habitat is near the route, and it is likely that these organisms would only be displaced a short distance. The majority of construction will be limited to upland areas and, therefore, it is anticipated that any potential impacts on fish and mollusks that inhabit the local waterbodies will be limited to the removal phase of the existing line (i.e., de-construction) where there would be short term disturbance.

Birds have the potential to collide with all elevated structures, including power lines. Avian collisions with transmission lines can occur in proximity to agricultural fields that serve as feeding areas, wetlands and water features, and along riparian corridors that may be used during migration.

The electrocution of large birds, such as raptors, is more commonly associated with small distribution lines than large transmission lines. Electrocution occurs when birds with large wingspans come in contact with two conductors or a conductor and a grounding device. Utility transmission and distribution line design standards provide adequate spacing to eliminate the risk of raptor electrocution and will minimize potential avian impacts of the proposed project.

Plastic erosion control netting is frequently used for erosion control during construction and landscape projects and can negatively impact terrestrial and aquatic wildlife populations as well as snag in maintenance machinery, resulting in costly repairs and delays. Wildlife entanglement in, and death from, plastic netting and other man-made plastic materials has been documented in birds, fish, mammals, and reptiles.[30]

Mitigative Measures

Minnesota Power has stated that it would construct the transmission line according to the Avian Power Line Interaction Committee (APLIC) recommended safety design standards regarding avian collisions and avian electrocution with HVTLs. In addition, the Applicant would work with the MnDNR and the USFWS to identify any areas that may require marking transmission line shield wires and/or using alternative structures to reduce the likelihood of avian collisions.[31]

Avoiding the use of photodegradable erosion-control materials where possible and the use of biodegradable materials (typically made from natural fibers), preferably those that will biodegrade under a variety of conditions, can minimize the impact to wildlife. The HVTL Route Permit could include the use of these materials as a standard condition.

With regard to other wildlife species, it is anticipated that any habitat displacement resulting from the proposed project will be temporary. Therefore, no wildlife mitigation measures are proposed.

5.14 Rare and Unique Natural Resources

Construction and maintenance of transmission lines might destroy individual plants and animals or might alter their habitat so that it becomes unsuitable for them. For example, trees used by rare birds for nesting might be cut down or soil erosion may degrade rivers and wetlands that provide required habitat.

In some limited cases, transmission line ROWs can be managed to provide habitat for endangered/threatened resources. An example includes osprey nesting platforms built on top of transmission poles.

[30] http://files.dnr.state.mn.us/eco/nongame/wildlife-friendly-erosion-control.pdf
[31] RPA at p44

Endangered species are species whose continued existence is in jeopardy. Threatened species are likely to become endangered. Species of special concern have some problems related to their abundance or distribution, although more study is required.

The MnDNR Division of Ecological and Water Resources manages the Natural Heritage Information System (NHIS) which provides information on Minnesota's rare plants, animals, native plant communities, and other rare features. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. Its purpose is to foster better understanding and conservation of these features.

However, some areas of the state have not been surveyed extensively or recently, so the NHIS database cannot be relied upon as a sole information source for rare species.

The MnDNR NHIS database was queried by the Applicant to obtain the locations of rare and unique natural resources within the project area. The results of this search are shown on Figure 5. The review of the NHIS database identified northern goshawk (Accipiter gentilis; state special concern) nests comprising one territory as well as one bald eagle (Haliaeetus leucocephalus) nest within one mile of the proposed project.

The Fish and Wildlife Service (USFWS) website was reviewed by the Applicant for a list of species covered under the Endangered Species Act (ESA) that may be present within St. Louis County. According to the website, the following federally listed species are known to occur within the county: piping plover (*Charadrius melodus*), Grey Wolf (Canis lupus; federally threatened), the rufa red knot (Calidris canutus rufa; federally threatened), the northern long-eared bat (Myotis septentrionalis; federally threatened), and Canada lynx (*Lynx canadensis*).

The Great Lakes population of piping plover is federally listed as endangered and Critical Habitat is designated in St. Louis County. Great Lakes piping plovers use open, sandy beaches, barrier islands, and sand spits formed along the Great Lakes' perimeters (FWS, 2012b). They do not inhabit lakeshore areas where high bluffs formed by severe erosion have replaced beach habitat. They prefer sparsely vegetated open sand, gravel, or cobble for nesting sites and forage along the rack line where invertebrates are most readily available (FWS, 2012c). The proposed project is not located within designated Critical Habitat nor does the appropriate habitat occur within the proposed route.

The Canada lynx is federally listed as threatened and Critical Habitat is designated in St. Louis County. Lynx live in dense forests with boreal features across northern Minnesota in areas that receive deep snow and have high-density populations of snowshoe hares, the principal prey of lynx (FWS, 2012d). Although the proposed route is not located within designated Critical Habitat, the general project area could be populated with Canada lynx at the time of construction based on distribution in the state.

The northern long-eared bat is a medium-sized bat about 3 to 3.7 inches in length, with a wingspan of 9 to 10 inches. Its fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. As its name suggests, this bat is distinguished by its long ears.

Potential Impacts

It is anticipated that the proposed project will have no effect on the piping plover or its habitat.

It is anticipated that the project impacts on the Canada lynx and Grey Wolf would be minor and temporary. Noise and/or physical disturbance would prompt these species to temporarily vacate the area for a short period of time, returning to the area shortly after cessation of activities. Lynx and Grey Wolf movement may be temporarily impeded and individuals may be displaced, but the impacts on these populations would likely be minimal if not negligible.

No rufa red knot are expected to be found in the project vicinity, as the species only utilizes shore line areas during migration through this county. While there are no known northern long-eared bat (NLEB) hibernacula in close proximity to any of the proposed routes, suitable habitat for the NLEB is potentially present near the proposed route.

Infrastructure projects such as the development of HVTL routes can cause the loss, degradation, and fragmentation of natural habitats in which the NLEB resides. These types of impacts have the potential to adversely affect the northern long-eared bat. Projects proposed in areas where suitable habitat occurs and the northern long-eared bat is known or assumed to be present require project proponents to determine if potential adverse effects to the NLEB are likely to occur and, if so, how they can avoid, minimize, and/or mitigate for those adverse effects.

Mitigative Measures

The environmental review process is designed to identify rare species and unique natural resources that may be presence within the proposed route to avoid encroachment and effects on these items to the greatest extent practicable. Once a final route has been determined, biological (flora and/or fauna) surveys along select portions of the anticipated alignment may be required as a permit condition if resources agencies deem it necessary.

Restricting ROW construction activities to avoid the NLEB's active season (April 1st through September 30th) may be a sufficient mitigation strategy to avoid the necessity of conducting a species specific biological survey and potential requirement of an Incidental Take Permit for this species. As a special condition of the route permit, tree clearing may be prohibited from April 1st through September 30th.

6.0 Potential Impacts Comparison of Alternative Routes

Because the proposed route and the alternative routes (AR-2 and AR-3) are sited virtually, and to a certain extent literally "on top of each other" the potential impacts are similar, with the primary distinctions between the routes being associated with the following factors:

- Human Settlement-Aesthetics, Land Use Compatibility, and Property Values;
- Use or Paralleling of Existing ROWs; and
- Cost of Construction.

Human Settlement

Alternative route AR-2 avoids crossing a private ownership parcel (PIN 690-0010-04630) of land (**Figure 11**) that the proposed route and alternative route AR-3 would impact. This parcel is 40 acres, is currently undeveloped, and is zoned as Forest Agricultural Management. The property is approximately evenly divided between Forested/Shrub Wetland and Lowland Deciduous forest cover.

If this private parcel were to be developed and depending on the siting and nature of the development, the presence of the HVTL may have a perceived aesthetic impact. The potential aesthetic impact, if any, would be influenced by the same considerations as discussed in Section 5.6 *Aesthetics* of this document.

Although the transmission line would be visible throughout most of its length, it is not incompatible with the parcel's zoning classification of Forest Agricultural Management, or the setting among existing transmission lines, transportation corridors and mining development that occur in this area.

Route alternatives AR-2 and AR-3 have the potential to interfere with any additional future expansion of the mine tailings basin, while the proposed route moves the 16 Line outside any foreseeable additional expansion of the United Taconite tailings basin.

As stated in Section 5.2 *Socioeconomic-Property Values*, due to the fact that property values are guided by various considerations specific to each separate piece of real estate, as well as, market conditions the effect of one specific transmission line project on a given parcel is difficult to determine. The potential impact relating to property values on this parcel is anticipated to be in line with those impacts discussed in that section.

Micro siting of the alignment during final design (i.e., placing the ROW along the western most boundary of the requested route width) may avoid or minimize the above potential impacts to this private parcel along the proposed route and alternative AR-3. Section 3.1 of the sample HVTL Route Permit (Appendix C) details the requirements for modification of the anticipated alignment.

Use or Paralleling of Existing ROWs
The proposed route parallels existing infrastructure (CN railroad) for approximately twice the distance as the two alternative routes.

Cost of Construction
It is the anticipated type and depth of the subsurface soils along the routing options, and the associated construction costs that differentiate the potential routes relative to the cost of construction.

EERA requested from the Applicant comparative cost estimates for construction of each route option; these costs are presented in **Table 17**.

Based on available information, Minnesota Power believes that the proposed route will avoid the necessity of requiring substantial backfill to support the structures by siting the line along the ridgelines/uplands surrounding the large wetland complex. The cost differential shown in table 18 reflects the need of backfill material if the route were to be sited through the large wetland complex.

Table 17 Cost Estimates Construction

	Proposed Route	Alternative 2	Alternative 3
Material Cost	$269,712.09	$606,681.97	$370,729.18
Construction Matting Cost	$1,365,280.00	$1,792,960.00	$1,983,040.00
Removal Matting Cost	$2,000,600.00	$1,620,440.00	$2,000,600.00
Construction Cost	$1,063,757.29	$1,075,385.65	$1,176,678.21
Total Cost	$4,699,349.38	$5,095,467.62	$5,531,047.39
Total Cost Difference	$0.00	$396,118.24	$831,698.01
*Structure Foundations Constructed with Mine Tailings			

	Proposed Route	Alternative 2	Alternative 3
Material Cost	$269,712.09	$744,292.87	$400,869.59
Construction Matting Cost	$1,365,280.00	$1,792,960.00	$1,983,040.00
Removal Matting Cost	$2,000,600.00	$1,620,440.00	$2,000,600.00
Construction Cost	$1,063,757.29	$1,075,385.65	$1,176,678.21
Total Cost	$4,699,349.38	$5,233,078.52	$5,561,187.80
Total Cost Difference	$0.00	$533,729.14	$861,838.42
*Structure Foundations Constructed with Select Granular Fill			

There are no other potential human or environmental impacts in which one routing option would minimize or mitigate impacts over another routing option.

A comparison of the potential human and environmental impacts of the routing options is presented in **Figure 12**.

7.0 Unavoidable Impacts

During construction of the proposed HVTL, there would be temporary unavoidable adverse impacts on the existing flora and fauna, soil, and traffic in those locations where construction would occur adjacent to an existing roadway. Some of these impacts may occur, on a lesser scale, during maintenance of the transmission line. Longer-term, non-temporary adverse impacts related to construction and maintenance of the proposal transmission line include loss of forested areas, including forested wetlands, within the ROW; visual impacts; impacts to migratory birds from collisions with the lines; and potential impacts to property values.

In addition, there are few commitments of resources associated with this project that are irreversible and irretrievable, but those that do exist are primarily related to construction. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action.

The proposed HVTL will require the commitment of land (a ROW of 3.0 miles in length and 100 feet wide) and while it is possible that the structures and conductors could be removed, and the ROW returned to the natural landscape, this is unlikely to happen in the foreseeable future.

The proposed HVTL may result in the loss of some forests and forested wetlands. While these are not irreplaceable, replacing them will take a significant amount of time. The ROW for certain land uses will be lost. In most cases, this ROW can continue to be used for many purposes; however, some other areas, such as forested areas, areas with minable resources, or areas that could have been used for other construction, will be converted during the lifetime of the project.

Construction resources that would be used include aggregate resources, concrete, steel, and hydrocarbon fuel. These resources would be used to construct the project. During construction, vehicles would be traveling to and from the site utilizing hydrocarbon fuels. However, once built, the proposed HVTL will not consume raw materials.

8.0 Relative Merits Analysis

An analysis of the relative merits utilizes the routing factors of Minnesota Rule 7850.4100 (A through N) and factor elements to analyze the relative merits of the various routing options. The relative merit factors reviewed for the MP 16 Line Relocation project included the following nine specific routing factors of Minnesota Rules, part 7850.4100:

- A. Effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;
- B. Effects on public health and safety;
- C. Effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining;
- D. Effects on archaeological and historic resources;
- E. Effects on the natural environment, including effects on air and water quality resources and flora and fauna;
- F. Effects on rare and unique natural resources;
- H. Use or paralleling of existing ROW, survey lines, natural divisions lines, and agricultural field boundaries;
- J. Use of existing transportation, pipeline, and electrical transmission systems or ROWs;
- L. Costs of constructing, operating, and maintaining the facility which are dependent on design and route.

The discussion in this section uses text and a graphic to describe the relative merits of specific routing options (**Table 18**). For routing factors where impacts are anticipated to vary with routing options, the graphic represents these anticipated impacts and compares them across these options. For routing factors that express the State of Minnesota's interest in the efficient use of resources (for example, the use of existing rights-of-way), the graphic represents the consistency of routing options with these interests and compares them one to the other.

For purposes of discussion here, and with respect to routing factor G, it is assumed that all of the routing options are equal with regard to maximizing energy efficiencies and accommodating expansion of transmission capacity. With respect to environmental impacts, the examination of

such impacts suggested by routing factor G is included in the discussion of other routing factors and elements that more specifically address an environmental impact (e.g., effects on the natural environment, routing factor E). Thus, factor G is not discussed further here.

Routing factor I, the use of large electric generating plant sites, is not relevant to this project and is not discussed here.

Routing factor K, relating to electrical system reliability, is not relevant since the MP 16 Line is a relocation project and neither routing option will result in a change to the system's reliability.

Routing factors M and N, the unavoidable and irreversible impacts of the project, are discussed in Section 7.0 *Unavoidable Impacts*.

Table 18 Guide to Relative Merits of Routing Options

Anticipated Impact or Consistency with Routing Factor	Color / Shape
Impacts are anticipated to be minimal with the application of BMPs and general route permit conditions (Commission's generic route permit template) – OR – routing option is very consistent with routing factor.	
Impacts are anticipated to be minimal to moderate with the application of BMPs and general route permit conditions (Commission's generic route permit template); impacts may require special conditions or selection of a specific routing option to mitigate – OR – routing option is consistent with routing factor but less so than other options in this area.	
Impacts are anticipated to be moderate and unable to be mitigated – OR – routing/siting option is not consistent with routing factor or consistent only in part.	

As indicated in Section 6.0 *Potential Impacts Comparison of Alternative Routes*, outside of the Factors Human Settlement (Aesthetics, Land Use Compatibility, and Property Values), the Use or Paralleling of Existing ROWs, and the Cost of Construction, there are no other potential human or environmental impacts in which one routing option would minimize or mitigate impacts over another routing option.

Table 19 provides an overview of the relative merits analysis for the proposed and alternative routes.

Table 19 Relative Merits Table: MP 16 Line Relocation Project Options

Routing Factor	Element/Indicator	Proposed Route	AR-2	AR-3	Comments
Human Settlement	Aesthetics/ Proximity to residences (Count within 0-1,500 from the anticipated alignment)	●	●	●	There are no residential structures located within the proposed project area. The closest dwelling to each of the routes is at least 1950 feet away in a forested area. Therefore, the aesthetics resources of this area would not be adversely affected by any of the routes.
	Land Use Compatibility/ Summary - land use type data and land ownership data	●	▲	▲	Each of the routes is within areas zoned as either industrial, residential, or forest agricultural management. The transmission line is not incompatible with the private parcel's zoning classification of Forest Agricultural Management, or the setting among existing transmission lines, transportation corridors and mining development that occur in this area. AR-2 and AR-3 have the potential to interfere with future expansions of the mine tailings basin.
	Property Values/ Proximity to residences and land ownership data	▲	●	▲	Alternative route AR-2 avoids crossing a private ownership parcel (PIN 690-0010-04630) of land (Figure 11) that the proposed route and alternative route AR-3 would impact. This parcel is 40 acres and is currently undeveloped. Micro-siting of the alignment within the proposed route and AR-3

					may avoid/minimize the impacts to this private parcel.
Paralleling of Existing ROWs	NA/ Proximity to high voltage transmission lines, roads, rail, and trails (percent of total length)				The proposed HVTL would parallel an existing railroad grade for approximately 1.25 miles. AR-2 and AR-3 would parallel an existing railroad grade for approximately 0.65 miles.
Cost of Construction	NA/ Total construction cost[1]				

(1) If the maximum cost of the alternative is up to 20% more than the Applicant-proposed route = yellow, if the maximum cost of the alternative is more than 20% above the cost of the Applicant-proposed route - it is red.

BLANK

Figures

BLANK

Appendix A – Scoping Decision

BLANK

Appendix B – Data Collection

In the Alternative Routing Process, applicants are not required to provide any routes for review other than their proposed, preferred route. However, alternatives are often brought forward during the scoping processes by concerned citizens or local governments. In this case, while no route alternatives were developed through the public scoping process, the Commission did adopt two alternatives (AR-2 and AR-3) bought forth by PUC staff, which were carried forward into the Scoping Decision for further consideration. Descriptions of these alternatives are presented in Section 4.

The PUC staff briefing paper on the issue of alternative routes also recommended that additional information (i.e., geotechnical soil boring and soil and wetland classification) and cost data be gathered in preparation of the EA to assist the Administrative Law Judge and the Commission in its evaluation of the routing alternatives.[32]

EERA requested cost estimates from the Applicant for the field work (See below) associated with this recommendation.

The level of "deck-top" resource data (aerial photographs, U.S. Geological Survey Topographical Maps, National Wetlands Inventory (NWI) soil data, U.S. Fish and Wildlife Service's Wetland Inventory Mapper, and U.S. Department of Agriculture NRCS data base) available today allows the reviewer access to much information, that while not eliminating the need for the collection of field data in the final design/pre-construction phase of a project, it can greatly reduce the need (and scope) of this work.

