DETROIT LAKES PUBLIC UTILITIES

APPLICATION TO THE

MINNESOTA PUBLIC UTILITIES COMMISSION

FOR A ROUTE PERMIT

115 KV HVTL AND SOUTH SUBSTATION PROJECT

Alternative Permitting Process

PUC Docket No. TL-18-755

November 6, 2019

Application to the Minnesota Public Utilities Commission
For A Route Permit 115 kV HVTL and South Substation Project
Detroit Lakes Public Utilities, Detroit Lakes, Minnesota

Table of Contents

1.0 Executive Summary

1.1 Introduction and Scope

Detroit Lakes Public Utilities (DLPU), of Detroit Lakes, Minnesota owns and operates a municipal electric system that provides electric service to the citizens of Detroit Lakes and surrounding areas.

DLPU completed an Electric System Study and Capital Improvements Plan in 2017. The system was analyzed and loads are projected to increase through 2026. System load growth projections are expected to increase the peak system demand from a level of 39,049 kW in 2019 to a level near 48,976 kW by 2026.

The system study showed that under emergency scenarios such as the loss of a distribution feeder, substation transformer, or 12.47 kV bus during heavily loaded periods, unacceptable voltage conditions are present on areas of the system. With the loss of the substations and or 12.47 kV busses, the remaining system is incapable of serving the entire load without poor voltage conditions throughout the system. These deficiencies suggest the need for additional circuits and/or switching devices in the future, especially when considering anticipated load growth on the system. The solution selected by DLPU to remedy the unacceptable conditions on the electric system is the construction of a new substation and HVTL on the south side of the DLPU service territory.

Other options that were looked at included adding additional LV distribution circuits to the existing substation and adding additional voltage regulators to the DLPU system. These options were not a feasible solution for resolving the voltage issues on the southern portion of the system. The voltage drop issues are a result of lengthy distribution circuits that are heavily loaded. Lack of a nearby source and distribution infrastructure limitations make improvements of existing circuitry unfeasible and/or prohibitively expensive. Constructing the new substation in this location will help unload the existing substations and drastically improve voltage conditions in the area during the loss of the transformer or bus at the existing substations and during normal system conditions.

Detroit Lakes Public Utilities (DLPU) submits this application for a Route Permit to the Minnesota Public Utilities Commission (MPUC) pursuant to Minnesota Statues Chapter 216E and Minnesota Rules Chapter 7850. A route permit is requested to construct 2.19 miles of 115 kV high voltage transmission line (HVTL) and a new 115/12.47 kV distribution substation.

The proposed 115 kV HVTL will source the new substation located in Section 21, T138N, R41W, (Lake View Twp) Becker County, MN. The south terminus will be the existing 115 kV transmission line location in Section 33, T138N, R41W. The proposed transmission line will head north approximately 0.03 mile to the east right-of-way of US Highway 59. The transmission line will continue north along and adjacent to the east public right-of-way of US Highway 59 for approximately 0.64 mile. The transmission line will cross US Highway 59 and continue north along and adjacent to the west ROW of US Highway 59 for 1.54 miles. The north terminus of the proposed transmission line will be the said proposed DLPU substation.

The proposed project is needed to provide additional capacity to the projected loads in the southern portion of the DLPU service territory. The proposed transmission line route and substation location are identified in Appendix A, Figure 1.

This Application is submitted pursuant to the Alternative Permitting outline in Minn. R., parts 7850.2800 to 7850.3900. The proposed 115 kV HVTL and associated facilities is eligible for consideration under the Alternative Permitting Process under Minn. Stat. § 216E.04, subd. 2(3), and Minn. R., parts 7850.2800 to 7850.3900 (see Minn. R., part 7850.2800, subpart 1(C)) because the proposed Project is between 100 and 200 kV and less than 10 miles in length. The Applicant respectfully requests that the Commission approve the proposed Route and proposed Substation Location as shown in Appendix A, Figures 1 and 2.

1.2 Application Permit Checklist

The Permit Application Content requirements under the Alternative Permitting Process are identified in Minn. Stat. § 216E.04, subd. 3 and Minnesota Rules, Part 3100. The rule requirements are listed in Table 1:

Table 1 Application Permit Checklist

Authority	Required Information	Route Permit Application Section
Minn. R., part 7850.2800, subparts 1(C) and (D)	**Subpart 1. Eligible Projects**	
	An applicant for a site permit or a Route Permit for one of the following projects may elect to follow the procedures of parts 7850.2800 to 7850.3900 instead of the full permitting procedures in part 7850.1700 to 7850.2700: (C) for HVTLs of between 100 and 200 kV; (D) HVTLs in excess of 200 kV and less than five miles in length.	2.5
Minn. R., part 7850.2800, subpart 2	**Subpart 2. Notice to Commission**	
	An applicant for a permit for one of the qualifying projects in subpart 1, who intends to follow the procedures of parts 7850.2800 to 7850.3700, shall notify the PUC of such intent, in writing, at least 10 days before submitting an application for the projects.	2.6, Appendix
Minn. R., part 7850.3100	**Contents of Application (alternative permitting process)**	
	The applicant shall include in the application the same information required in part 7850.1900, except the applicant need not propose any alternative sites or routes to the preferred site or route. If the applicant has rejected alternative sites or routes, the applicant shall include in the application the identity of the rejected sites or routes and an explanation of the reasons for rejecting them.	4.2.2

Authority	Required Information	Route Permit Application Section
Minn. R., part 7850.1900, subpart 2 (applicable per Minn. R., part7850.3100)	**Route Permit for HVTL**	
A.	A statement of proposed ownership of the facility at the time of filing the application and after commercial operation	2.1
B.	The precise name of any person or organization to be initially named as permittee or permittees and the name of any other person to whom the Route Permit may be transferred if transfer of the Route Permit is contemplated.	2.3
C.	At least two proposed routes for the proposed HVTLs and identification of the preferred route and the reasons for the preference.	Not applicable, per Minn. R., part 7850.3100
D.	A description of the proposed HVTL and all associated facilities including the size and type of the HVTL.	3.2, 4.1, 4.2
E.	The environmental information required under part 7850.1900, subpart 3	Section 6.0 see Minn. R., part 7850.1900, subpart 3 (A) - (H)
F.	Identification of land uses and environmental conditions along the proposed routes.	Section 6.0
G.	The names of each owner whose property is within any of the proposed routes for the HVTL.	Appendix D
H.	United States Geological Survey topographical maps or other maps acceptable to the chair showing the entire length of the HVTL on all proposed routes.	Appendix A
I.	Identification of existing utility and public ROWs along or parallel to the proposed routes that have the potential to share ROW, the land used by a public utility (as for a transmission line), with the proposed line.	Appendix A, 4.2.1
J.	The engineering and operational design concepts for the proposed HVTL, including information on the electric and magnetic fields of the transmission line.	Section 5.4, 6.2.2, 6.2.3
K.	Cost analysis of each route, including the costs of constructing, operating, and maintaining the HVTL that are dependent on design and route.	3.5
L.	A description of possible design options to accommodate expansion of the HVTL in the future.	4.4
M.	The procedures and practices proposed for the acquisition and restoration of the ROW, construction, and maintenance of the HVTL.	5.2, 5.3

Authority	Required Information	Route Permit Application Section
Minn. R., part 7850.1900, subpart 2 (applicable per Minn. R., part7850.3100)	**Route Permit for HVTL**	
N.	A listing and brief description of federal, state, and local permits that may be required for the proposed HVTL.	7.6
O.	A copy of the Certificate of Need or the certified HVTL list containing the proposed HVTL or documentation that an application for a Certificate of Need has been submitted or is not required.	2.4 Not applicable, per Minn. Stat. § 216B.2421, subd. 2(3) and 216B.243
Minn. R., part 7850.1900, subpart 3	**Environmental Information**	
A.	A description of the environmental setting for each site or route.	6.1
B.	A description of the effects of construction and operation of the facility on human settlement, including, but not limited to, public health and safety, displacement, noise, aesthetics, socioeconomic impacts, cultural values, recreation and public services.	6.2
C.	A description of the effects of the facility on land-based economies, including but not limited to, agriculture, forestry, tourism, and mining.	6.3
D.	A description of the effects of the facility on archaeological and historic resources.	6.4
E.	A description of the effects of the facility on the natural environment, including effects on air and water quality resources and flora and fauna.	6.5
F.	A description of the effects of the facility on rare and unique natural resources.	6.6
G.	Identification of human and natural environmental effects that cannot be avoided if the facility is approved at a specific site or route.	6.0
H.	A description of measures that might be implemented to mitigate the potential human and environmental impacts identified in items A to G and the estimated costs of such mitigative measures.	6.0

2.0 Introduction

Detroit Lakes Public Utilities (DLPU), of Detroit Lakes, Minnesota owns and operates a municipal electric system that provides electric service to the citizens of Detroit Lakes and surrounding areas. DLPU completed an Electric System Study and Capital Improvements Plan in 2017. The system was analyzed and loads are projected to increase through 2026. System load growth projections are expected to increase the peak system demand from a level of 39,049 kW in 2019 to a level near 48,976 kW by 2026.