The surface and subsurface conditions (soils and wetlands) within the proposed and alternative routes for the 16 Line replacement project is one such instance. Considering the cost of the field work required to "ground-proof" this information and the fact that the routes are virtually, and to a certain extent literally "on top of each other", EERA determined that the level of information available is adequate for a comparison of the three route options.

Cost Estimates Geotechnical Investigation

	Soil Boring Cost	Matting Access	Matting Access Cost	Total
Proposed Route	$0.00	NA	$0.00	**NA**
AR-2	$8,000.00	1.7 miles	$404,000.00	**$412,000.00**
AR-3	$3,000.00	1.3 miles	$309,000.00	**$315,000.00**

[32] PUC staff Briefing Paper, April 22, 2015. eDocket 20154-109540-01

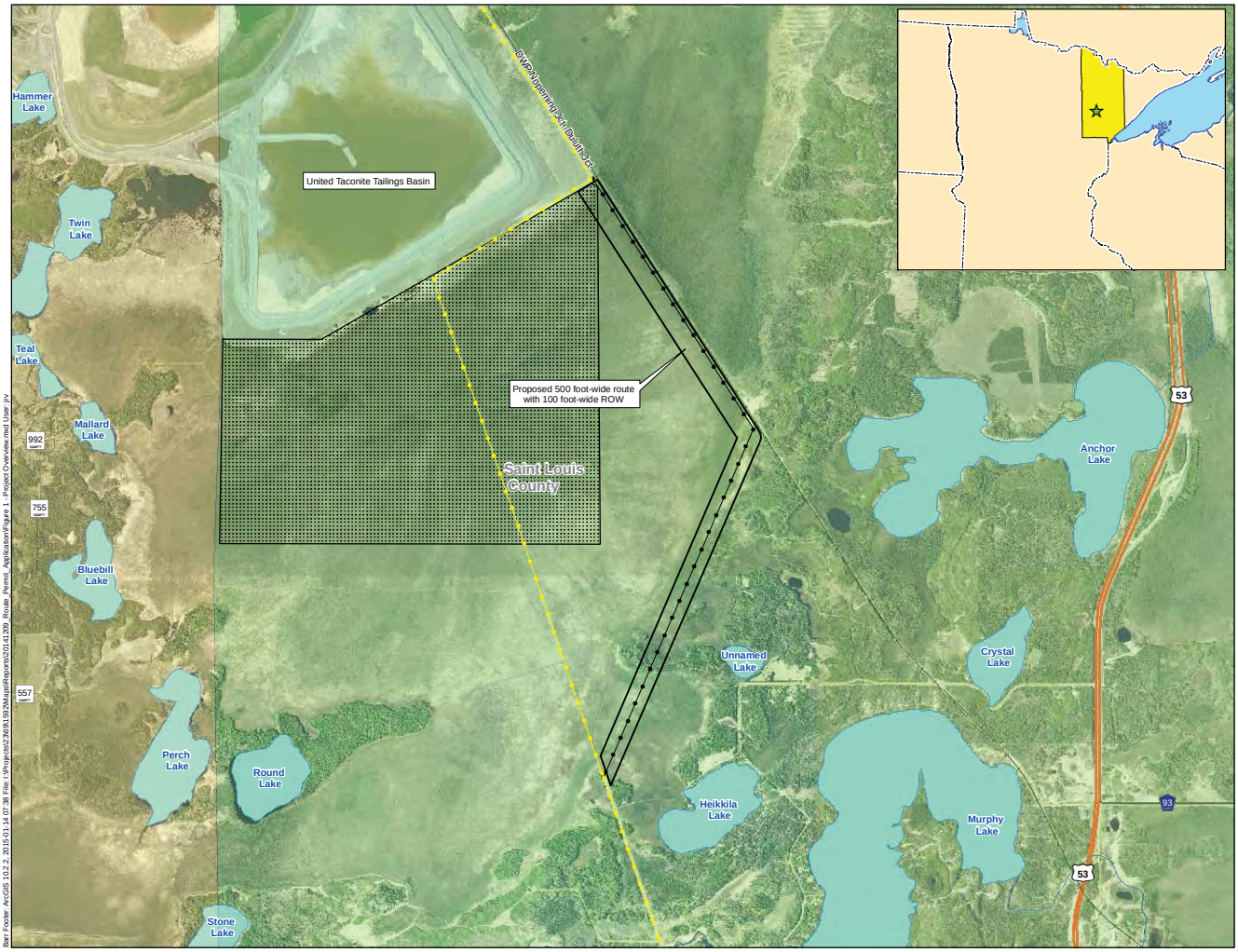
Cost Estimates Wetland Delineation

Task	Subtask	Proposed Route, AR-2 and AR-3
Pre-field	Define Study Area w/ Client	$250.00
	Desktop GIS Analysis & QC Check	$1,140.00
	Figure & GIS Data Management	$300.00
	Study Area Discussion/Revisions	$920.00
Field Survey	Resources Coordination	$380.00
	General Safety Coordination	$1,300.00
	Kick-off Meeting w/ Client	$1,300.00
	Field Maps, GPS Data Analysis	$1,100.00
	Field Work	$5,888.40
	Field Data Handling/Processing	$1,100.00
	Client Updates	$500.00
Reporting	Data Review & Analysis	$1,600.00
	Narrative/Tables/Photos/Datasheets	$4,050.00
	Figures & GIS Data Management	$2,400.00
	Peer Review/Edits	$920.00
	Publishing	$350.00
	Review Results w/ Client	$960.00
	Distribute to Agencies	$730.00
Total		**$25,188.40**

BLANK

Appendix C – Sample Route Permit

BLANK



Existing 16 Line
Proposed 16 Line Alignment
Proposed 16 Line 500 foot-wide Route
PWI Basin
PWI Watercourse
Tailings Basin Expansion Area

Township Boundary

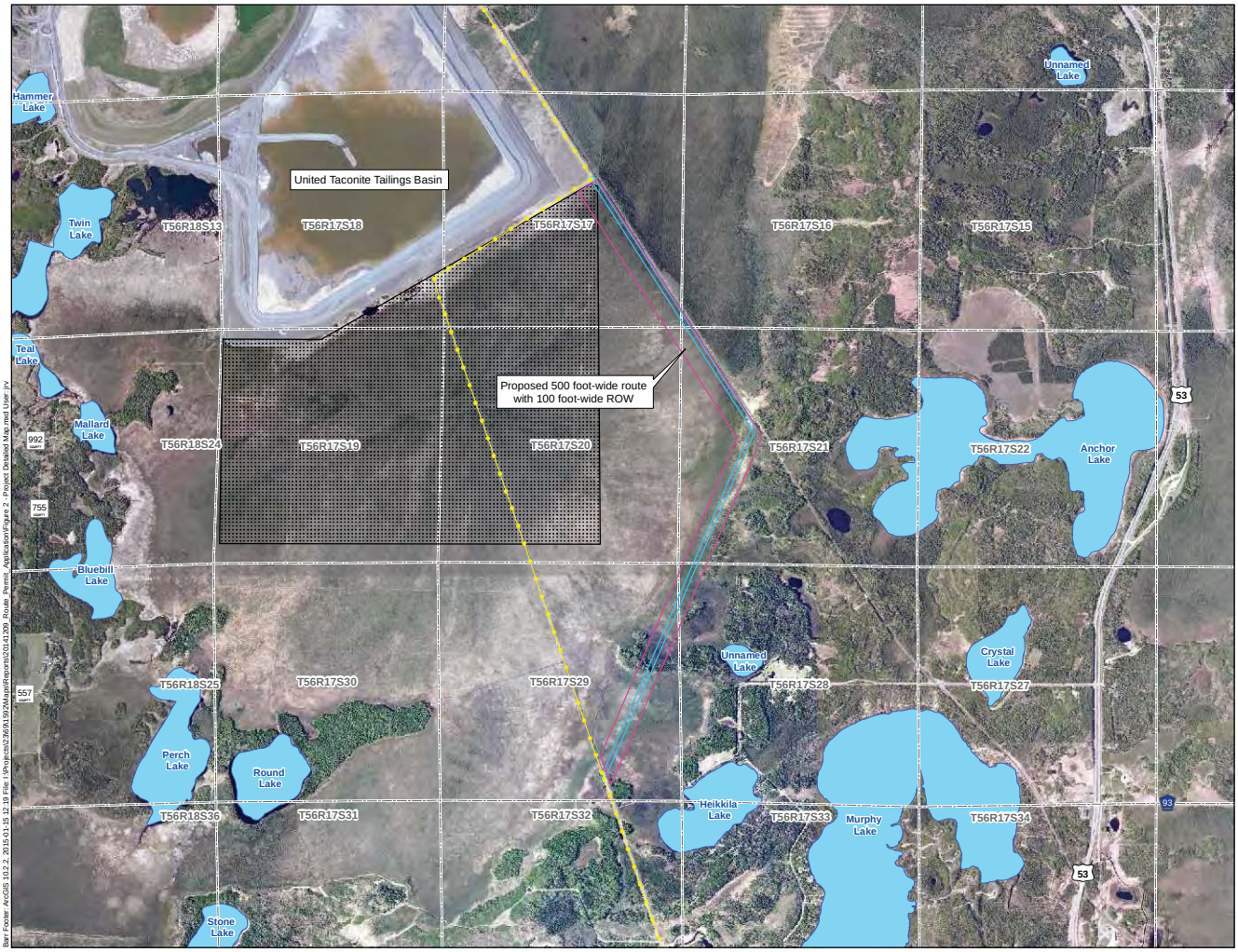
Heikkila Lake Township
McDavitt Township

N

0 2,000 4,000 Feet

Figure 1

PROJECT OVERVIEW
Proposed 16 Line Reroute
Saint Louis County, MN



Existing 16 Line
Proposed 16 Line 100 foot-wide ROW
Proposed 16 Line 500 foot-wide Route
PWI Basin
Tailings Basin Expansion Area
Public Land Survey Sections

N

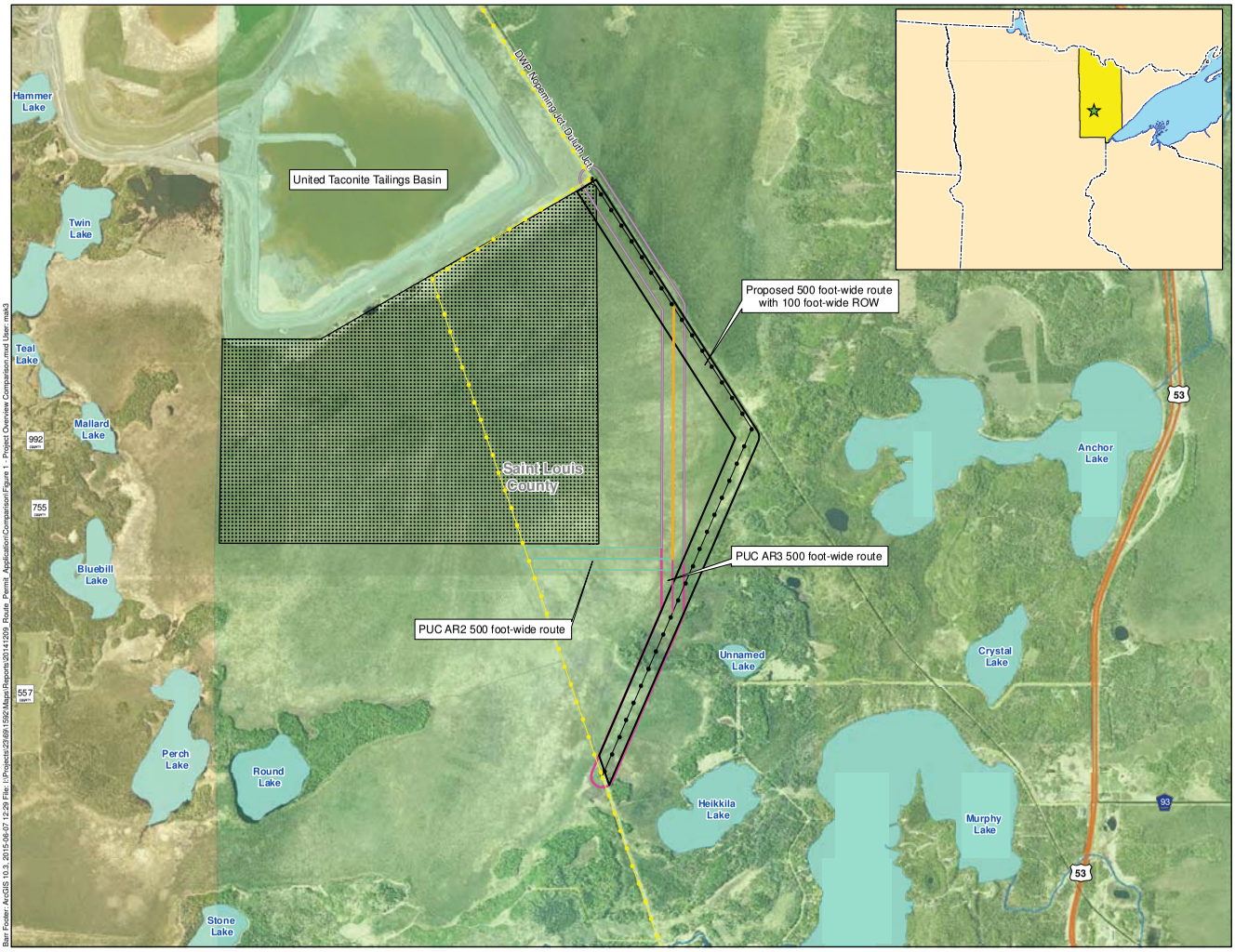
0 2,000 4,000

Feet

Figure 2

PROJECT DETAIL MAP
Proposed 16 Line Reroute
Saint Louis County, MN

Barr Footer: ArcGIS 10.2.2 2015-01-15 12:19 File: I:\Projects\23\6192\Maps\Reports\2014\209 Route Permit Application\Figure 2 - Project Detailed Map.mxd User: jrv

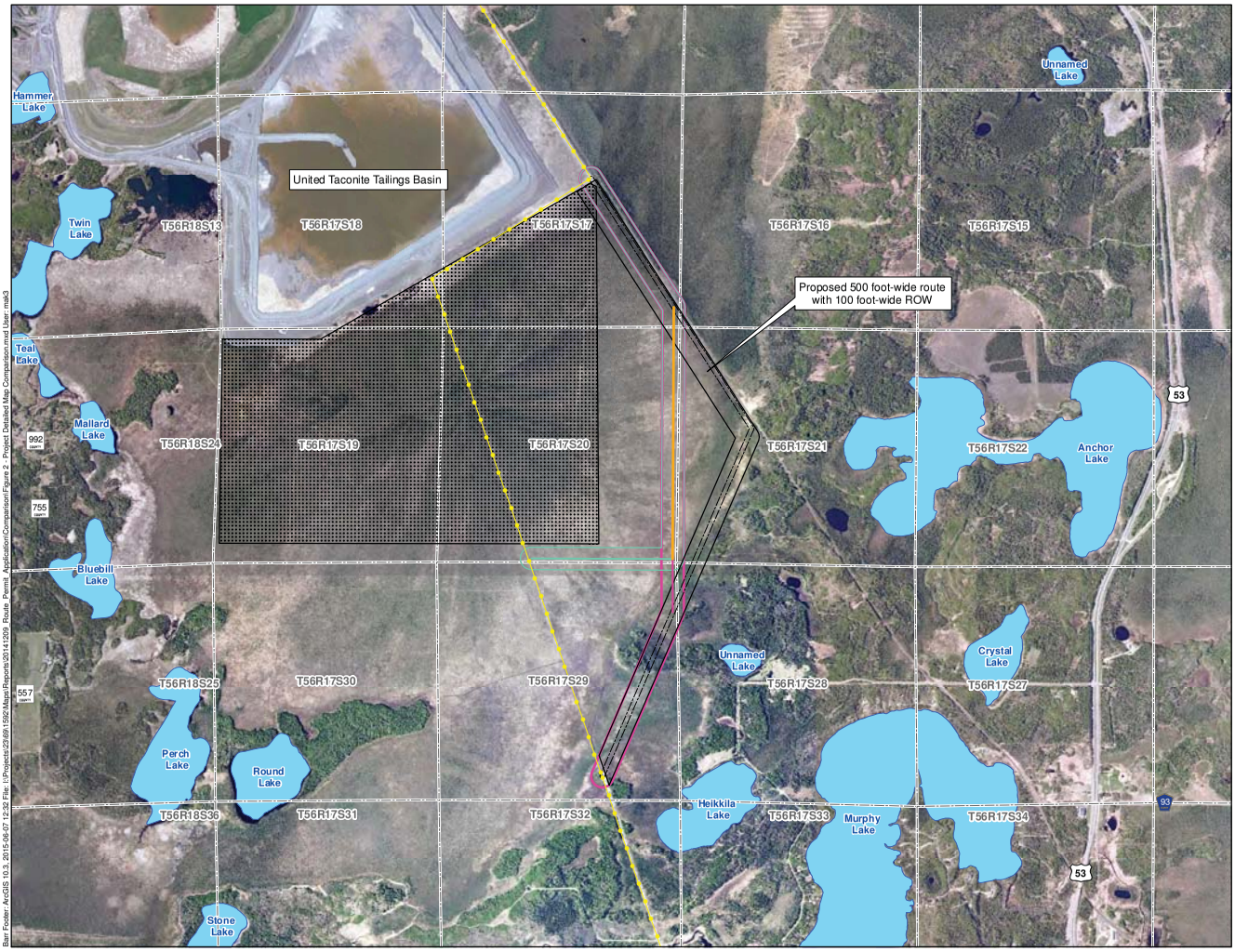


Barr Footer: ArcGIS 10.3, 2015-06-07 12:29 File: I:\Projects\23\69\1592\Maps\Reports\20141209_Route_Permit_Application\Comparison\Figure 1 - Project Overview Comparison.mxd User: mak3