The system study showed that under emergency scenarios such as the loss of a distribution feeder, substation transformer, or 12.47 kV bus during heavily loaded periods, unacceptable voltage conditions are present on areas of the system. With the loss of the substations and or 12.47 kV busses, the remaining system is incapable of serving the entire load without poor voltage conditions throughout the system. These deficiencies suggest the need for additional circuits and/or switching devices in the future, especially when considering anticipated load growth on the system. The solution selected by DLPU to remedy the unacceptable conditions on the electric system is the construction of a new substation and HVTL on the south side of the DLPU service territory.

Other options that were looked at included adding additional LV distribution circuits to the existing substation and adding additional voltage regulators to the DLPU system. These options were not a feasible solution for resolving the voltage issues on the southern portion of the system. The voltage drop issues are a result of lengthy distribution circuits that are heavily loaded. Lack of a nearby source and distribution infrastructure limitations make improvements of existing circuitry unfeasible and/or prohibitively expensive. Constructing the new substation in this location will help unload the existing substations and drastically improve voltage conditions in the area during the loss of the transformer or bus at the existing substations and during normal system conditions.

Detroit Lakes Public Utilities (DLPU) submits this application for a Route Permit to the Minnesota Public Utilities Commission (MPUC) pursuant to Minnesota Statues Chapter 216E and Minnesota Rules Chapter 7850. A route permit is requested to construct 2.19 miles of 115 kV high voltage transmission line (HVTL) and a new 115/12.47 kV distribution substation in Lake View Township in Becker County. See Figure 1, Appendix A for project location.

2.1 Statement of Ownership

The proposed 115 kV HVTL and substation will be owned and operated by Detroit Lakes Public Utilities (DLPU). DLPU is a municipal utility governed by a five-member Public Commission appointed by the City Council. DLPU provides service to the community of Detroit Lakes, Minnesota and surrounding areas.

2.2 Requested Action

This Application is submitted pursuant to the Alternative Permitting outline in Minn. R., parts 7850.2800 to 7850.3900. The proposed 115 kV HVTL and associated facilities is eligible for consideration under the Alternative Permitting Process under Minn. Stat. § 216E.04, subd. 2(3), and Minn. R., parts 7850.2800 to 7850.3900 (see Minn. R., part 7850.2800, subpart 1(C)) because the proposed Project is between 100 and 200 kV and less than 10 miles in length. The Applicant respectfully requests that the Commission approve the proposed Route and proposed substation Location as shown in Appendix A, Figures 1 and 2.

This Application demonstrates that construction of the proposed HVTL along the proposed route and substation location will comply with the applicable criteria set forth in Minn. Statue § 216E.03, subd. 7 and Minn. R., part 7850.4100.

2.3 Permittee

The permittee for the proposed Project is:

Permittee:	Detroit Lakes Public Utilities
Contact:	Vernell Roberts, General Manager
Address:	1025 Roosevelt Avenue Detroit Lakes, MN 56501
Phone:	218-847-7609
Email:	vroberts@cityofdetroitlakes.com

2.4 Certificate of Need

Minn. Stat. § 216B.243, subd. 2 states that "no large energy facility" shall be sited or constructed in Minnesota without the issuance of a Certificate of Need by the Commission. The proposed Project does not meet the definition of a "large energy facility" under Minn. Stat. § 216B.2421. While the proposed 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 (Minn. Stat. § 216B.2421 subd. 2(3)). Therefore, a Certificate of Need is not required for the proposed Project.

2.5 Route Permit - Alternative Permitting Process

The Minnesota Power Plant Siting Act (PPSA) states that "no person may construct an HVTL without a Route Permit from the Commission" (Minn. Stat. § 216E.03, subd. 2). Under the PPSA, an HVTL is considered to be a transmission line that is 100 kV or more and is greater than 1,500 feet in length (Minn. Stat. § 216E.01, subd. 4). The proposed Project is capable of operating at more than 100 kV and is greater than 1,500 feet in length and, therefore, a Route Permit is required from the

Commission prior to construction. The proposed Project qualifies for review under the Alternative Permitting Process authorized by Minn. Stat. § 216E.04, subd. 2(3) and Minn. R., part 7850.2800, subpart 1(C). Accordingly, the Applicant is following the provisions of the Alternative Permitting Process outlined in Minn. R., parts 7850.2800 to 7850.3900 for this proposed Project.

2.6 Notice to the Commission

The Applicant notified the Commission on December 5, 2018 via a letter via the Commission's electronic filing system that the Applicant intends to use the Alternative Permitting Process for the proposed project. The letter complies with the requirement of Minn. R., part 7850.2800, subpart 2, to notify the Commission of this election at least 10 days prior to submitting an application for a Route Permit. A copy of the letter is attached in the Appendix B.

3.0 PROJECT INFORMATION

3.1 Project Location

The project is located in Becker County, Minnesota near Detroit Lakes, Minnesota. The proposed route for the HVTL and location of substation location are shown in the Appendix A, Figure 1.

3.2 Project Routing

The south terminus will be an existing 115 kV transmission line location in Section 33, T138N, R41W owned and operated by Great River Energy. The proposed transmission line will head north approximately 0.03 mile on private right ow way to the east right-of-way of US Highway 59. The transmission line will continue north along and adjacent to the east public right-of-way of US Highway 59 for approximately 0.64 mile. The transmission line will cross US Highway 59 and continue north along and adjacent to the west ROW of US Highway 59 for 1.54 miles. The north terminus of the proposed transmission line will be the said proposed DLPU substation.

To lessen impact to agricultural and residential property use along the line route, DLPU is proposing a route that will follow along road right-of-ways. See Figure 2 in Appendix A for the HVTL route map.

The 115 kV transmission line will consist of narrow profile construction, utilizing horizontal post insulators. A typical tangent structure is shown on Figure 3 in Appendix A. Poles will be self-weathering steel single-pole structures. The transmission line consists of four wires (three electrical and one for lightning protection/communication).

The proposed project includes installation of overhead transmission conductors on a single, steel pole with span lengths of approximately 300'.

3.3 Project Need

DLPU performed an electric system study and long-range planning study in 2017. The study identified a system deficiency in ability to continue to reliably serve the system load in the southern portion of DLPU's service territory under a single contingency analysis. The proposed project will solve the system deficiency by providing additional capacity to the projected loads and increase the reliability in the southern portion of the DLPU service territory.

3.4 Project Schedule

Construction of the Project is expected to begin in the fourth quarter of 2020 with a proposed in-service date in the fourth quarter of 2021. Table 2 shows the Project milestone dates.

Table 2 Project Schedule

Project Task	Date
File Route Permit Application (Application) with the Commission	2nd Quarter 2019
Route Permit Review Process Complete	1st Quarter 2020
Begin HVTL and Substation Construction	4th Quarter 2020
In-Service Date	4th Quarter 2021

3.5 Project Costs

It is estimated that the Project will cost approximately $3,500,000. A breakdown of the projected costs is shown below in Table 3.

Table 3 Project Costs

Project Segment	Cost
115 kV HVTL Facilities	$1,300,000
115-12.47 kV Substation Facilities	$2,200,000
Total	$3,500,000

Maintenance costs after construction will be nominal for several years, since the proposed transmission line will be new and there will be minimal initial vegetation management required. DLPU conducts annual line inspection on the HVTL. Maintenance and repair are performed on an as-needed basis.

DLPU performs periodic inspections of substations and equipment. The type and frequency of inspection varies depending on the type of equipment. Typical inspection intervals are semi-annual or annual. Maintenance and repair are performed on an as-needed basis, and therefore the cost varies from substation to substation.

4.0 Facility Description and Route Selection

4.1 Transmission Line Description

The proposed Project involves building 2.19 miles of new 115 kV HVTL. The proposed Project will primarily use self-weathering steel monopole structures. As shown in Appendix A, Figure 2, the proposed Project south terminus will start Section 33, T138N, R41W by tapping an existing 115 kV line owned by Great River Energy via a 3 -way line switch and the proposed Project north terminus will end in Section 21, T138N, R41W at the proposed 115/12.47 kV Substation. The 3-way switch will be constructed by Great River Energy Company.

From the south terminus, the proposed HVTL will head north approximately 0.03 mile to the east right-of-way of US Highway 59. The transmission line will continue north along and adjacent to the east public right-of-way of US Highway 59 for approximately 0.64 mile. The transmission line will cross US Highway 59 and continue north along and adjacent to the west ROW of US Highway 59 for 1.54 miles. Additionally, all spans that cross wetlands will have bird flight diverters installed.

4.2 Route Width and Alignment Selection Process

4.2.1 Route Width

The PPSA directs the Commission to locate transmission lines in a manner that "minimize[s] adverse human and environmental impact while ensuring continuing electric power system reliability and integrity and ensuring their electric needs are met and fulfilled in an orderly and timely fashion" (Minn. Stat. § 216E.02, subd. 1). The PPSA also authorizes the Commission to meet its routing responsibility by designating a "route" for a new transmission line when it issues a Route Permit. The route may have "a variable width of up to 1.25 miles" within which the ROW for the facilities can be located (Minn. Stat. § 216E.01, subd. 8).

DLPU is proposing to construct the new 115 kV HVTL in the existing MNDOT ROW along US Hwy 59 to minimize impacts to adjacent land owners. MNDOT has jurisdiction over this ROW. The ROW width of US Hwy 59 varies; at the narrowest location the ROW is 100 feet from centerline and 160 feet at the widest. DLPU has consulted with MNDOT on placement of the proposed HVTL within the ROW. MNDOT and DLPU have agreed on an alignment for the proposed HVTL and will continue to work on the placement of the structures during the MNDOT permitting application process.