Figure 3 Alternative Routes Map

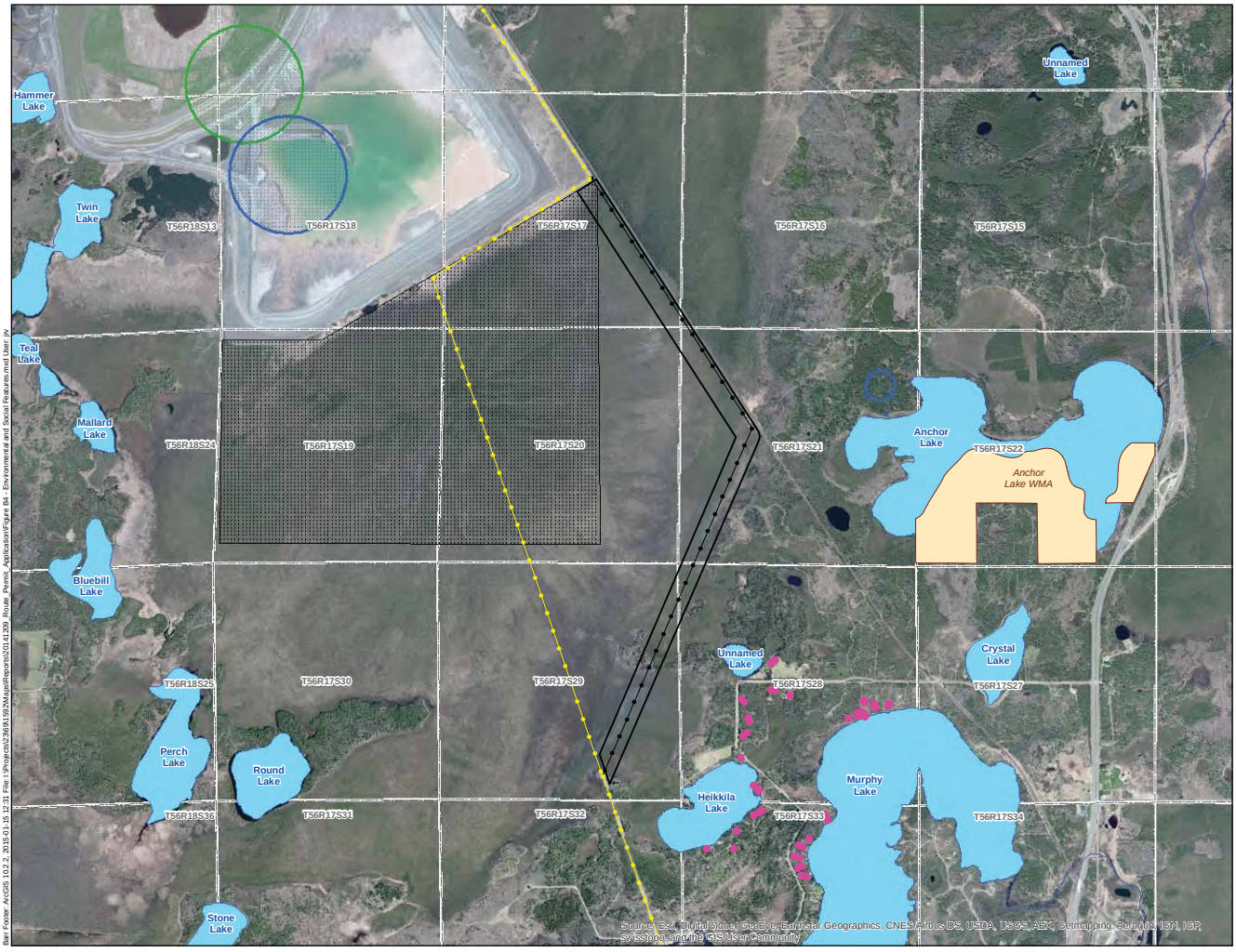
N

0 2,000 4,000 Feet



Barr Footer: ArcGIS 10.3, 2015-06-07 12:32 File: I:\Projects\23\69\1590\Maps\Reports\20141209 Route_Permit_Application\Comparison\Figure 2 - Project Detailed Map Comparison.mxd User: mak3

Figure 4 Overview All Route Map



Proposed 16 Line Alignment
Proposed 16 Line 500 foot-wide Route
Existing 16 Line
Tailings Basin Expansion Area
Public Land Survey Sections
Wildlife Management Area

T&E Species*

Vertebrate Animal
Animal Assemblage
Residential Buildings
PWI Basin
PWI Watercourse

*Rare features data included here were provided by the Natural Heritage and Nongame Research Program of the Division of Ecological Services, Minnesota Department of Natural Resources (DNR), and were current as of 05/15/13

N

0 2,000 4,000 Feet

Figure 5

ENVIRONMENTAL AND SOCIAL FEATURES
Proposed 16 Line Reroute
Saint Louis County, MN

Barr Footer: ArcGIS 10.2.2 2015-01-15 12:31 File: I:\Projects\23\6\9192\Maps\Reports\2014\209_Route_Permit_Application\Figure B4 - Environmental and Social Features.mxd User: jw

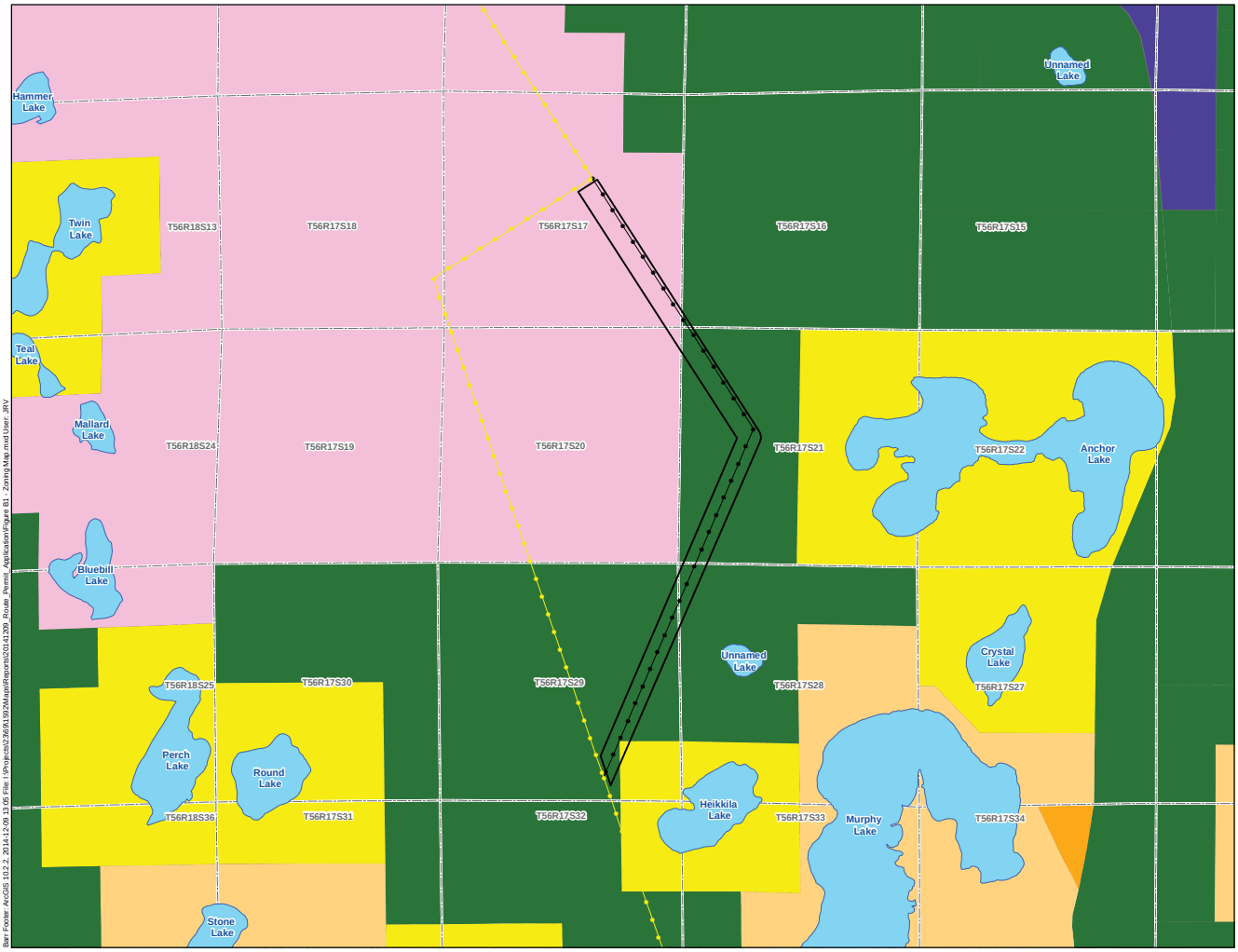


Figure 6

ZONING MAP
Proposed 16 Line Reroute
Saint Louis County, MN

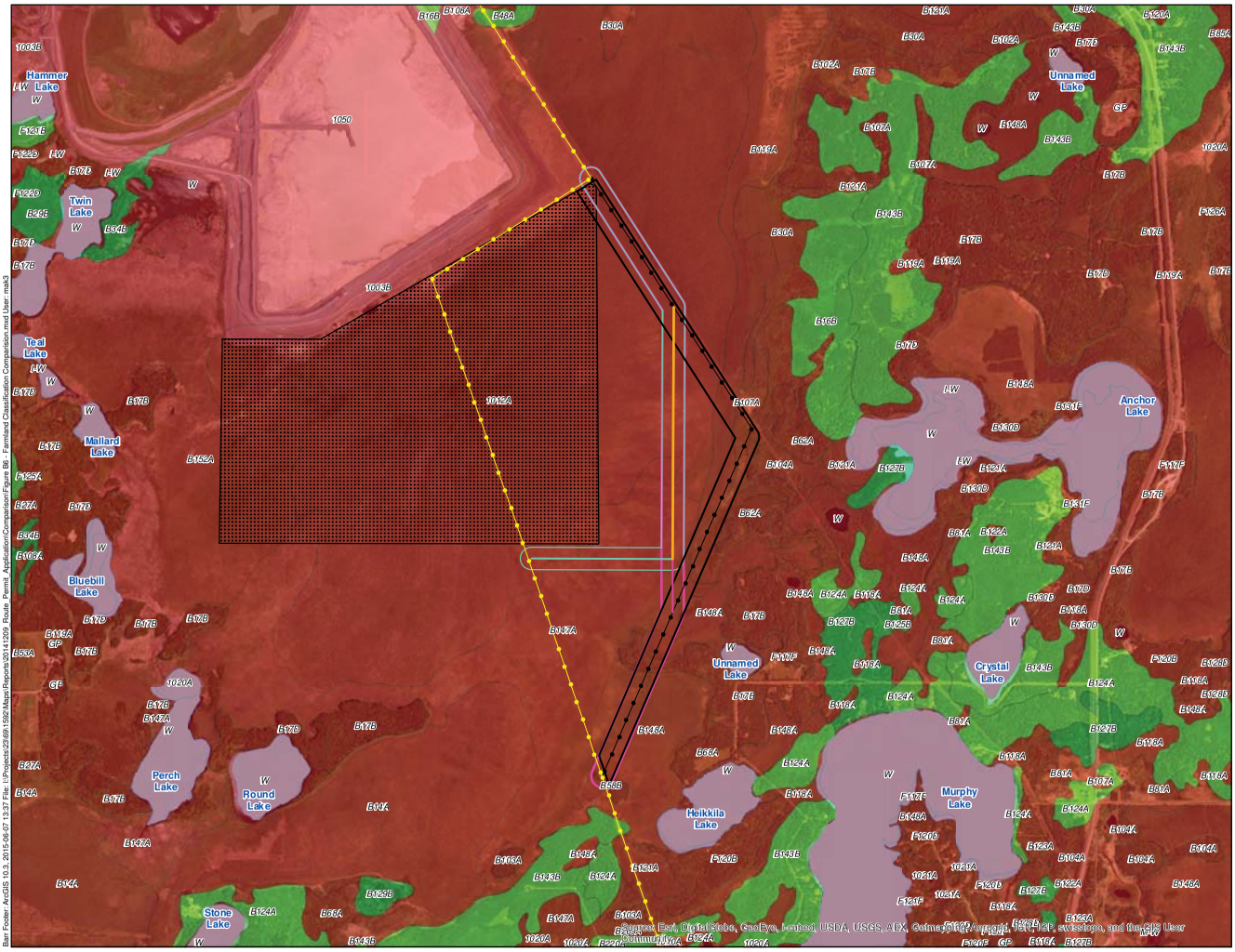


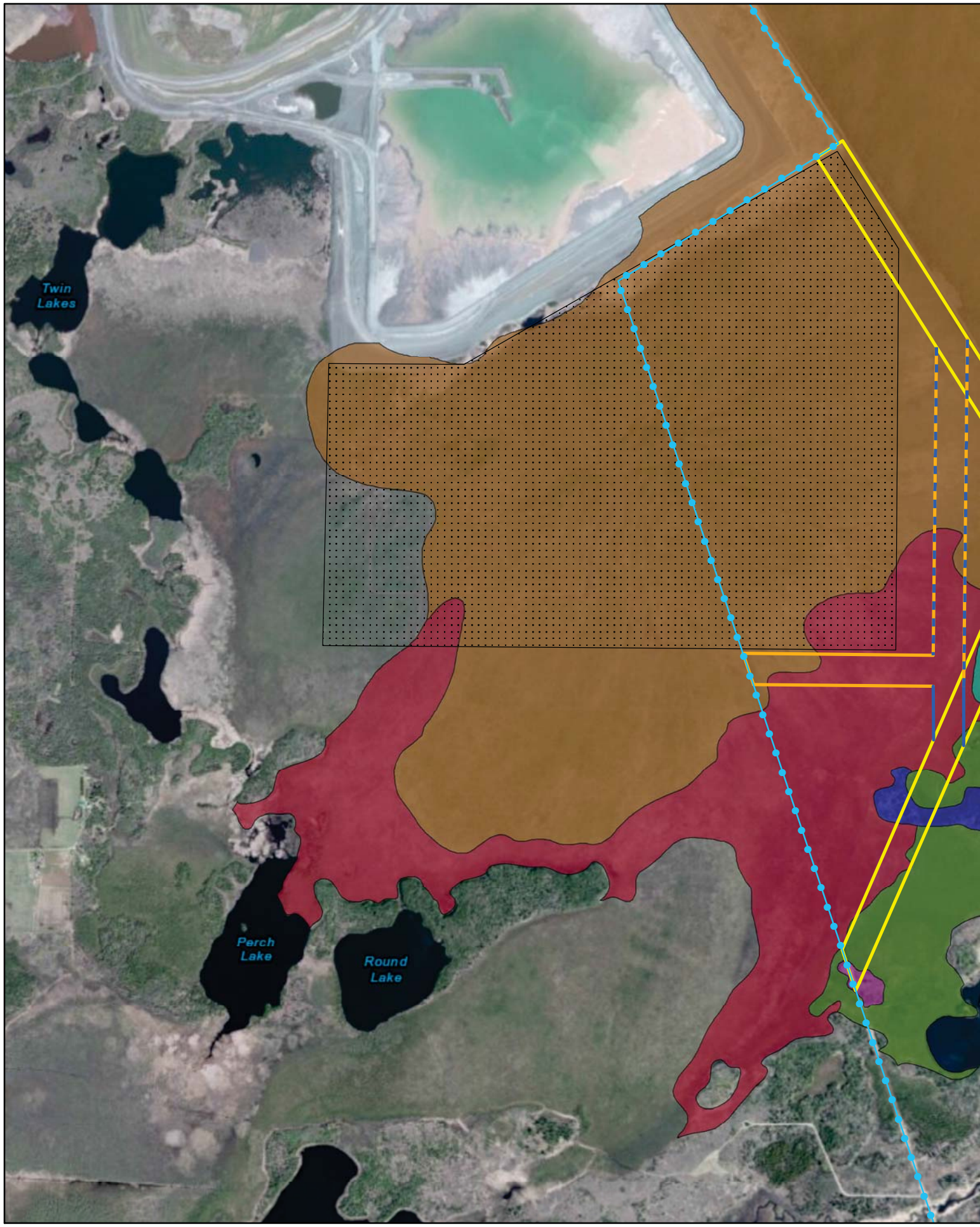
Figure 7

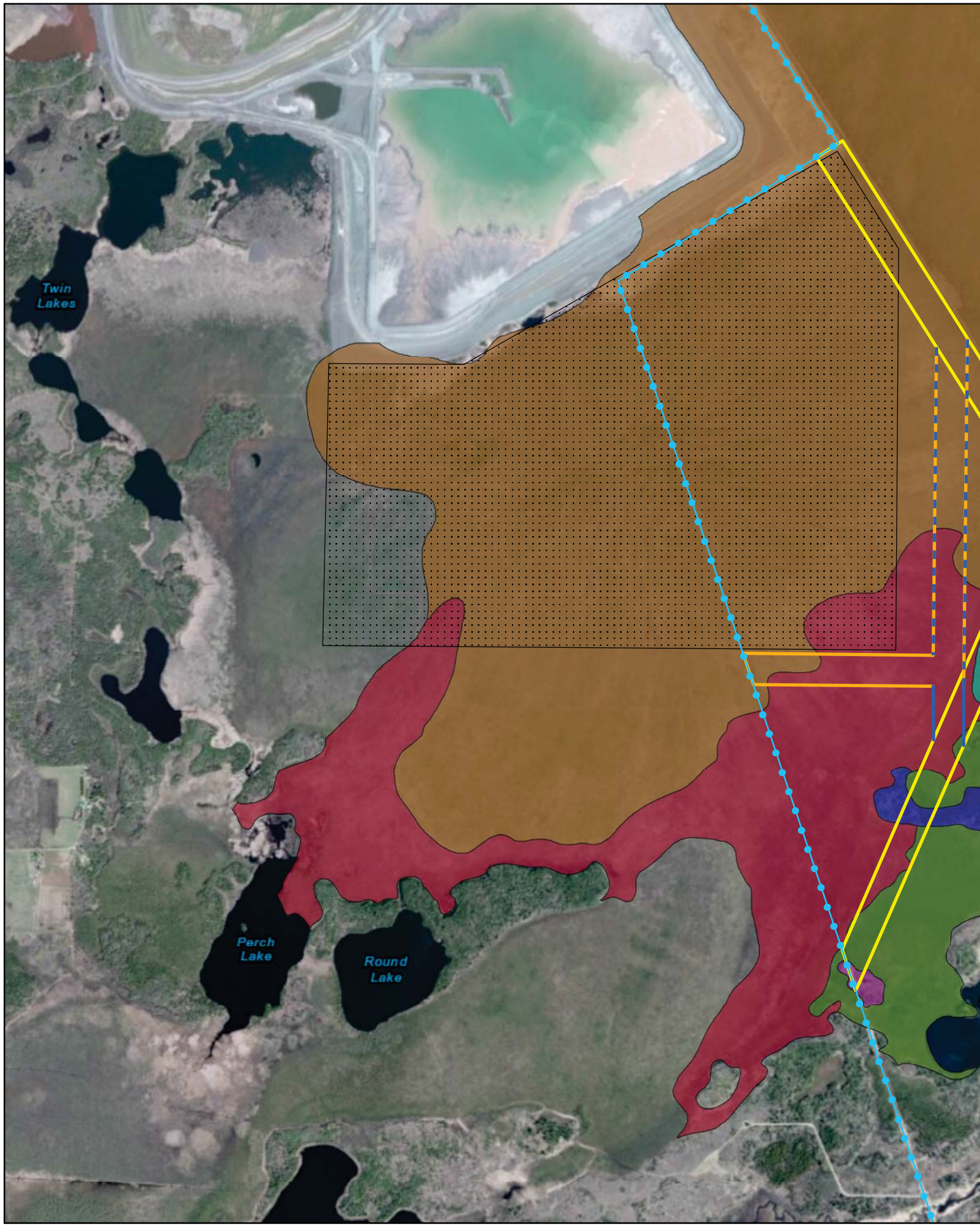
N

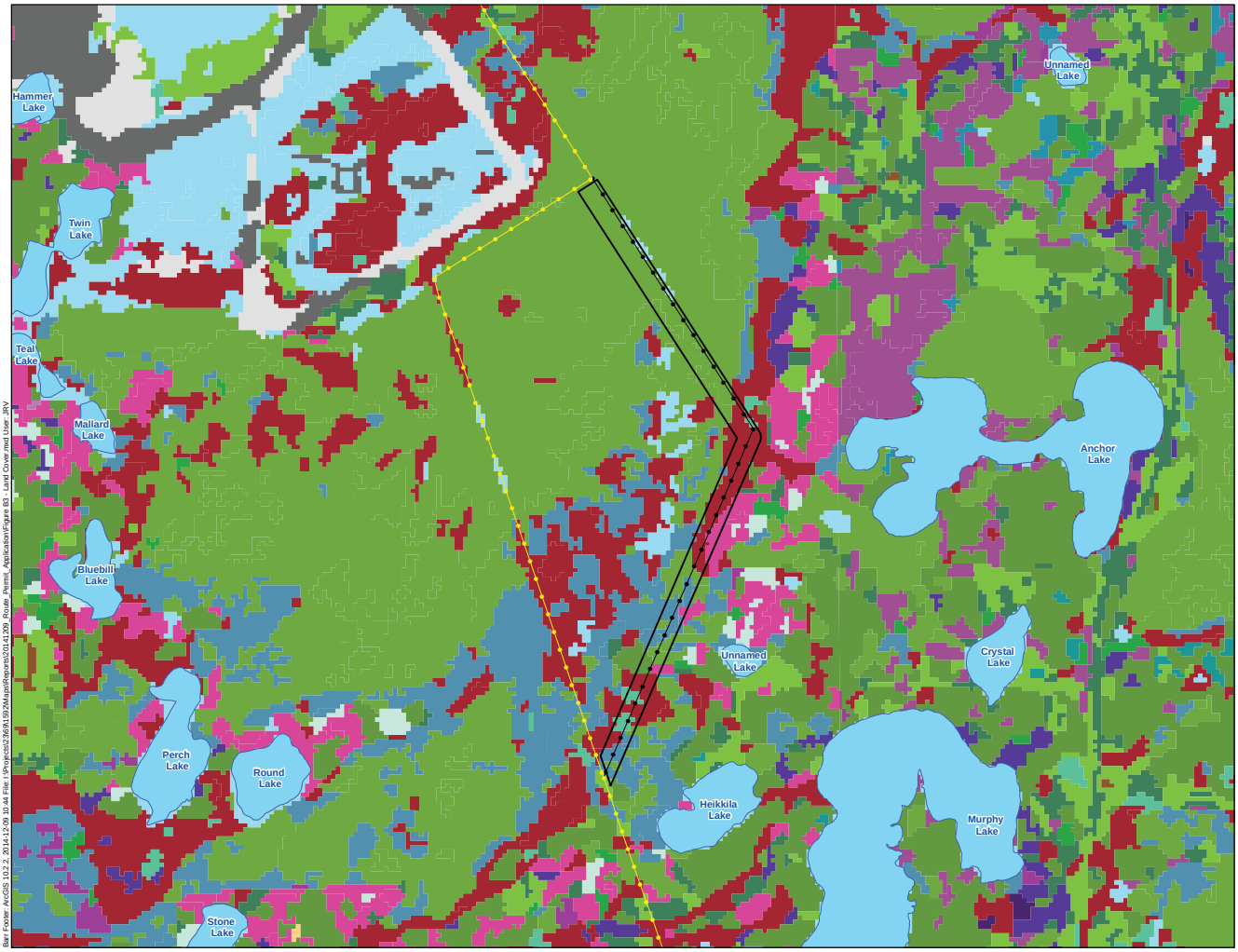
0 2,000 4,000 Feet

FARMLAND CLASSIFICATION
Proposed 16 Line Reroute
Saint Louis County, MN

Barr Footer: ArcGIS 10.3, 2015-06-07 13:37 File: I:\Projects\23\69\1592\Maps\Reports\20141209 Route_Permit_Application\Comparison\Figure B8 - Farmland Classification Comparison.mxd User: mak3


Twin
Lakes
Perch
Lake
Round
Lake


Twin
Lakes
Perch
Lake
Round
Lake



Barr Footer: ArcGIS 10.2.2 2014-12-09 10:44 File: I:\Projects\23\6192\Maps\Reports\20141209_Route Permit_Application\Figure B3 - Land Cover.mxd User: JRV

Figure 10

LAND COVER
Proposed 16 Line Reroute
Saint Louis County, MN

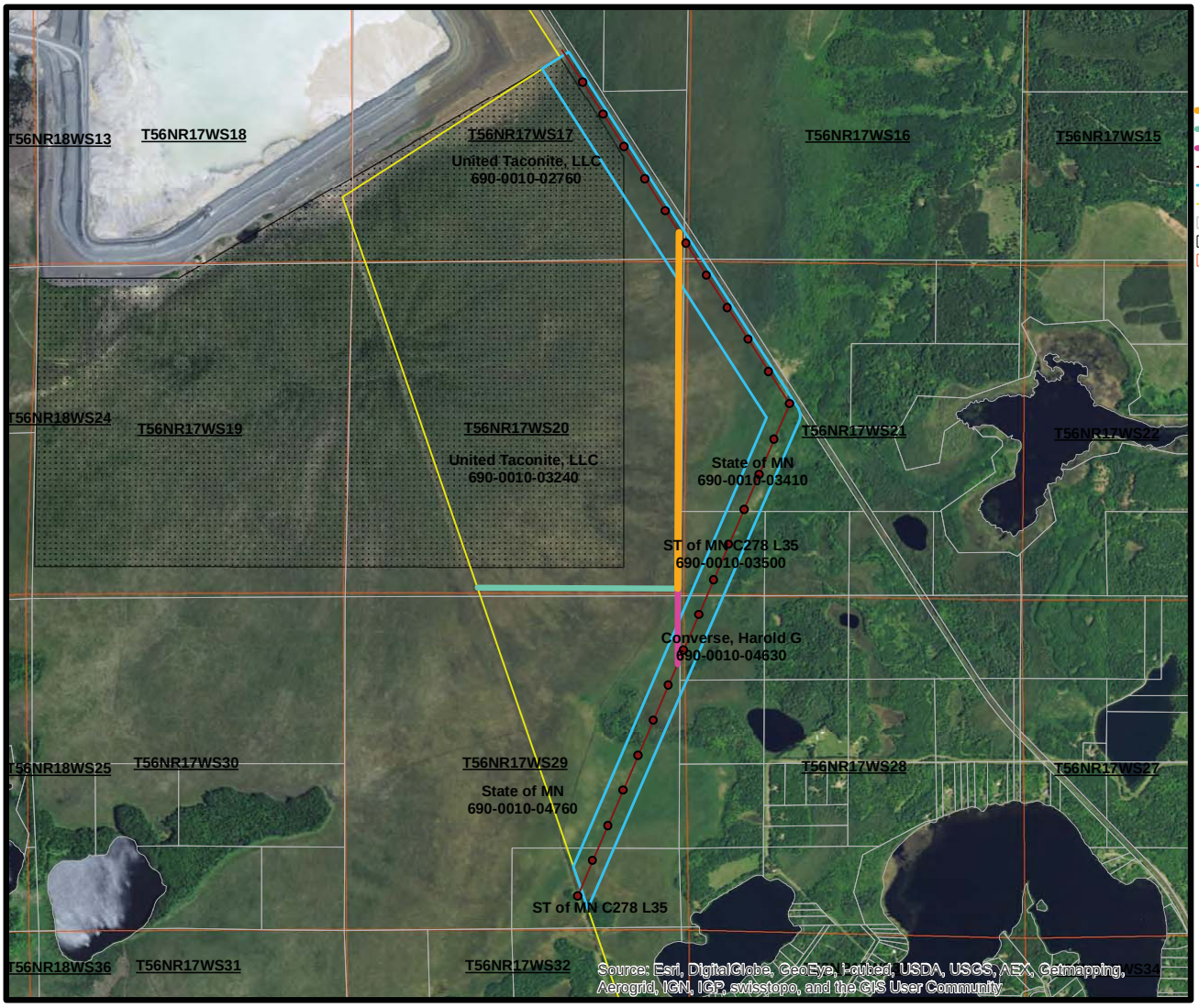


Figure 11 Parcel Data Map

Figure 12 Comparative Impacts Proposed Route, AR-2 and AR-3

Title	Comparison Applicable	Proposed Route	Alternative Route AR-2	Alternative Route AR-3
Project Description	Each of the routes differs slightly; however, the start and end of each route connect with the existing 16 Line.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 1.25 miles. The line would then proceed southwest for approximately 1.75 miles where it would connect to the existing 16 Line. An existing three-mile 115 kV HVTL section would be taken out of service and removed.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.10 miles and then it would proceed west for approximately 0.60 miles where it would connect to the existing 16 Line. An existing three-mile 115 kV HVTL section would be taken out of service and removed.	The proposed Project is located south of Fayal Township and approximately four miles east of McDavitt Township in St. Louis County, Minnesota. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 0.65 miles. The line would then proceed south for approximately 1.30 miles and then it would proceed southwest for approximately 0.75 miles where it would connect to the existing 16 Line. An existing three-mile 115 kV HVTL section would be taken out of service and removed.
Project Costs	The options for constructing the structure foundations with mine tailings or constructing the structure foundations with select granular fill have been compared and the cost differences are noted. Mine tailings would be preferred due to their proximity and cost.	Assumes Structure Foundations require no fill material Total Cost = $4,699,349.38	Structure Foundations Constructed with Mine Tailings Cost Difference = $396,118.24 Structure Foundations Constructed with Select Granular Fill = $533,729.14	Structure Foundations Constructed with Mine Tailings Cost Difference = $831,698.01 Structure Foundations Constructed with Select Granular Fill = $861,838.42
Location	Each of the routes would impact the same Township, Range, and Sections. The routes and the Township, Range, and Section are displayed in **Figure 2**.	Township 56 North, Range 17 West, Section 16 Township 56 North, Range 17 West, Section 17 Township 56 North, Range 17 West, Section 18 Township 56 North, Range 17 West, Section 20 Township 56 North, Range 17 West, Section 21 Township 56 North, Range 17 West, Section 28 Township 56 North, Range 17 West, Section 29		
Route Width	Each of the routes would have the same route and ROW widths.	The route width for each route would be 500-feet and the ROW width would be 100 feet. For each route engineering challenges associated with the project would require a 500-foot route width to allow adequate flexibility in developing a final alignment.		
Transmission Structures	Each of the routes would utilize the same structures; however, the placement of each structure may be different depending on the route. More specific information regarding the structure design is included in **Table 3**.	The transmission line for each route would be designed to meet or exceed relevant local and state codes including the National Electric Safety Code (NESC) and Company standards. Appropriate standards will be met for construction and installation, and applicable safety procedures will be followed during and after installation.		
Right-of-Way Width	Each of the routes would have the same ROW width.	The ROW width for each route would be 100 feet.		
Transmission Removal Procedures	Transmission Removal Procedures, which is not specific to the route. (**see Section 5.1.5 RPA**)	NA		

Figure 12 Comparative Impacts Proposed Route, AR-2 and AR-3

Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
Restoration Procedures	Not applicable, the text in this section describes Restoration Procedures, which is not specific to the route. (**see Section 5.2.6 RPA**)	NA		
Maintenance Procedures	Not applicable, the text in this section describes Maintenance Procedures, which is not specific to the route. (**see Section 5.1.7 RPA**)	NA		
Electric Fields	Each of the routes would have the same EF Values. Detailed information regarding the calculated EF is located in **Table 10.**	Due to the conductor configuration of the single circuit 115 kV H-Frame type structure, the maximum EF for this configuration actually occurs at approximately 16 feet from the centerline of the ROW, this would be the same for all routes. The maximum EF was calculated to be 1.55 kV/m at one meter above ground for all routes.		
Magnetic Fields	Each of the routes would have the same MF Values. Detailed information regarding the calculated MF is located in **Table 11**.	Due to the conductor configuration of the single circuit 115 kV H-Frame type structure, the peak MF for this configuration actually occurs at the centerline of the ROW, this would be the same for all routes. This peak MF was calculated to be 104.90 mG under the conductor thermal limit condition and 70.69 mG under the expected peak loading condition for all routes.		
Stray Voltage	Each of the routes would have the same mitigation measures for stray voltage.	Appropriate measures would be taken to prevent stray voltage problems when the proposed HVTL parallels or crosses distribution lines for each route.		
Farm Operations, Vehicle Use and Metal Buildings Near Power Lines	Each of the routes would have the same mitigation measures.	Minnesota Power would design the Project to exceed NESC minimum clearances for each route.		
Environmental Setting	Each of the routes is located in close proximity; therefore, they are within the same environmental setting.	Each route area is located within the Northern Minnesota Drift and Lake Plains Section, a section within the biogeographic province known as the Laurentian Mixed Forest Province under the Ecological Classification System developed by the Minnesota Department of Natural Resources. Each route is located in the Tamarack Lowlands Subsection of the Northern Minnesota Drift and Lake Plains Section, near the transition between the St. Louis Moraines and Toimi Uplands Subsections. The Tamarack Lowlands Subsection is characterized by level to gently rolling topography. The largest landform is a lake plain. Around the edges of the old glacial lake is a till plain (Aurora Till Plain) formed in Superior lobe sediments. There is also a small piece of end moraine north of Sandy Lake that is related to the St. Louis moraines. The most common forest communities include lowland hardwoods and conifers. Additionally, northern hardwood and aspen-birch forests were common on the other portions of this region. Presently, much of the land is in public ownership. Forestry and tourism, along with some agriculture are the most common land uses.		
Public Health and Safety	Each of the routes is located in close proximity; therefore, the public health and safety concerns are the same.	Minnesota Power would implement proper safeguards during construction and operation to avoid potential impacts to public health and safety for each route. Concerns related to health and safety include hazards associated with coming into contact with energized equipment, induction, and stray voltage. In general, impacts to public health and safety from the project are not anticipated for any of the routes. Additionally, each route would be equipped with protective devices (circuit breakers and relays located in the substation where the transmission lines terminate) to safeguard the public if an accident occurs, such as a structure or conductor falling to the ground.		