The proposed shared ROW varies in width because MNDOT requested that the structures be placed at least 65 feet from the centerline of the highway and as far back as practicable while maintaining

safety standards and meeting NESC codes. The varying ROW width will also allow DLPU make final structure placement adjustments once all ground survey work for other utilities in the ROW has been completed. DLPU will coordinate the final placement of the structures with MNDOT.

The south terminus of the proposed Project requires a switch to connect to the existing 115 kV HVTL owned operated by Great River Energy (GRE). The point of ownership between DLPU and GRE is the terminal pad of the switch. GRE is responsible for the design of the switch structure for the connection. The switch structure will have operating handles approximately four (4) feet above grade to allow personnel to operate the switch. For the safety of personnel operating the switch, GRE has requested that the switch structure be installed at a new location, which will place it on private property and require DLPU to obtain an easement from the property owner. To accommodate GRE's request, the switch structure is proposed to be installed outside of the ROW and ten (10) feet from the ROW line. DLPU will need to acquire a private easement from the landowner for overhang of the proposed HVTL. DLPU will propose a 30 feet easement from the current landowner.

Figure 2 in Appendix A shows the ROW corridor of the proposed HVTL. Page 8 shows the proposed location of the switch in relation to MNDOT's ROW.

4.2.2 Route Selection Process

The Applicant developed the proposed Route with consideration of the statutory and rule criteria set forth in the PPSA and Minn. R., part 7850.4100. The Applicant chose to utilize the existing public ROW of US Hwy 59 because this is the most direct routes and will minimize the impact to land owners. Appendix A Figure 5 shows existing electric infrastructure in the Project area.

4.3 Associated Facilities and Substation Modifications

The proposed 115/12.47 kV Substation will have a 14 mega volt ampere (MVA) transformer along with associated equipment, control house, circuit breakers, and surge arrestors. The estimated dimensions for the new South substation, subject to final design, are 140 feet by 160 feet. Appendix A, Figure 4 shows the proposed Substation dimensions and preliminary layout.

The south terminus of the proposed HVTL will be a new switch structure that will be installed within an existing HVTL owned and operated by Great River Energy (GRE). GRE is responsible for the design of this structure. GRE has requested to DLPU that the switch structure be installed outside of the ROW. The current plan is to have the switch structure installed ten (10) feet from the ROW line on private property. DLPU will need to acquire a private easement from the landowner for overhang of the proposed HVTL. Figure 2 in Appendix A shows the placement of this structure in private property and DLPU ROW requirements.

4.4 Design Options to Accommodate Future Expansion

The proposed HVTL will be designed with enough capacity to meet current and future needs of the DLPU system. The proposed substation site will have enough space to add a second transformer in the future if necessary.

5.0 Engineering Design, Construction & ROW

5.1 Transmission Structure Design

The proposed 115 kV HVTL will primarily be constructed on a single self-weathering steel poles with horizontal line post and braced line post insulators with a single shield wire. The proposed typical tangent poles will be self-supporting with no guy wires and directly embedded. Two types of tangent structures will be utilized. Figures 3a and 3b depict the proposed configurations. Figure 3a shows a staggered insulator structure configuration. This structure type will be used were the structure is not installed adjacent to the ROW line. Figure 3b shows a stacked configuration structure type where all the insulators are on one side of the structure. This structure will be utilized where a structure will be placed near the ROW line. The structures would be oriented so the phase conductors are on the road side of the pole.

Large angles within the alignment for the HVTL will utilize a self-supporting structure on concrete foundations. This structure type is depicted in Figure 3c.

The structures will have an average height between 70 to 80 feet with a 300 to 330 feet span between structures. Table 4 provides a summary of the typical structure design for the proposed project.

TABLE 4 Structure Design Summary

Structure Designation	Structure Type	Structure Material	Approximate Height (ft.)	Structure Base Diameter (in.)	Span Length (ft.)
3a	Monopole	Self-weathering Steel	70-80	17-24	300 - 310
3b	Monopole	Self-weathering steel	70-80	17-24	300 - 310
3c	Monopole	Self-weathering steel	70-80	36-60	275 - 310

5.2 Conductor Blowout Summary

The selected conductor size for this project is 336 kcmil ACSR 'Linnet'.

Conductor blowout is the displacement of the conductor from rest due to wind on the conductor. The conductor blowout condition was modeled using the NESC blowout condition of a 6 psf (48.5 MPH) wind at maximum sag and 60° F. Table 5 summarizes the conductor blowout distance of the proposed structure types.

TABLE 5 NESC Conductor Blowout Summary

Structure Designation Type	Maximum Span Length (ft.)	Blowout Distance (ft.) (from Centerline of Pole)	Blowout Distance (ft.) (from Conductor Attachment)
TP-115 (Fig 3a)	307	9.07	4.07
TP-115B (Fig 3b)	307	0.93	4.07
TS-5G (Fig 3c)	309	6.12	6.12

5.3 Construction Details

Construction of the proposed transmission Project is planned to begin in the fall of 2020, depending on when required permitting approvals are obtained. The proposed 115 kV transmission line would be constructed at grade elevations; therefore, no structure locations would require grading unless it is necessary to provide a level area for construction access and activities. Construction would comply with the latest industry standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, ROW widths, erecting power poles, and stringing of transmission line conductors.

The excavation for a structure types 3A and 3B would require disturbing a soil area that is 3 to 4 feet in diameter and 9 to 12 feet deep. Structure type 3C will require disturbing an area that is 5 to 6 feet in diameter and 35 to 45 feet deep. Structures located in wet environments may require additional foundation support, typically consisting of a concrete foundation or placement of the structure base inside a vertical, galvanized steel culvert. Best management practices (BMP) will be used to provide erosion control to minimize runoff during construction. A Contractor procured by DLPU would perform transmission line construction in compliance with local, state, National Electrical Safety Code, and industry standards.

Poles would be delivered to either the staked location or a project storage yard. A project storage yard has not been identified at this time. The site will be selected for their location, access, security and ability to efficiently and safely warehouse materials. DLPU and the selected contractor will review potential sites.

The Insulators and other hardware would typically be attached while the pole was on the ground. The pole would then be lifted, placed and secured in or on the foundation by a bucket truck or crane. Once the structures have been erected, conductors would be installed by establishing stringing setup areas. The stringing setup areas would usually be established every two miles or at locations where the line route changed direction along the project route. Conductor stringing operations also 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 poles would be installed, as needed, over existing distribution or communication lines, streets, roads, highways, railways or other obstructions after any necessary notifications were made or permits obtained. This ensures that conductors would not obstruct traffic or contact existing energized conductors or other cables. In addition, the conductors would be protected from damage.

During construction, limited ground disturbance at the structure sites may occur. Disturbed areas would be restored to their original condition to the maximum extent practicable. Post-construction reclamation activities include:

- Removing and disposing of debris,
- Removing all temporary facilities (including staging and laydown areas),
- Employing appropriate erosion control measures,
- Reseeding and mulching areas disturbed by construction activities with vegetation similar to that which was removed and,
- Restoring the areas to their original condition to the extent possible.

Environmentally sensitive areas (e.g. wetlands) may require special construction techniques, which will vary according to the conditions at the time of construction. During construction impacts on wetlands and sensitive areas will be minimized to the extent possible by spanning the areas. In addition, construction practices will be utilized to help prevent soil erosion.

5.4 Maintenance

Substations require a certain amount of maintenance to keep them functioning in accordance with accepted operating parameters and the NESC. Transformers, circuit breakers, batteries protective relays and other equipment need to be maintained periodically. The substation yard must be kept free of debris and vegetation. DLPU personnel would perform inspection services at least one a month.

Transmission lines have few mechanical elements and are designed to withstand the weather conditions of the area. DLPU personnel will perform annual line inspections, maintain equipment,

and repair any damage. DLPU would also conduct regular route maintenance for removal of undesired vegetation that would interfere with the operation of the proposed transmission line.

6.0 ENVIRONMENTAL CONSIDERATIONS

6.1 Natural Environment

The project area is located within and near the City of Detroit Lakes in Becker County. According to the Minnesota Department of Natural Resources (MnDNR) Ecological Classification System (ECS), the project area is located within the Hardwood Hills Subsection of the Minnesota and Northeast Iowa Morainal section of the Eastern Broadleaf Forest Province (MnDNR 2011). The Hardwood Hills Subsection topography characteristics steep slopes, high hills and lakes formed in glacial end moraines and outwash plains. The dominant landscape features are ice stagnation moraines, end moraines, ground moraines, and outwash plains. Kettle lakes are common on both moraine and outwash deposits. The major bedrock geology is 100 to 500 feet of glacial drift. Loamy soils are prevalent and Borolls and Aquolls are the most common classification. Most of the region is farmed. Wetlands and lakes are also common and provide wildlife habitat (DNR 2011).

The proposed HVTL alignment is along US Highway 59 which is a major thoroughfare for Detroit Lakes. The area land use along the project corridor is predominantly agriculture with a small mix of residential and commercial. Some of the commercial businesses include public storage facilities, liquor store, RV and Marine dealer, and a flea market area.

6.2 Human Settlement

The substation site was recently purchased by DLPU. The site has an existing house that will be moved off site by the previous owner. The previous owner did not occupy the house, the area was used as a garden space for the property owner. Therefore, no displacement of any owner/family will occur.