Figure 12 Comparative Impacts Proposed Route, AR-2 and AR-3

Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
Residential and Non-Residential Land Use	Each of the routes are located in close proximity; therefore, the public health and safety concerns are the same. Each of the routes differ slightly; therefore, the amount of residential land impact is different. The Proposed Route crosses 1.6 acres of areas zoned residential; AR-2 does not cross areas zoned residential; and AR-3 crosses 1.3 acres of areas zoned residential. The most proximate structure is the same for each route; which is a dwelling located at least 1950 feet from the routes.	The Proposed Route would cross areas zoned as industrial, residential, and forest agricultural management. Construction of the Proposed Route is primarily located in open wetland areas and wetlands adjacent to railroad tracks. Approximately 1.6 acres of the Proposed Route would cross an area zoned residential. There are no residences are located within the proposed ROW and within 1,000 feet of the Proposed Route.	The AR-2 would cross areas zoned as industrial, and forest agricultural management. Construction of AR-2 is primarily located in open wetland areas and wetlands adjacent to railroad tracks. No areas zoned residential would be crossed by AR-2. There are no residences located within the proposed ROW and within 1,000 feet of AR-2.	The AR-3 cross areas zoned as industrial, residential, and forest agricultural management. Construction of AR-3 is primarily located in open wetland areas and wetlands adjacent to railroad tracks. Approximately 1.3 acres of AR-3 would cross an area zoned residential. There are no residences located within the proposed ROW nor within 1,000 feet of the Proposed Route.
Noise	The routes would be constructed in a similar fashion; therefore, there are no differences regarding noise produced by the HVTL.	The noise generated from the each of the routes would not exceed background noise levels and would, therefore, not be audible at any receptor location. The noise level is well below the MPCA limits for the relevant noise area classifications (NAC 1, NAC 2, and NAC 3). The proposed HVTLs would be designed and constructed to comply with state noise standards established by the MPCA. Any audible noise would be below the MPCA noise standards established for NAC 1. Additionally, it is not anticipated that the proposed Project would increase noise from transmission line conductors or any associated facilities above the levels already experienced in the area. With implementation of state design and construction standards, the proposed project is not anticipated to result in adverse or significant impacts on the public as a result of noise.		
Television and Radio Interference	The routes would be constructed in a similar fashion; therefore, there are no differences regarding television and radio interference associated with the HVTL.	If television or radio interference is caused by or from the operation of the routes in those areas where good reception is presently obtained, the Applicant would inspect and repair any loose or damaged hardware, or take other necessary action to restore reception to the present level, including the appropriate modification of receiving antenna systems if deemed necessary.		
Aesthetics	Each of the routes are located in close proximity; therefore, the aesthetic impacts for all routes would be the same.	Each of the routes is within areas zoned as either industrial, residential, or forest agricultural management. There are no residential structures located within the proposed project area. The closest dwelling to each of the routes is at least 1950 feet away in a forested area. Therefore, the aesthetics resources of this area would not be adversely affected by any of the routes.		
Socioeconomic	Each of the routes are located in close proximity; therefore, the socioeconomic impacts for all routes would be the same.	None of the routes would create any permanent jobs; however, the construction activities for each route would provide a seasonal influx of additional dollars into the communities during the construction phase, and materials, such as concrete, may be purchased from local vendors where feasible. Long-term beneficial impacts from each of the routes would be measured as the value of the United Taconite tailings basin expansion, which would allow United Taconite to continue operating.		
Cultural Values	Each of the routes are located in close proximity; therefore, the cultural impacts for all routes would be the same.	No impacts are anticipated for any of the routes and, therefore, no mitigative measures are proposed.		
Recreation	Each of the routes are located in close proximity; therefore, the impacts to recreation for all routes would be the same.	None of the routes are located in the immediate vicinity of any recognized recreational area; however, Hiekkila and Murphy Lakes are located within one mile of each of the routes as shown in Figure 5. Several properties have shoreline property on these water bodies. These property owners and the general public may use the lakes for a variety of recreational activities; including boating, fishing, and watersports. None of the routes are located within the immediate vicinity of these lakes and, thus, no impacts are anticipated.		

Figure 12 Comparative Impacts Proposed Route, AR-2 and AR-3

Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
Recreation	Each of the routes is located in close proximity; therefore, the impacts to recreation for all routes would be the same.	None of the routes are located in the immediate vicinity of any recognized recreational area; however, Hiekkila and Murphy Lakes are located within one mile of each of the routes as shown in Figure 5. Several properties have shoreline property on these water bodies. These property owners and the general public may use the lakes for a variety of recreational activities; including boating, fishing, and watersports. None of the routes are located within the immediate vicinity of these lakes and, thus, no impacts are anticipated.		
Public Services	Each of the routes is located in close proximity; therefore, the impacts to public services for all routes would be the same.	No impacts to public services are anticipated for any of the routes and, therefore, no mitigative measures are proposed.		
Utilities	Each of the routes is located in close proximity; therefore, the impacts to utilities for all routes would be the same.	No impacts to utilities are anticipated for any of the routes and, therefore, no mitigative measures are proposed.		
Transportation and Traffic	Each of the routes is located in close proximity; therefore, the impacts to transportation and traffic for all routes would be the same.	No impacts to emergency services are anticipated for any of the routes, Minnesota Power would minimize potential impacts through coordination of the construction with local and state road authorities for all routes and use signage during construction to alert drivers. No significant conflicts are anticipated. Operation of the transmission line is not expected to impact vehicular or rail traffic for any of the routes.		
Agriculture	Each of the routes is located in close proximity; therefore, the impacts to agriculture for all routes would be the same.	No farmland is present within the any of the routes as displayed on Figure 6.		
Forestry	Each of the routes is located in close proximity; therefore, the impacts to forestry for all routes would be the same.	There are no known tree farms or federal or state forests located within any of the routes.		
Tourism	Each of the routes is located in close proximity; therefore, the impacts to tourism for all routes would be the same.	No formal tourist areas are present within the any of the routes.		
Mining	Each of the routes would accommodate expanding United Taconite's tailing basin; therefore, the impacts to mining for all routes would be the same.	Although all three routes would allow for United Taconite to complete its planned expansion of the tailings basin, AR-2 and AR-3 would be located in close proximity to the basin. This could impact future expansion or maintenance by United Taconite or require the proposed line to be relocated in the future.		

Figure 12 Comparative Impacts Proposed Route, AR-2 and AR-3

Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
Archaeological and Historic Resources	Each of the routes are located in close proximity; therefore, the impacts to archaeological and historic resources for all routes would be the same.	Two Pines Resource Group, LLC (Two Pines) conducted a cultural resources literature search for the proposed Project in December of 2014. Based on the data from Two Pines, no archaeological or historic resources have been documented within one mile of the Proposed Route. Both AR-2 and AR-3 are within one mile of the Proposed Route; therefore, there are no anticipated impacts to archaeological and historic resources for any of the routes. Ll routes would be subject to conditions of the route permit regarding encountering such items/features during construction		
Air Quality	Each of the routes would be constructed in a similar fashion with the same materials; therefore, the impacts air quality for all routes would be the same.	None of the routes would result in adverse or significant effects on air quality.		
Water Quality	Each of the routes would be constructed in a similar fashion with the same materials in similar environmental settings; therefore, the impacts air quality for all routes would be the same.	Each route may have minor, short term effects on water quality. Impacts on water quality are possible during the construction phase of each route; when sediment could possibly reach surface waters due to excavation, grading, and construction traffic disturb the ground. In the event that a National Pollutant Discharge Elimination System (NPDES) construction storm water permit and Stormwater Pollution Prevention Plan (SWPPP) is required for any of the routes the Applicant would obtain the permit and prepare a SWPPP as a condition of the route permit.		
MnDNR Public Waters Inventory	Each of the routes would be constructed in a similar fashion with the same materials.	No PWI basins are located within the ROW of any of the routes, PWIs are displayed on Figure 8.		
Wetlands	Each of the routes differs slightly; therefore, the amount of wetlands impacted is different. The Proposed Route impacts 157.7 acres of Forested/Shrub Wetlands; AR-2 impacts 144.5 acres of Forested/Shrub Wetlands; and AR-3 impacts 161.1 acres of Forested/Shrub Wetlands. Wetland impacts are displayed on Figure 8.	Based on NWI data approximately 157.5 acres of Forested/Shrub Wetland have been mapped within the Proposed Route.	Based on NWI data approximately 144.5 acres of Forested/Shrub Wetland have been mapped within AR-2.	Based on NWI data approximately 161.1 acres of Forested/Shrub Wetland have been mapped within AR-3.
Floodplain	Each of the routes is located in close proximity; therefore, the impacts to floodplains for all routes would be the same.	None of the routes would impact floodplain resources. The location of the routes and nearby floodplains is displayed on Figure 8.		

Flora — Each of the routes is located in close proximity; however, they differ slightly. Therefore, the amount of flora impacted by each route differs.

Land Cover Type	Acres	Percent
Aquatic	0.75	2.15%
Lowland Shrub	11.02	31.57%
Marsh	1.86	5.33%
Tamarack	4.89	14.01%
Lowland Black Spruce	15	42.97%
Aspen/White Birch	0.55	1.58%
Pine	0.6	1.72%
Grassland	0.25	0.72%

Land Cover	Acres	Percent
Aquatic	3.82	13.53%
Lowland Black	14.62	51.76%
Lowland Shrub	5.46	19.32%
Tamarack	4.35	15.39%

Land Cover Type	Acres	Percent
Aquatic	3.72	10.65%
Aspen/White Birch	0.55	1.57%
Grassland	0.25	0.71%
Lowland Black Spruce	17.87	51.20%
Lowland Shrub	3.69	10.56%
Marsh	1.34	3.85%
Pine	0.05	0.15%
Tamarack	5.42	15.54%

Figure 12 Comparative Impacts Proposed Route, AR-2 and AR-3

Title	Comparison Applicable	Proposed Route	Alternative Route 2	Alternative Route 3
Fauna	Each of the routes are located in close proximity; therefore, the impacts to fauna for all routes would be the same.	The Anchor Lake MnDNR Wildlife Management Area (WMA) is located approximately 0.75 miles east of each of the routes; however, this area will not be impacted by any of the routes. Additionally, no USFWS Waterfowl Production Areas (WPA) are located within the vicinity of the any of the routes. Displacement of fauna would be minor and temporary for each route, and no long-term population-level impacts are anticipated. The Applicant would construct the selected route according to Avian Power Line Interaction Committee (APLIC) recommended safety design standards regarding avian collisions and avian electrocution with HVTLs. In addition, the Applicant would work with the MnDNR and the USFWS to identify any areas that may require marking transmission line shield wires and/or using alternative structures to reduce the likelihood of avian collisions.		
Rare and Unique Natural Resources	Each of the routes are located in close proximity; therefore, the impacts to rare and unique natural resources for all routes would be the same.	The USFWS list of federally threatened, endangered, proposed, and candidate species was reviewed to obtain information on federally-listed species that could be present along or near the Proposed Route. According to the USFWS list, St. Louis County, where the Proposed Route is located, is within the overall range of the Canada Lynx (Lynx canadensis; federally threatened), Gray Wolf (Canis lupus; federally threatened), the piping plover (Charadrius melodus; federally endangered), the rufa red knot (Calidris canutus rufa; federall threatened), and the northern long-eared bat (Myotis septentrionalis; federally threatened). Since AR-2 and AR-3 are very proximate to the Proposed Route the habitat and impacts to these species is the same. If Canada Lynx or Grey Wolf are present along any route it would not likely adversely affect them as it would not limit their movement and would not have direct impacts on active denning sites. Piping plover, which occupies shoreline and open sandy habitats, would not be present within any of the routes. No rufa red knot are expected to be found in the project vicinity, as the species only utilizes shoreline areas during migration through this county. Suitable habitat for the northern long-eared bat is potentially present near the proposed route, however, all impacts to the species will be avoided by adhering to seasonal tree-clearing restrictions. Trees will not be cleared from April 1st through September 30th. Additionally, there are no known bat hibernacula in close proximity to any of the proposed routes. The Minnesota Natural Heritage Inventory System (NHIS) database was reviewed for state-listed threatened, endangered, and special concern species that have been documented within one mile of the proposed Project. There are records of five northern goshawk (Accipiter gentilis; state special concern) nests comprising one territory as well as one bald eagle (Haliaeetus leucocephalus) nest within one mile of the project as shown in Figure 5.		

MINNESOTA DEPARTMENT OF COMMERCE

In the Matter of Minnesota Power's Application for a HVTL Route Permit for the proposed MP 16 Line Relocation HVTL Project.

ENVIRONMENTAL ASSESSMENT SCOPING DECISION
PUC Docket No. E015/TL-14-977

The above matter came before the Deputy Commission, Department of Commerce (Department) for a decision on the scope of the Environmental Assessment (EA) to be prepared for the Minnesota Power application for a Route Permit to construct the proposed MP 16 Line Relocation HVTL Project.

Project Description

Minnesota Power proposes to construct an approximately 3.0-mile-long, 115 kV HVTL in St. Louis County. The project is located in St Louis County, south of Fayal Township and approximately four miles east of McDavitt Township.

In addition, three miles of existing transmission line will be taken out of service and removed. United Taconite requested that Minnesota Power remove the existing 115 kV HVTL (portion of the 16 Line) to accommodate United Taconite's plans to expand its tailings basin located south of Fayal Township. The proposed HVTL would connect to Minnesota Power's existing 16 Line on the east side of United Taconite's existing tailings basin and proceed southeast, parallel to an existing railroad grade for approximately 1.25 miles. The line would then proceed southwest for approximately 1.75 miles where it would connect to the existing 16 Line.[1]

Regulatory Background

Minnesota Statute 216E.03, subd. 2 provides that no person may construct a high voltage transmission line without a Route Permit from the Commission. An HVTL is defined as a transmission line of 100 kV or more and greater than 1,500 feet in length in Minnesota Statute 216E.01, subd. 4. The proposed transmission lines are HVTLs and therefore a Route Permit is required prior to construction. The Application was submitted pursuant to the provisions of the Alternative Permitting Process outlined in Minn. Rules7850.2800-3900.

On January 20, 2015, Minnesota Power (MP or Applicant) submitted a high voltage transmission line (HVTL) Route Permit Application[2] under the alternative permitting process to the Commission for the proposed transmission line relocation of the MP Line 16. The Commission released an Order on February 26, 2015, finding the route permit application to be complete and initiating the alternative review process.

In the Commission's Order accepting Minnesota Power's HVTL Route Permit as complete, the Commission requested that the Energy Environmental Review and Analysis (EERA) staff present, to the Commission, the alternative routes that were put forth through the scoping process.

[1] RPA at p 9
[2] Route Permit Application (RPA), eDockets Document ID 20151-106265-01

The review process begins with the determination by the Commission that the application is complete. The Commission has six months to reach a final decision on the route permit application from the date the application is determined to be complete. The Commission may extend this limit for up to three months for just cause or upon agreement of the applicant (Minn. Rule 7850.3900).

Scoping Process

Applications for high voltage transmission line route permits under the alternative permitting process are subject to environmental review, which is conducted by EERA staff under Minn. Rule 7850.3700. Scoping is the first step in the alternative permitting process after application acceptance. The scoping process has two primary purposes: (1) to ensure that the public has a chance to participate in determining what routes and issues are studied in the EA, and (2) to help focus the EA on impacts and issues important to a reasoned route permit decision. This scope identifies potential human and environmental issues that will be addressed in the EA. The scope also presents an anticipated schedule of the environmental review process.

Public Scoping Meeting

On February 27, 2015, Commission staff sent notice of the place, date and times of the Public Information and Scoping meeting to those persons on the General List maintained by the Commission, the agency technical representatives list and the project contact list.[3]

Additionally, mailed notices were sent to those persons on Minnesota Power's property owners list and to the local units of government. Notice of the public meeting was also published in the local newspapers.

On Monday, March 23, 2015, Commission staff and EERA staff jointly held a public information/scoping meeting at the Eveleth City Hall in Eveleth. The purpose of the meeting was to provide information to the public about the proposed project, to answer questions, and to allow the public an opportunity to suggest alternatives and impacts (i.e., scope) that should be considered during preparation of the environmental review document.

One person attended the public information and scoping meeting; no individuals took the opportunity to speak on the record. A court reporter was present to document oral statements.[4]

Since only one member of the public (a Ms. Julie Marinucci from the consulting firm Short, Elliott, Hendrickson) attended the meeting, an informal question and answer period was held in lieu of a formal presentation. A variety of topics were discussed during this conversation, including project description, environmental review and schedule.

Public Comments

Written comments were due no later than Friday, April 3, 2015.

Three written comments were received: two from state agencies (Department of Natural Resources and Department of Transportation) and one from the Applicant.[5]

[3] Notice of Public Information/Scoping Meeting, eDocket No. 20152-107733-01
[4] Oral Comments Received During Scoping, eDocket No. 20154-109441-01
[5] Written Comments Received During Scoping, eDocket No. 20154-108882-01, 20154-108832-01, and 20154-108834-01

The Department of Natural Resources (DNR) in its comment letter acknowledged that the DNR had previously reviewed a request from the Applicant regarding state listed species. The DNR's response to that request was that the proposed project would not be likely to negatively affect any know rare features.

The Department of Transportation (MnDOT) in its letter recognized that it appears that the project area does not directly abut any state trunk highway; however, the agency did request that it be made aware of any changes to the proposed HVTL that may bring the project area close enough to occupy a portion of current MnDOT rights-of-way (ROW). Additionally, MnDOT requested that it be informed if the transportation and/or storage of structures have the potential to affect any MnDOT ROW.

The Applicant took this opportunity to clarify an alignment question that was raised during deliberations at the Commission's meeting on application completeness; that is, why the proposed route did not follow a straighter line between the portions of the existing 16 Line. The Applicant explained in its letter that the area between the existing 16 Line and the proposed route is comprised of wetland and peat soils. Along the proposed route, the project's heavy angle structures are located in mineral soils. If the project's heavy angle structures were installed in wetland and peat soils rather than the mineral soils found along the proposed route, foundation costs as well as maintenance would increase. Additionally, the proposed route for the project follows existing linear infrastructure, specifically an existing railroad grade in sections 16, 17 and 21 T56N, R17W.

Commission's Consideration of Alternatives

Under Minn. Rules, part 7850.3700, subp. 3, the scope of the environmental assessment must be determined by the Department within 10 days after close of the public comment period (March 21, 2013, in this case). However, Minn. Stat. § 216E.04, subd. 5, anticipates Commission input into the identification of routes, in addition to an applicant's proposed route, for inclusion in the environmental review of a project. Since the rule's 10-day timeline for determining the scope of the environmental assessment after the close of the public comment period constrains the Commission's ability to provide input, the Commission varied the 10-day timeline. The Commission extended the 10-day timeline to 40 days (which would be May 13, 2015), subject to the Executive Secretary's authority to seek additional time from the Commission.

In its briefing paper dated April 22, 2015, PUC staff recommended the inclusion of two additional alternatives (AR2 & AR3) to the proposed route for evaluation in the environmental assessment, stating that "all things being equal, the most direct route between two points should be the first route alternative[s] considered."[6]

On April 30, 2015, the Commission at its regularly scheduled meeting considered what action, if any, the Commission should take in regards to the alternatives put forth during the scoping process. The Commission elected to add the two alternative routes, AR2 and AR3, put forth by staff for evaluation in the environmental assessment.