The proposed transmission line is to be located within the public road right-of-way of US Hwy 59. The majority of the area will still allow for use by such things as farming activities, drainage systems, underground utilities and access drives. Therefore, impacts to human settlement will be minimal in this area and no mitigation measures are proposed.

The area adjacent to the public ROW of US Highway 59 is identified as agriculture with some residential zoning. As noted in Table 2 below very few commercial buildings are within 100 feet of the proposed HVTL.

6.2.1 Public Health and Safety

All transmission lines will be constructed in accordance with the National Electric Safety Code (NESC) and other relevant industry standards, to ensure that adequate safety clearances and provisions are

provided. Safety measures including fencing, warning signs, and equipment grounding will be provided per code requirements. All construction personnel will be required to follow Occupational Safety and Health Administration (OSHA) regulations throughout project construction.

Questions about Electric and Magnetic Fields sometimes arise concerning electrical power lines. The following paragraphs include information provided by the Minnesota State Interagency Working Group (MSIWG). Work Group members included representatives from the Department of Commerce, the Department of Health, the Pollution Control Agency, the Commission, and the Environmental Quality Board (MSIWG, 2002). In September of 2002 the MSIWG published "A White Paper on Electric and Magnetic Field (EMAGNETIC FIELD) Policy and Mitigation Options." This paper is located at the following weblink: http://www.capx2020.com/Images/EMAGNETICFIELDWhitePaper2002.pdf. The following excerpts are from the summary of the afore mentioned document:

Over the last two decades concern about the health effects of electric and magnetic fields (EMAGNETIC FIELD) has increased. Early scientific studies reported a weak association between increased rates of cancer and closeness to certain kinds of power lines that can cause strong electric and magnetic fields. As more electric facilities are built to meet growing demands for electricity, policy makers will increasingly be faced with questions regarding the potential health impacts of EMAGNETIC FIELD. This report is the result of an interagency work group that was formed to examine these issues and provide useful, science-based information to policy makers in Minnesota.

Electric and magnetic fields are a basic force of nature generated by electricity from both natural and human sources. Exposure to EMAGNETIC FIELD comes from high voltage transmission lines and distribution lines, wiring in buildings, and electric appliances. Electric fields are easily shielded by common objects such as trees, fences, and walls. Magnetic fields are difficult to shield; this is why magnetic fields produced by power lines can extend into people's homes.

Research on the health effects of EMAGNETIC FIELD has been carried out since the 1970s. Epidemiological studies have mixed results – some have shown no statistically significant association between exposure to EMAGNETIC FIELD and health effects, and some have shown a weak association. More recently, laboratory studies have failed to show such an association, or to establish a biological mechanism for how magnetic fields may cause cancer. A number of scientific panels convened by national and international health agencies and the U.S. Congress have reviewed the research carried out to date. Most concluded that there is insufficient evidence to prove an association between EMAGNETIC FIELD and health effects; however, many of them also concluded that there is insufficient evidence to prove that EMAGNETIC FIELD exposure is safe.

6.2.2 Electric Fields

While there is no official federal standard for transmission line electric fields, the Environmental Quality Board (EQB) has developed a standard of a maximum electric field limit of 8 kV/m measured at one meter above the ground. the standard was designed to prevent serious hazards from shocks

when touching large objects parked under alternative current (ac) transmission lines of 500 kV or greater. Table 6 provides the electric field's at maximum operating voltage for the proposed project. Maximum operating voltage is defined as the nominal voltage plus five percent.

The electric field calculations were performed using transmission line modeling software. For the single circuit 115 kV single pole type structure, the maximum electric field at a height of 1.0 meter above ground was calculated to be 0.782 kV/m at the anticipated centerline and approximately 0.186 to 0.208 kV/m at the edges of the 50-foot-width from centerline and 0.056 kV/m 100-foot width from centerline.

Table 6 Calculated Electric Fields (kV/M)

Structure Type	Maximum Operating Voltage (kV)	Distance to Anticipated Centerline (feet)								
		-200	-100	-50	-25	0	25	50	100	200
115 kV Single Pole	121	0.013	0.056	0.208	0.415	0.782	0.547	0.186	0.056	0.015

6.2.3 Magnetic Fields

There are presently no federal or Minnesota regulations pertaining to magnetic field exposure. The EQB and the Commission have recognized that Florida (a 150 mG limit) and New York (a 200 mG limit) are the only two state standards in the country. Recent studies of the health effects from power frequency fields conclude that the evidence of health risk is low.

The magnetic field profiles around the proposed Project are shown in Table 7. Magnetic fields were calculated at the conductor's thermal limit based on the design of the HVTL and at the expected peak loading 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 proposed alignment. Magnetic field profile data show that magnetic field levels generally decrease rapidly as the distance from the centerline increases.