***

Having reviewed the matter, consulted with Energy Environmental Review and Analysis staff, and in accordance with Minnesota Rule 7850.3700, I hereby make the Scoping Decision:

MATTERS TO BE ADDRESSED IN THE EA

[6] PUC staff briefing paper, eDocket No. 20154-109540-01

The EA on the proposed MP 16 Line Relocation HVTL project will address and provide information on the following matters:

1.0 PROJECT DESCRIPTION

Purpose of the Transmission Line
Project Location
Route Description
Route Width
Rights-of-Way Requirements
Project Cost
Sources of Information

2.0 REGULATORY FRAMEWORK

CN Applicability
HVTL Route Permit Process
Environmental Review Process

3.0 ENGINEERING AND OPERATION DESIGN

Transmission Line Conductors
Transmission Line Structures

4.0 CONSTRUCTION

Transmission Line and Structures
Property/Right-of-Way Acquisition
Cleanup and Restoration
    Wildlife Friendly Erosion Control
Damage Compensation
Maintenance
    Herbicide Application and Wetlands/Public Waters
    Invasive Species Management

5.0 AFFECTED ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATIVE MEASURES

The EA will include a discussion of the following human and environmental resources potentially impacted by the project and its alternatives. Potential impacts, both positive and negative, of the proposed project and each alternative considered will be described. Based on the impacts identified, the EA will describe mitigative measures that could reasonably be implemented to reduce or eliminate the identified impacts. The EA will describe any unavoidable impacts resulting from implementation of the proposed project.

Environmental, economic, employment, and sociological impacts for the proposed project and each alternative will be thoroughly but succinctly discussed relative to the potentially significant adverse or beneficial effects generated, be they direct, indirect, or cumulative. The level of data and analyses will be commensurate with the importance of the impact and the relevance of the information to a reasoned choice among alternatives and to the consideration of the need for mitigation measures.

EERA will consider the relationship between the cost of data and analyses and the relevance and importance of the information in determining the level of detail of information to be prepared for the EA consistent with the timelines set forth in the governing statute and rule. Less important material may be

summarized, consolidated, or simply referenced. If the relevant information cannot be obtained within those timeframes or the overall costs of obtaining it are exorbitant or the means to obtain it are not known, EERA will include within the environmental review document a statement that such information is incomplete or unavailable; and a statement of the relevance of the incomplete or unavailable information to evaluating potential impacts or alternatives.

Environmental Setting
Socioeconomic Setting
Human Settlement
- Displacement

Noise
- Construction Activities

Aesthetics
- Visual and View-shed

Proximity to Structures
- Residences
- Businesses
- Schools/Daycares
- Hospitals
- Cemeteries
- Displacement
- Existing Utilities

Public Health and Safety
- Electric and Magnetic Fields
- Implantable Medical Devices
- Stray Voltage
- Tower Collapse
- Security of Facilities, placarding, emergency provisions

Recreation
- Parks (city, county, state, and federal)
- Trails (walking, bike)

Transportation and Public Services
- Emergency Services
- Airports
- Highways, Roads and Bike Paths
- Traffic (during construction)

Interference
- Radio and Television (digital and satellite)
- Internet (Wi-Fi)
- Cellular Phone
- Current and Future Infrastructure
- Emergency vehicle pre-emption devices

Archaeological and Historic Resources
Zoning and Compatibility/Federal, State and Local Government Planning
Land-Based Economies
- Agriculture
- Forestry

Property Values

- Residential
- Industrial
- Agriculture

Air Quality (As it pertains specifically to this transmission line only.)
- Construction (heavy equipment, dust)

Natural Resources
- Surface Water
  - Lakes
  - Surface/stormwater Flows
- Groundwater
  - Dewatering Requirements
- Wetlands
- Floodplains
- State Wildlife Management Areas/Scientific Natural Areas
- National Wildlife Refuge/Waterfowl Production Areas

Flora
- Invasive Species

Fauna
- Avian Impacts (diverter methods)

Rare and Unique Natural Resources/Critical Habitat
Environmental Justice

6.0 ALTERNATIVE ROUTES

The EA will identify and evaluate the proposed route and the two alternative routes (AR2 and AR3) put forth by the Commission. The evaluation will contain a comparison of the relative merits of the proposed route and each alternative in view of the factors to be considering in determining a route permit, as per Minnesota Rule 7850.1400.

7.0 REJECTED ALTERNATIVE ROUTES

The EA will include a discussion of route alternatives that were evaluated by the Applicants and/or through the scoping process and rejected.

8.0 REQUIRED PERMITS AND APPROVALS

The EA will include a list of permits that will be required for the project.

The above outline is not intended to serve as a "Table of Contents" for the EA document, and as such, the organization (i.e., structure of the document) of the information and the data may not be similar to that appearing in the EA.

ISSUES OUTSIDE THE SCOPE OF THE EA

The following issues will not be considered or evaluated in the EA:

- No build alternative.
- Issues related to project need, size, type, or timing.
- Any route alternative(s) not specifically identified in this scoping decision.
- The impacts of specific energy sources, such as carbon outputs from coal-generated facilities.

- The manner in which landowners are paid for transmission rights-of-way easements.

SCHEDULE

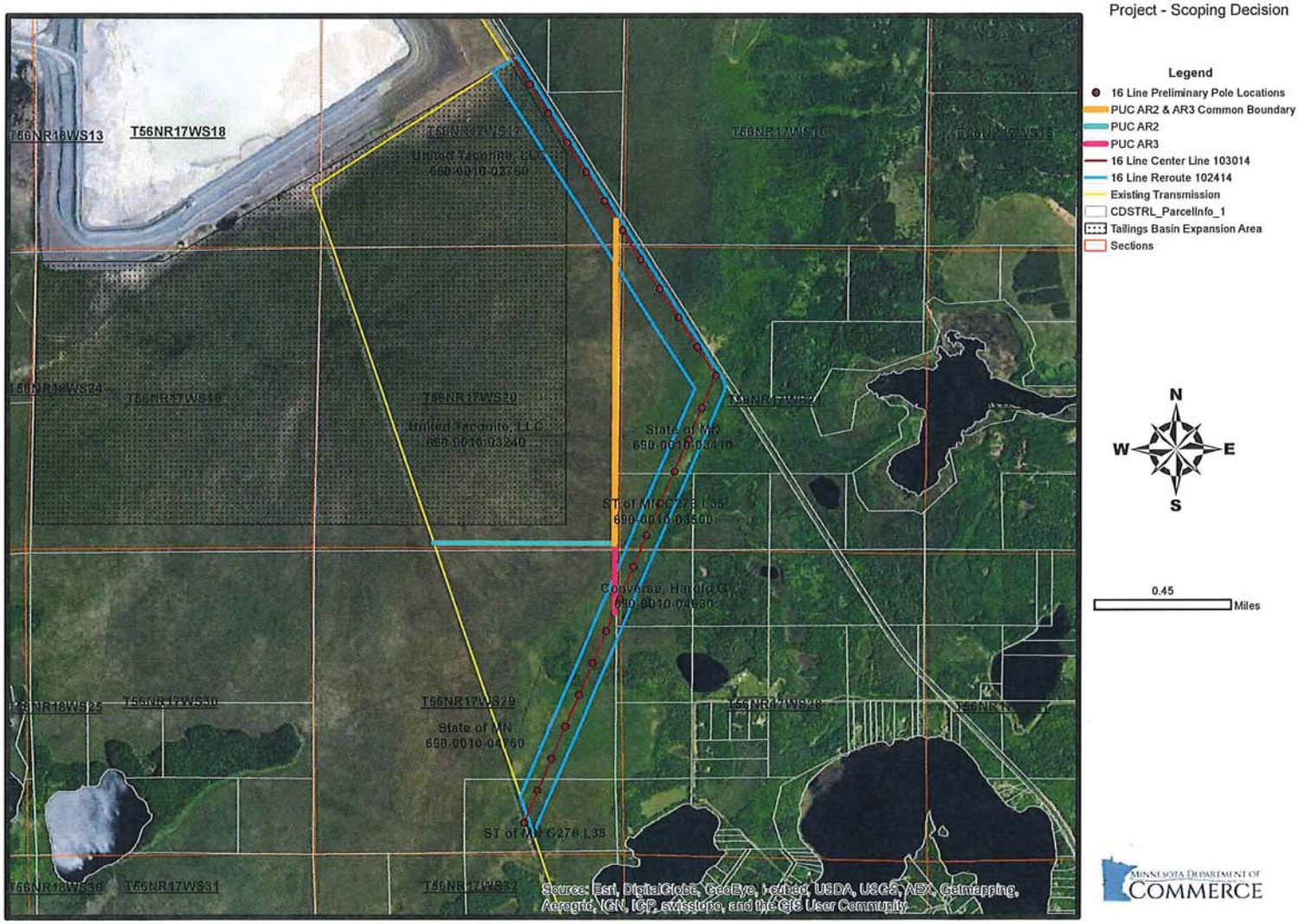
The EA is scheduled to be available in August 2015.

Signed this 19th day of May, 2015

STATE OF MINNESOTA
DEPARTMENT OF COMMERCE

William Grant, Deputy Commissioner

Minnesota Power Proposed 16 Line Relocation - Alternative Routes



BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
David C. Boyd	Commissioner
Nancy Lange	Commissioner
J. Dennis O'Brien	Commissioner
Betsy Wergin	Commissioner

In the Matter of the Application of Minnesota Power for a Route Permit for the 39 Line 115 kV Transmission Line Project in St. Louis County	ISSUE DATE: January 13, 2014 DOCKET NO. E-015/TL-12-1123 ORDER ISSUING ROUTE PERMIT

PROCEDURAL HISTORY

On November 30, 2012, Minnesota Power filed an application for a route permit under Minn. Stat. § 216E.04 to construct approximately 2.9 miles of new 115 kilovolt (kV) transmission line near the City of Eveleth in St. Louis County (the Project).

On January 16, 2013, the Commission found the route permit application complete and referred the application to the Office of Administrative Hearings to develop the record.

On March 11, 2013, the Department of Natural Resources (DNR) filed comments on the proposed project and the scope of environmental review.

April 18, 2013, the Department of Commerce (the Department) issued its Scoping Decision, identifying the issues to be addressed in the Environmental Assessment.

On July 19, 2013, the Energy Environmental Review and Analysis unit of the Department of Commerce (EERA) filed its Environmental Assessment on the Project.

On September 4, 2013, Administrative Law Judge Jeanne M. Cochran conducted a public hearing at the Leonidas Community Center in Eveleth on the route permit application. On November 15, 2013, she filed her FINDINGS OF FACT, CONCLUSIONS, AND RECOMMENDATIONS (ALJ's Report) on the Project, recommending that the Commission issue a route permit to Minnesota Power for its proposed route. No one filed exceptions to the ALJ's Report.

On December 19, 2013, the matter came before the Commission.

FINDINGS AND CONCLUSIONS

I. The Proposed Project

Minnesota Power proposes to construct approximately 2.9 miles of new 115 kV transmission line in St. Louis County near the City of Eveleth. At the request of United Taconite, Minnesota Power also proposes to remove approximately 1.9 miles of existing 115 kV line. The existing 39 Line runs through United Taconite's north pit. United Taconite made the request to remove that section of the existing transmission line as part of its plan to extend its mining operation west of Eveleth. Minnesota Power stated that the Project is therefore necessary to remove the existing line without degrading the quality of the area's transmission system.

II. The Legal Standard

The Project is subject to Minn. Stat. Chapter 216E, which requires that high-voltage transmission lines be routed consistent with the state's goals to locate electric power facilities in an orderly manner compatible with environmental preservation and the efficient use of resources.[1] In addition, the statute requires that route permit determinations be guided by the policy objective to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electric energy security through efficient, cost-effective power supply and electric transmission infrastructure.[2]

The Project is also subject to environmental review under Minn. Stat. § 216E.04, subd. 5, which directs the Commissioner of the Department of Commerce (the Department) to prepare an Environmental Assessment on proposed high voltage transmission lines between 100 and 200 kV and to study and evaluate the impacts of the proposed project and alternatives, including mitigation measures.

Furthermore, in designating a route, the Commission must consider the permitting criteria contained in Minn. Stat. § 216E.03, subd. 7 (b) and Minn. R. 7850.4100.

III. Environmental Assessment

Minn. R. 7850.3700 requires that the Environmental Assessment include:

A. a general description of the proposed facility;
B. a list of any alternative sites or routes that are addressed;
C. a discussion of the potential impacts of the proposed project and each alternative site or route on the human and natural environment;
D. a discussion of mitigative measures that could reasonably be implemented to eliminate or minimize any adverse impacts identified for the proposed project and each alternative site or route analyzed;
E. an analysis of the feasibility of each alternative site or route considered;
F. a list of permits required for the project; and
G. a discussion of other matters identified in the scoping process.

[1] Minn. Stat. § 216E.02.

[2] Minn. Stat. § 216E.03, subd. 7 (a) and Minn. Rules, part 7850.4000.

On April 18, 2013, the Department issued a scoping decision, which identified the issues to be addressed in the Environmental Assessment, including a project description; a discussion of the affected environment, potential impacts, and mitigative measures; rejected alternative routes; and required permits and approvals.

On July 19, 2013, the EERA issued the Environmental Assessment, which contains a comprehensive analysis of the proposed project and the feasibility of project alternatives, including an evaluation of the affected environment, potential impacts, and possible mitigation measures.

The Commission has reviewed the Environmental Assessment under Minn. R. 7850.3900, subp. 2, which requires the Commission to determine whether the Environmental Assessment and the record created at the public hearing address the issues identified in the scoping decision. Based on its review of the Environmental Assessment, the Commission finds that, under Minn. R. 7850.3900, subp. 2, the Environmental Assessment and the record as a whole address the issues identified in the scoping decision.

IV. The ALJ's Report

The Administrative Law Judge's Report is well reasoned, comprehensive, and thorough. She made some 156 findings of fact and conclusions and recommended that the Commission issue a route permit to Minnesota Power for its proposed route.

Having itself examined the record and having considered the ALJ's Report, the Commission concurs in her findings, conclusions, and recommendations and will therefore accept, adopt, and incorporate her findings, conclusions, and recommendations.

V. Route Permit

With the decisions contained herein, the Commission finds that the Project satisfies the routing criteria contained in Minn. Stat. § 216E.03 and Minn. R. 7850.4100 and meets the goal set forth in Minn. Stat. § 216E.02 to locate large electric power facilities in an orderly manner compatible with environmental preservation and the efficient use of resources. The Commission will therefore issue the route permit to Minnesota Power in the form attached.

ORDER

1. The Commission hereby approves and adopts the ALJ's Report for Minnesota Power's 39 Line High Voltage Transmission Line Project in St. Louis County.

2. The Commission hereby finds that the Environmental Assessment and the record created at the public hearing address the issues identified in the environmental assessment scoping decision.

3. The Commission hereby issues a high-voltage transmission line route permit to Minnesota Power, identifying a specific route and permit conditions for the 39 Line 115 kV Transmission Line Project in St. Louis County, in the form attached.

4. This Order shall become effective immediately.

BY ORDER OF THE COMMISSION

Burl W. Haar
Executive Secretary

This document can be made available in alternative formats (e.g., large print or audio) by calling 651.296.0406 (voice). Persons with hearing loss or speech disabilities may call us through their preferred Telecommunications Relay Service.

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

ROUTE PERMIT FOR CONSTRUCTION OF A HIGH-VOLTAGE TRANSMISSION LINE AND ASSOCIATED FACILITIES

IN
ST. LOUIS COUNTY

ISSUED TO
MINNESOTA POWER

PUC DOCKET NO. E-015/TL-12-1123

In accordance with the requirements of Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850, this route permit is hereby issued to:

MINNESOTA POWER

Minnesota Power is authorized by this route permit to construct approximately a 3.0-mile long, 115 kV high voltage transmission line (HVTL) from Minnesota Power's existing 39 Line in the City of Eveleth to Minnesota Power's existing 37 Line northwest of the city of Leonidas in St. Louis County. Minnesota Power is to remove approximately 1.9 miles of existing 39 Line that runs through United Taconite's north mining pit.

The transmission line and associated facilities shall be built within the route identified in this permit and as portrayed on the official route maps, and in compliance with the conditions specified in this permit.

Approved and adopted this 13th day of January, 2014

BY ORDER OF THE COMMISSION

Burl W. Haar,
Executive Secretary

This document can be made available in alternative formats (i.e., large print or audio) by calling 651-296-0406 (voice). Persons with hearing or speech disabilities may call us through their preferred Telecommunications Relay Service.

CONTENTS

FIGURES

ATTACHMENTS

1.0 ROUTE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this route permit to Minnesota Power (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This permit authorizes Minnesota Power to construct an approximately 3.0-mile, 115 kV high voltage transmission line (HVTL) from the existing 39 Line in the City of Eveleth to the existing 37 Line northwest of the city of Leonidas in St. Louis County and to remove approximately 1.9 miles of the existing 39 Line that runs through United Taconite's north mining pit, as identified in the attached route permit maps, hereby incorporated into this document.

2.0 PROJECT DESCRIPTION

The installation of 3.0 miles of 115 kV HVTL is needed to allow the existing line to be removed without degrading the area's high voltage transmission system. Two structures are proposed for the new 115 kV line, wooden monopoles and wooden H-frame. Monopole structures are proposed for the portion of the line located within the active United Taconite mining operation and along highway 101. The Project includes removing approximately 1.9 miles of existing 115 kV HVTL to accommodate United Taconite's plans to extend its mining operations located west of the City of Eveleth.

2.1 Project Location

The Project extends from Minnesota Power's existing 39 Line connection west of the City of Eveleth to the connection with the existing 37 Line northwest of the City of Leonidas.

2.2 Associated Facilities and Substations

No associated facilities are proposed as part of the project.

2.3 Structures and Conductors

Two structures are proposed for the new 115 kV line, wooden monopoles and wooden H-frame. Monopole structures are proposed for the portion of the line located within the active United Taconite mining operation and along highway 101. The monopole structures range in height from 60 to 105 feet above ground, and the spans between the structures will range from 250 to 350 feet. The H-frame structures utilize two braced wood poles and suspension insulators. The H-frame structures range in height from 60 to 70 feet above ground, and the spans between these structures range from 500 to 1,000 feet.

Pole height and span length for both structure types vary depending on topography and environmental constraints within the proposed right-of-way. The conductor for the proposed line will include three phases of Aluminum Core Steel Reinforced cable accompanied by shield wires for lighting protection.

The transmission line shall be designed to meet or exceed all relevant local and state codes, the National Electric Safety Code (NESC), and North American Electric Reliability Corporation (NERC) requirements. This includes standards relating to clearances to ground, clearance to crossing utilities, clearance to buildings, strength of materials, clearances over roadways, right-of-way widths, and permit requirements. The transmission line shall be equipped with protective devices to safeguard the public if an accident occurs.

3.0 DESIGNATED ROUTE

The route designated by the Commission in this permit is the route described below and shown on the route maps attached to this permit. The route is generally described as follows:

The route begins at Minnesota Power's existing 39 Line in the City of Eveleth, proceeds southerly to Highway 101, follows Highway 101 to the west past 13th Avenue West where it deviates from Highway 101 (to the north) and proceeds west to Minnesota Power's existing 37 Line northwest of the city of Leonidas in St. Louis County.

The Commission authorizes a route width of up to 500 feet for the project, as depicted on the project maps.

3.1 Right-of-Way

The approved right-of-way width for the project is up to 100 feet. The Permittee will utilize its existing rights-of-way associated with the single circuit 115 kV transmission line being replaced to the greatest extent possible.

This permit anticipates that the right-of-way will generally conform to the anticipated alignment as noted on the attached route permit maps unless changes are requested by individual landowners and agreed to by the permittee or for unforeseen conditions that are encountered or are otherwise provided for by this permit.

Any alignment modifications within the designated route shall be located so as to have comparable overall impacts relative to the factors in Minn. R. 7850.4100, as does the alignment identified in this permit, and shall be specifically identified and documented in and approved as part of the plan and profile submitted pursuant to section 4.1 of this permit.

Where the transmission line route parallels existing highway and other road rights-of-way, the transmission line right-of-way shall occupy and utilize the existing right-of-way to the maximum extent possible, consistent with the criteria in Minn. R. 7850.4100, the other requirements of this permit, and for highways under the jurisdiction of the Minnesota Department of Transportation (Mn/DOT) rules, policies, and procedures for accommodating utilities in trunk highway rights-of-way.

4.0 GENERAL CONDITIONS

The Permittee shall comply with the following conditions during construction of the transmission line and associated facilities over the life of this permit.

4.1 Plan and Profile

At least 30 calendar days before right-of-way preparation for construction begins on any segment or portion of the project, the Permittee shall provide the Commission with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, structure specifications and locations, cleanup, and restoration for the transmission line. The documentation shall include maps depicting the plan and profile including the right-of-way, alignment, and structures in relation to the route and alignment approved per this permit.

The Permittee may not commence construction until the 30 days has expired or until the Commission has advised the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this permit. If the Permittee intends to make any significant changes in its plan and profile or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this permit.

4.2 Construction Practices

The Permittee shall follow those specific construction practices and material specifications described in Minnesota Power's application to the Commission for a route permit for the *39 Line Transmission Line Project*, dated November 30, 2013, unless this permit establishes a different requirement in which case this permit shall prevail.

4.2.1 Field Representative

At least 14 days prior to commencing construction, the Permittee shall advise the Commission in writing of the person or persons designated to be the field representative

for the Permittee with the responsibility to oversee compliance with the conditions of this permit during construction.

The field representative's address, phone number, emergency phone number, and email shall be provided to the Commission and shall be made available to affected landowners, residents, public officials and other interested persons. The Permittee may change the field representative at any time upon written notice to the Commission.

4.2.2 Local Governments

During construction, the Permittee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services or public utilities occur these would be temporary and the Permittee will restore service promptly. Where any impacts to utilities have the potential to occur the Permittee will work with both landowners and local agencies to determine the most appropriate transmission structure placement.

The Permittee shall cooperate with county and city road authorities to develop appropriate signage and traffic management during construction.

4.2.3 Cleanup

All waste and scrap that is the product of construction shall be removed from the area and properly disposed of upon completion of each task. Personal litter, including bottles, cans, and paper from construction activities shall be removed on a daily basis.

4.2.4 Noise

Construction and routine maintenance activities shall be limited to daytime working hours, as defined in Minn. R. 7030.0200, to ensure nighttime noise level standards will not be exceeded.

4.2.5 Vegetation Removal

The Permittee shall minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not violate sound engineering principles or system reliability criteria.

Tall growing species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission facility will be removed by the Permittee. The Permittee shall leave undisturbed, to the extent possible, existing low growing species in the right-of-way or replant such species in the right-of-way to blend the difference between the right-of-way and adjacent areas, to the extent that the low growing vegetation that will not pose a threat to the transmission facility or impede construction.

The Permittee shall avoid construction and maintenance practices, particularly the use of fertilizer, herbicides or other pesticides, that are inconsistent with the landowner's or tenant's use of the land.

4.2.6 Aesthetics

The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures, rights-of-way, and other areas with the potential for visual disturbance. Care shall be used to preserve the natural landscape, minimize tree removal and prevent any unnecessary destruction of the natural surroundings in the vicinity of the project during construction and maintenance. Structures shall be placed at a distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highway, or trail crossings and could cross roads to minimize or avoid impacts.

4.2.7 Erosion Control

The Permittee shall implement those erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program.

The Permittee shall minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the facilities shall be returned to pre-construction conditions.

When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed certified to be free of noxious weeds.

To the extent possible, the Permittee shall use native seed mixes. The Permittee shall consult with landowners on the selection and use of seed for replanting.

The Permittee shall employ best management practices to avoid the potential spread of invasive species within and adjacent to the right-of-way during construction and maintenance of the transmission lines.

Where larger areas of one acre or more are disturbed or other areas designated by the MPCA, the Permittee shall obtain a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater permit from the MPCA.

4.2.8 Wetlands and Water Resources

Wetland impact avoidance measures that shall be implemented during design and construction of the transmission line will include spacing and placing the power poles at variable distances to span and avoid wetlands, watercourses, and floodplains. Unavoidable wetland impacts as a result of the placement of poles shall be limited to the immediate area around the poles. To minimize impacts, construction in wetland areas shall occur during frozen ground conditions. When construction during winter is not possible, wooden or composite mats shall be used to protect wetland vegetation. Soil excavated from the wetlands and riparian areas shall be contained and not placed back into the wetland or riparian area.

Wetlands and riparian areas shall be accessed using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts. No staging or stringing set up areas shall be placed within or adjacent to wetlands or water resources, as practicable. Power pole structures shall be assembled on upland areas before they are brought to the site for installation. Areas disturbed by construction activities shall be restored to pre-construction conditions.

All requirements of the U.S. Army Corps of Engineers (wetlands under federal jurisdiction), Minnesota Department of Natural Resources (Public Waters/Wetlands), and County (wetlands under the jurisdiction of the Minnesota Wetland Conservation Act) shall be met.

4.2.9 Archaeological and Historic Resources

The Permittee shall make every effort to avoid impacts to identified archaeological and historic resources when installing the high-voltage transmission line on the approved route. In the event that a resource is encountered, the Permittee shall contact and consult

with the State Historic Preservation Office (SHPO). Where feasible, avoidance of the resource is required. Where not feasible, mitigation must include an effort to minimize project impacts on the resource consistent with SHPO and State Archaeologist requirements.

Prior to construction, workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction.

4.2.10 Avian Mitigation

The Permittee's standard transmission design shall incorporate adequate spacing of conductors and grounding devices in accordance with Avian Power Line Interaction Committee standards to eliminate the risk of electrocution to raptors with larger wingspans that may simultaneously come in contact with a conductor and grounding devices.

4.2.11 Temporary Work Space

The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way. Temporary space shall be selected to limit the removal and impacts to vegetation.

Temporary easements outside of the authorized transmission line right-of-way will be obtained from affected landowners through rental agreements and are not provided for in this permit.

Temporary driveways may be constructed between the roadway and the structures to minimize impact using the shortest route possible. Construction mats should also be used to minimize impacts on access paths and construction areas.

4.2.12 Restoration

The Permittee shall restore the right-of-way, temporary work spaces, access roads, abandoned right-of-way, and other public or private lands affected by construction of the transmission line. Restoration within the right-of-way must be compatible with the safe operation, maintenance, and inspection of the transmission line. Within 60 days after completion of all restoration activities, the Permittee shall advise the Commission in writing of the completion of such activities.

The Permittee shall fairly compensate landowners for damage to crops, fences, landscaping, drain tile, or other damages sustained during construction.

4.2.13 Notice of Permit

The Permittee shall inform all employees, contractors, and other persons involved in the transmission line construction of the terms and conditions of this permit.

4.3 Periodic Status Reports

The Permittee shall report to the Commission on progress regarding finalization of the route, design of structures, and construction of the transmission line. The Permittee need not report more frequently than monthly.

4.4 Complaint Procedures

Prior to the start of construction, the Permittee shall submit to the Commission the procedures that will be used to receive and respond to complaints. The procedures shall be in accordance with the requirements set forth in the complaint procedures attached to this permit.

4.5 Notification to Landowners

The Permittee shall provide all affected landowners with a copy of this permit and, as a separate information piece, the complaint procedures at the time of the first contact with the landowners after issuance of this permit. The Permittee shall contact landowners prior to entering the property or conducting maintenance along the route.

The Permittee shall work with landowners to locate the high-voltage transmission line to minimize the loss of agricultural land, forest, and wetlands, and to avoid homes and farmsteads.

4.6 Completion of Construction

4.6.1 Notification to Commission

At least three days before the line is to be placed into service, the Permittee shall notify the Commission of the date on which the line will be placed into service and the date on which construction was complete.

4.6.2 As-Builts

Within 60 days after completion of construction, the Permittee shall submit copies of all final as-built plans and specifications developed during the project.

4.6.3 GPS Data

Within 60 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (e.g., ArcGIS compatible map files, GPS coordinates, associated database of characteristics) for all structures associated with the transmission line and each substation connected.

4.7 Electrical Performance Standards

4.7.1 Grounding

The Permittee shall design, construct, and operate the transmission line in a manner so that the maximum induced steady-state short-circuit current shall be limited to five milliamperes root mean square (rms) alternating current between the ground and any non-stationary object within the right-of-way, including but not limited to large motor vehicles and agricultural equipment.

All fixed metallic objects on or off the right-of-way, except electric fences that parallel or cross the right-of-way, shall be grounded to the extent necessary to limit the induced short-circuit current between ground and the object so as not to exceed one milliampere rms under steady state conditions of the transmission line and to comply with the ground fault conditions specified in the NESC. The Permittee shall address and rectify any induced current problems that arise during transmission line operation.

4.7.2 Electric Field

The transmission line shall be designed, constructed, and operated in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms.

4.7.3 Interference with Communication Devices

If interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of the transmission line, the Permittee shall take whatever action is feasible to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the line.

4.8 Other Requirements

4.8.1 Applicable Codes

The Permittee shall comply with applicable NERC planning standards and requirements of the NESC including clearances to ground, clearance to crossing utilities, clearance to buildings, right-of way widths, erecting power poles, and stringing of transmission line conductors.

4.8.2 Other Permits

The Permittee shall comply with all applicable state rules and statutes. The Permittee shall obtain all required permits for the project and comply with the conditions of these permits. A list of the required permits is included in the permit application. The Permittee shall submit a copy of such permits to the Commission upon request.

4.8.3 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this route permit shall be the sole approval required to be obtained by the Permittee for construction of the transmission facilities and this permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose government.

4.9 Delay in Construction

If the Permittee has not commenced construction or improvement of the route within four years after the date of issuance of this permit the Permittee shall file a report on the failure to construct and the Commission shall consider suspension of the permit in accordance with Minn. R. 7850.4700.

5.0 SPECIAL CONDITIONS

The Permittee shall provide a report to the Commission as part of the plan and profile submission that describes the actions taken and mitigative measures developed regarding the project and the following special conditions. Special conditions shall take precedence over other conditions of this permit should there be a conflict.

5.1.1 Vegetation Management Plan

The Permittee shall consult and coordinate with the Minnesota Department of Natural Resources (DNR) on the development of a vegetation management plan to minimize the project impacts on vegetation and potential for introduction of invasive species. The plan shall be submitted as a compliance filing along with the plan and profile deliverable.

5.1.2 Wildlife-Friendly Erosion Control Materials

The Permittee, in cooperation with the DNR, shall use wildlife-friendly erosion control materials in areas known to be inhabited by wildlife species (birds, small mammals, reptiles, and amphibians) susceptible to entanglement in plastic netting.[1]

6.0 PERMIT AMENDMENT

This permit may be amended at any time by the Commission. Any person may request an amendment of the conditions of this permit by submitting a request to the Commission in writing describing the amendment sought and the reasons for the amendment. The Commission will mail notice of receipt of the request to the Permittee. The Commission may amend the conditions after affording the Permittee and interested persons such process as is required.

7.0 TRANSFER OF PERMIT

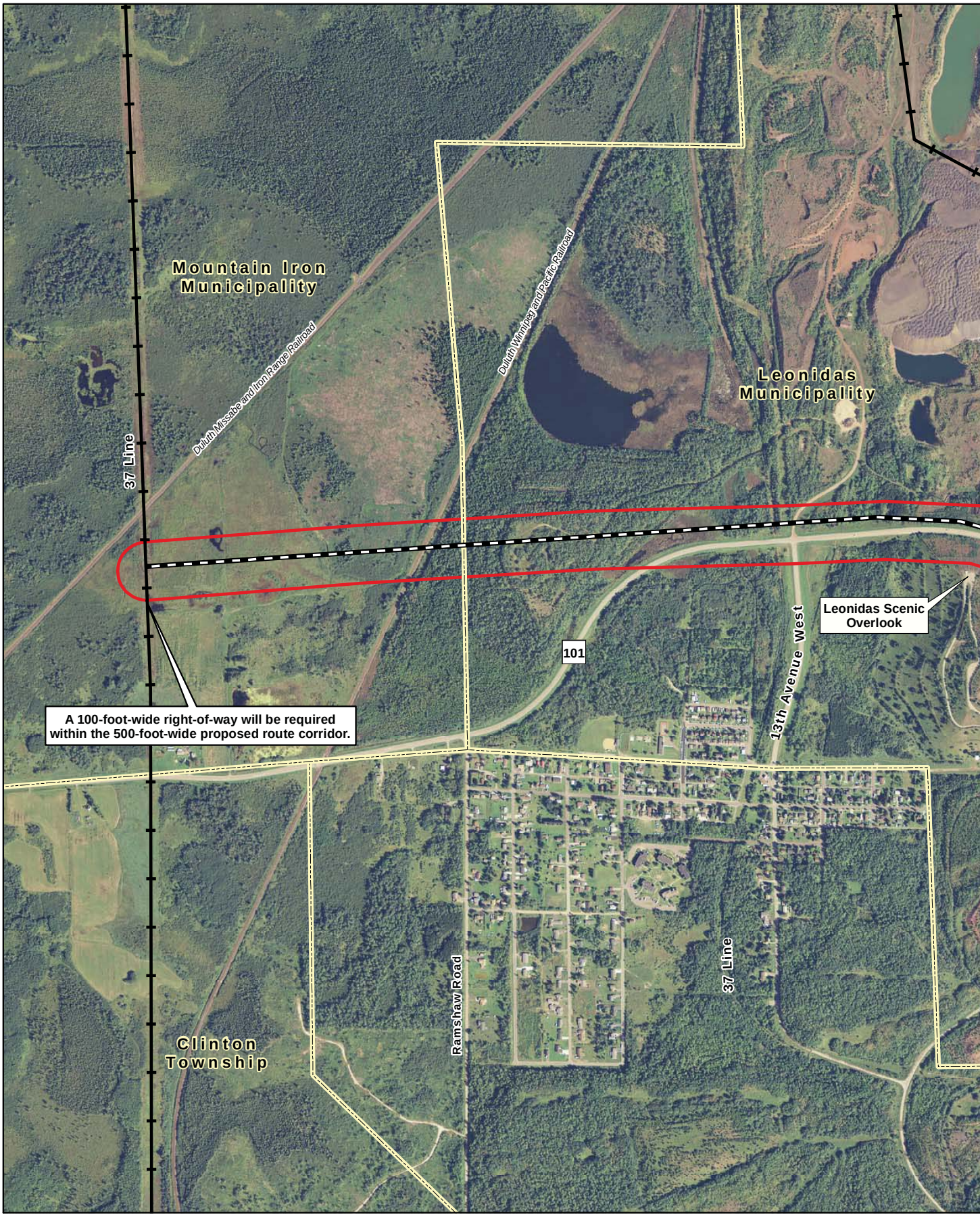
The Permittee may request at any time that the Commission transfer this permit to another person or entity. The Permittee shall provide the name and description of the person or entity to whom the permit is requested to be transferred, the reasons for the transfer, a description of the facilities affected, and the proposed effective date of the transfer.

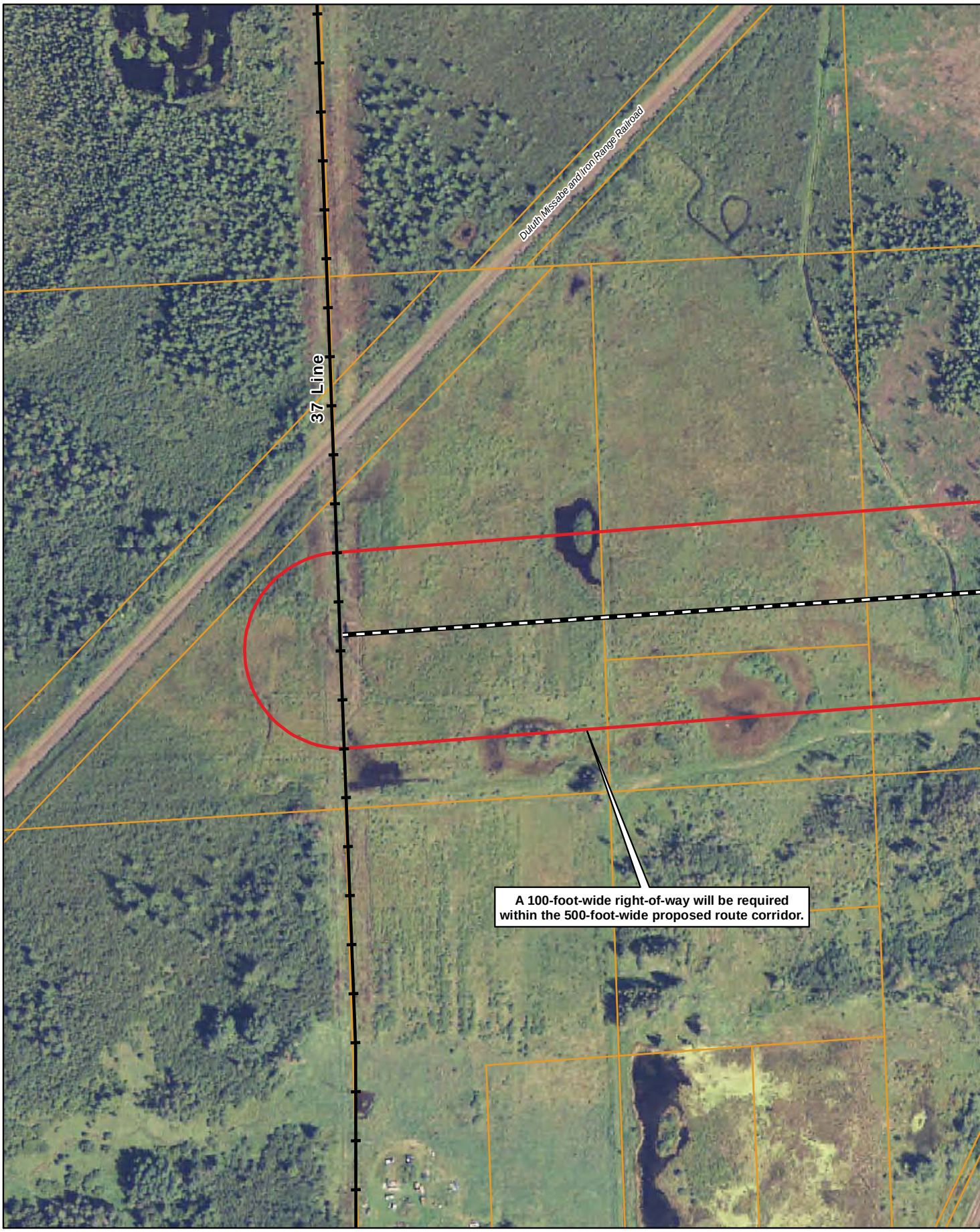
The person to whom the permit is to be transferred shall provide the Commission with such information as the Commission shall require to determine whether the new Permittee can comply with the conditions of the permit. The Commission may authorize transfer of the permit after affording the Permittee, the new Permittee, and interested persons such process as is required.

8.0 REVOCATION OR SUSPENSION OF THE PERMIT

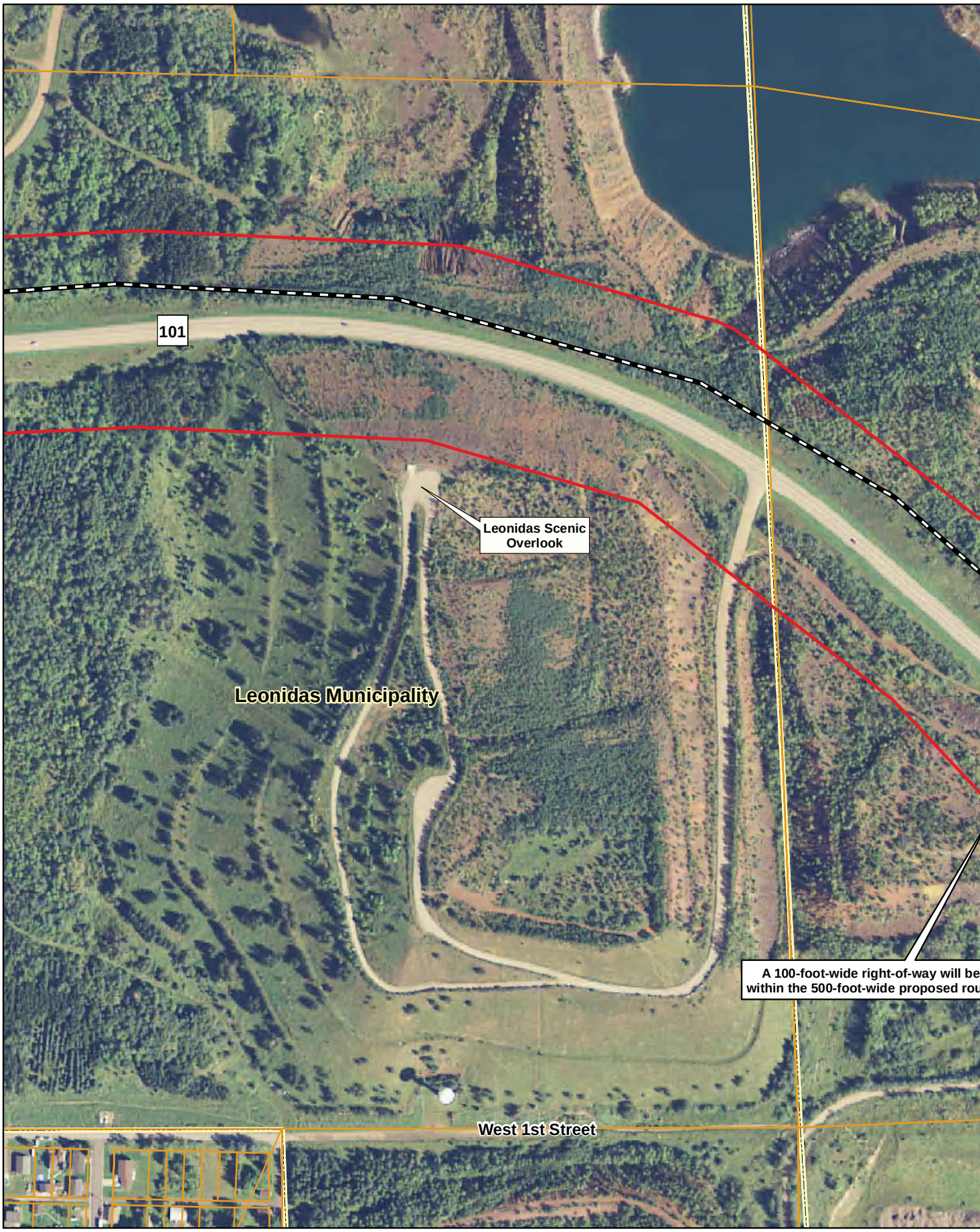
The Commission may initiate action to revoke or suspend this permit at any time. The Commission shall act in accordance with the requirements of Minn. R. 7850.5100, to revoke or suspend the permit.

[1] http://files.dnr.state.mn.us/eco/nongame/wildlife-friendly-erosion-control.pdf


Mountain Iron Municipality
Duluth Missabe and Iron Range Railroad
Duluth Winnipeg and Pacific Railroad
Leonidas Municipality
37 Line
Leonidas Scenic Overlook
101
13th Avenue West
A 100-foot-wide right-of-way will be required within the 500-foot-wide proposed route corridor.
Ramshaw Road
37 Line
Clinton Township


37 Line
Duluth Missabe and Iron Range Railroad
A 100-foot-wide right-of-way will be required within the 500-foot-wide proposed route corridor.


Duluth Winnipeg and Pacific Railroad
Leonidas Municipality
Mountain Iron Municipality
A 100-foot-wide right-of-way will be required within the 500-foot-wide proposed route corridor.


101
Leonidas Scenic Overlook
Leonidas Municipality
A 100-foot-wide right-of-way will be
within the 500-foot-wide proposed rou
West 1st Street


Eveleth Municipality
101


39 Line
A 100-foot-wide right-of-way will be required within the 500-foot-wide proposed route corridor.
Eveleth Municipality

MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLAINT HANDLING PROCEDURES FOR
HIGH-VOLTAGE TRANSMISSION LINES

A. Purpose

To establish a uniform and timely method of reporting complaints received by the permittee concerning permit conditions for site preparation, construction, cleanup and restoration, operation, and resolution of such complaints.

B. Scope

This document describes complaint reporting procedures and frequency.

C. Applicability

The procedures shall be used for all complaints received by the permittee and all complaints received by the Minnesota Public Utilities Commission (Commission) under Minn. R. 7829.1500 or Minn. R. 7829.1700 relevant to this permit.

D. Definitions

Complaint: A verbal or written statement presented to the permittees by a person expressing dissatisfaction or concern regarding site preparation, cleanup or restoration or other route and associated facilities permit conditions. Complaints do not include requests, inquiries, questions or general comments.

Substantial Complaint: A written complaint alleging a violation of a specific permit condition that, if substantiated, could result in permit modification or suspension pursuant to the applicable regulations.

Unresolved Complaint: A complaint which, despite the good faith efforts of the permittee and a person, remains to both or one of the parties unresolved or unsatisfactorily resolved.

Person: An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

E. Complaint Documentation and Processing

1. The permittee shall designate an individual to summarize complaints for the Commission. This person's name, phone number and email address shall accompany all complaint submittals.

2. A person presenting the complaint should to the extent possible, include the following information in their communications:

    a. name, address, phone number, and email address;
    b. date of complaint;
    c. tract or parcel number; and
    d. whether the complaint relates to a permit matter or a compliance issue.

3. The permittee shall document all complaints by maintaining a record of all applicable information concerning the complaint, including the following:

    a. docket number and project name;
    b. name of complainant, address, phone number and email address;
    c. precise description of property or parcel number;
    d. name of permittee representative receiving complaint and date of receipt;
    e. nature of complaint and the applicable permit condition(s);
    f. activities undertaken to resolve the complaint; and
    g. final disposition of the complaint.

F. Reporting Requirements

The permittee shall commence complaint reporting at the beginning of project construction and continue through the term of the permit. The permittee shall report all complaints to the Commission according to the following schedule:

Immediate Reports: All substantial complaints shall be reported to the Commission the same day received, or on the following working day for complaints received after working hours. Such reports are to be directed to the Commission's Consumer Affairs Office at 1-800-657-3782 (voice messages are acceptable) or consumer.puc@state.mn.us. For e-mail reporting, the email subject line should read "PUC EFP Complaint" and include the appropriate project docket number.

Monthly Reports: By the 15th of each month, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be filed to Dr. Burl W. Haar, Executive Secretary, Public Utilities Commission, using the eDockets system. The eDockets system is located at: https://www.edockets.state.mn.us/EFiling/home.jsp

If no complaints were received during the preceding month, the permittee shall file a summary indicating that no complaints were received.

G. Complaints Received by the Commission

Complaints received directly by the Commission from aggrieved persons regarding site preparation, construction, cleanup, restoration, operation and maintenance shall be promptly sent to the permittee.

H. Commission Process for Unresolved Complaints

Commission staff shall perform an initial evaluation of unresolved complaints submitted to the Commission. Complaints raising substantial permit issues shall be processed and resolved by the Commission. Staff shall notify the permittee and appropriate persons if it determines that the complaint is a substantial complaint. With respect to such complaints, each party shall submit a written summary of its position to the Commission no later than ten (10) days after receipt of the staff notification. The complaint will be presented to the Commission for a decision as soon as practicable.

I. Permittee Contacts for Complaints and Complaint Reporting

Complaints may filed by mail or email to:

Minnesota Power
Attn: Bryan Maslowski
30 West Superior St. Duluth, MN 55802
218-355-2943
bmaslowski@mnpower.com

This information shall be maintained current by informing the Commission of any changes by eFiling, as they become effective.

MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLIANCE FILING PROCEDURE FOR
PERMITTED ENERGY FACILITIES

A. Purpose

To establish a uniform and timely method of submitting information required by the Commission energy facility permits.

B. Scope and Applicability

This procedure encompasses all compliance filings required by permit.

C. Definitions

Compliance Filing: A filing of information to the Commission, where the information is required by a Commission site or route permit.

D. Responsibilities

1. The permittee shall eFile all compliance filings with Dr. Burl W. Haar, Executive Secretary, Public Utilities Commission, through the eDockets system. The eDockets system is located at: https://www.edockets.state.mn.us/EFiling/home.jsp

General instructions are provided on the eDockets website. Permittees must register on the website to eFile documents.

2. All filings must have a cover sheet that includes:

    a. Date
    b. Name of submitter/permittee
    c. Type of permit (site or route)
    d. Project location
    e. Project docket number
    f. Permit section under which the filing is made
    g. Short description of the filing

3. Filings that are graphic intensive (e.g., maps, engineered drawings) must, in addition to being eFiled, be submitted as paper copies and on CD. Paper copies and CDs should be sent to: 1) Dr. Burl W. Haar, Executive Secretary, Minnesota Public Utilities Commission, 121 7th Place East, Suite 350, St. Paul, MN 55101-2147, and 2) Department of Commerce, Energy Environmental Review and Analysis, 85 7th Place East, Suite 500, St. Paul, MN 55101-2198.

The Commission may request a paper copy of any eFiled document.

PERMIT COMPLIANCE FILINGS[1]

PERMITTEE: Minnesota Power
PERMIT TYPE: HVTL Route Permit
PROJECT LOCATION: St. Louis County
PUC DOCKET NUMBER: TL-12-1123

Filing Number	Permit Section	Description of Compliance Filing	Due Date
1	4.1	Plan and profile right-of-way (ROW)	30 days before ROW preparation for construction
2	4.2.1	Contact information for field representative	14 days prior to construction
3	4.2.12	Restoration complete	60 days after completion of all restoration activities
4	4.3	Periodic status reports	Monthly
5	4.4	Complaint procedures	Prior to the start of construction
6	Complaint Handling Procedures	Complaint report	By the 15th of each month
7	4.5	Notification to landowners	First contact with landowners after permit issuance
8	4.6.1	Notice of completion and date of placement in service	Three days prior to energizing
9	4.6.2	Provide as-built plans and specifications	Within 60 days of after completion of construction
10	4.6.3	Provide GPS data	Within 60 days after completion of construction
11	4.2.9	Notification of previously unrecorded archaeological sites	Upon discovery
12	5.1.1	Invasive species management plan	Along with plan and profile

[1] This compilation of permit compliance filings is provided for the convenience of the permittee and the Commission. It is not a substitute for the permit; the language of the permit controls.

MINNESOTA DEPARTMENT OF COMMERCE

85 7th Place East, Suite 500
St. Paul, Minnesota 55101-2198
ph 651.296.4026 | fx 651.297.7891
mn.gov/commerce/energyfacilities

Issued: October 5, 2015

NOTICE OF ENVIRONMENTAL ASSESSMENT

In the Matter of the Applications for a Route Permit for the MP 16 Line Relocation Project

PUC Docket Numbers: E015/TL-14-977

PLEASE TAKE NOTICE that the Minnesota Department of Commerce, Energy Environmental Review and Analysis (EERA) announces the release of the environmental assessment (EA) for the proposed MP 16 Line Relocation project.

Electronic versions of the EA, the scoping decision, route permit application and other documents relevant to this matter are available on the Minnesota Department of Commerce's website: http://energyfacilities.puc.state.mn.us/Docket.html?Id=34059, and on the Department of Commerce eDockets website: https://www.edockets.state.mn.us/EFiling/search.jsp (enter the Docket Number Year "14" and Number "977").

The Environmental Assessment is a written document that describes the human and environmental impacts of the transmission line project (and selected alternative routes) and methods to mitigate such impacts. Applications for high voltage transmission line route permits under the alternative permitting process require a public hearing upon completion of the EA pursuant to Minn. R. 7850.3800. A portion of the hearing must be held in a county where the proposed project would be located.

The public hearing will be noticed separately and in accordance with Minnesota Statutes, section 216E.03, subdivision 6.

If you have any questions about this document or would like more information, please contact the DOC EERA Environmental Manager: Bill Storm, 85 7th Place East, Suite 500, St. Paul, MN 55101; Tel: 651.539.1844; e-mail: bill.storm@state.mn.us.

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Notice of Environmental Assessment

Docket No. E015/TL-14-977

Dated this 5th day of October 2015

/s/Sharon Ferguson

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List
Jeanne	Cochran	Jeanne.Cochran@state.mn.us	Office of Administrative Hearings	P.O. Box 64620 St. Paul, MN 55164-0620	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 500 Saint Paul, MN 551012198	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List
Margaret	Hodnik	mhodnik@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Lori	Hoyum	lhoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Stacy	Kotch	Stacy.Kotch@state.mn.us	MINNESOTA DEPARTMENT OF TRANSPORTATION	395 John Ireland Blvd. St. Paul, MN 55155	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List
Michael	Krikava	mkrikava@briggs.com	Briggs And Morgan, P.A.	2200 IDS Center 80 S 8th St Minneapolis, MN 55402	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	OFF_SL_14-977_Official CC Service List
James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_14-977_Official CC Service List
John	Lindell	agorud.ecf@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Susan	Ludwig	sludwig@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 7th St E St. Paul, MN 55106	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Dan	McCourtney	dmccourtney@allete.com	Minnesota Power	30 West Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Herbert	Minke	hminke@allete.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Andrew	Moratzka	apmoratzka@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Jennifer	Peterson	jjpeterson@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Rian	Reed	rian.reed@state.mn.us	Minnesota Deparment of Natural Resources	1201 East Hwy 2 Grand Rapids, MN 55744	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List
Thomas	Scharff	thomas.scharff@newpagecorp.com	New Page Corporation	P.O. Box 8050 610 High Street Wisconsin Rapids, WI 544958050	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates	Ste 122 9100 W Bloomington Frwy Bloomington, MN 55431	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Ron	Spangler, Jr.	rlspangler@otpco.com	Otter Tail Power Company	215 So. Cascade St. PO Box 496 Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Karen	Turnboom	karen.turnboom@newpagecorp.com	NewPage Corporation	100 Central Avenue Duluth, MN 55807	Electronic Service	No	OFF_SL_14-977_Official CC Service List
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_14-977_Official CC Service List

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Andrew	Levi	andrew.levi@state.mn.us	DOC EERA	85 7TH PLACE E SUITE 500 SAINT PAUL, MN 55011-2198	Electronic Service	No	SPL_SL_14-977_MP 16 Line Project Contact List
Tracy	Smetana	tracy.smetana@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 55101	Electronic Service	No	SPL_SL_14-977_MP 16 Line Project Contact List