The estimates of the magnetic fields were performed for peak loading and maximum emergency line ratings using software based on the Electrical Power Research Institute (EPRI) methodology. The peak magnetic field for this configuration at 1.0 meter above ground was calculated to be 6.87 mG at the anticipated centerline and approximately 1.974 mG and 0.653 mG at the edges of the 50-foot-wide and 100-foot-wide ROWs, respectively, under the expected peak loading condition. Peak magnetic field under the conductor thermal limit condition was calculated to be 45.97 mG.

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 and should remain at or below the expected peak loading for the foreseeable future, resulting in typical magnetic fields well below those indicated in Table 6.

Table 7 Calculated Magnetic Fields (mG)

Structure Type	Current (Amps)	Distance to Anticipated Centerline (feet)								
		-200	-100	-50	-25	0	25	50	100	200
Magnetic Field Profile at Conductor Thermal Limits										
115 kV Single Pole	475	1.2	4.4	13.2	27.4	46.0	31.1	14.8	4.7	1.2
Magnetic Field Profile at Expected Peak Loading										
115 kV Single Pole	71	0.2	0.7	2.0	4.1	6.9	4.7	2.2	0.7	0.2

6.2.4 Residential and Non-Residential Land Use

The proposed Project is primarily located within the public ROW. According to the Becker County Zoning Map and the land use map, most of the area adjacent to the road ROW is zoned agriculture with some residential lands. The area near the south terminus of the Project is zoned agriculture and the land use is identified as developed and some woodlands. See Figures 7 and 8 in Appendix A.

The substation site is primarily in an area identified as developed and zoned agriculture.

There are a few residences located in the vicinity of the proposed project. The number of residential and commercial buildings located within 50 ft., 100 ft., and 200 ft. are tabulated in Table 8.

TABLE 8 Residence and Commercial Property within Vicinity of Project

Building Type	Buildings within 50 ft.	Buildings within 100 ft.	Buildings within 200 ft.	Total Buildings
Residential	0	7	7	14
Commercial	1	2	12	15

6.2.5 Displacement

The proposed project will not require displacement of occupied residences or commercial buildings. DLPU will construct the proposed HVTL consistent with any applicable zoning ordinances. However, if a Route Permit is issued by the MPUC, zoning, building, and land use regulations are preempted

per Minn. Stat. § 2416E.10, subd. 1. No adverse or significant impacts on residential or commercial properties are anticipated.

6.2.5.1 Mitigation Measures

Due to the fact that no displacement will occur, no mitigation measures are proposed.

6.2.6 Noise

Transmission conductors produce noise under certain conditions. The level of noise is dependent on the conductor conditions, voltage level, and weather conditions. Standard levels of noise associated with heavy construction equipment operation will occur during construction. Construction activities would typically be between 7:00 AM - 7:00 PM. weekdays. These impacts are expected to be minimal, and would be similar in nature or less than the noise levels produced by trains passing by or the normal traffic along highways.

Noise emissions from a transmission line occurs during certain weather conditions. In, foggy or rainy weather, transmission lines can create a crackling sound when a small amount of electricity ionizes the moist air near the conductors. During heavy rain, the background noise level of the rain is usually greater than the noise generated from the transmission line. Therefore, people do not usually hear the noise generated from the transmission lines during a heavy rain weather event.

Noise levels produced by a 115 kV transmission line are generally less than outdoor background levels and are therefore not usually audible. Noise levels at substations are primarily generated by the transformers, which can cause a 'humming' noise.

Human hearing is not equally sensitive to all frequencies of sound. Many different properties affect the noise level of a specific source. Noise levels that are audible to humans are measured in decibels (dBA). The human ear can usually detect a change in the noise level is the sound changes by 3 dBA or more. A 5 dBA change in noise level is clearly noticeable. An increase of 10 dBA is considered as a doubling of the noise level. Whereas a 20 dBA increase is considered a dramatic change. Table 9 shows noise levels associated with common sources.

Table 9 Common Noise Sources and Levels

Noise Source	Sound Level (dBA)
Jet Engine	140
Rock Band (at 5 m)	110
Gas Lawnmower (at 1 m)	90
Vacuum cleaner (at 1m)	70
Normal speech (at 1m)	60
Library	40

Quiet urban nighttime	40
Bedroom	30
Quiet rural nighttime	20

Minnesota's noise pollution rules are based on statistical calculations that quantify noise levels over a one-hour period. The standards are expressed as a range of permissible dBA. L_{10} may be exceeded in 10percent of the time over a one-hour period. L_{50} may be exceed 50percent of the time within the one-hour period.

Land areas are assigned to an activity category based on the land use at the location. The Noise Area Classification is listed in the MPCA noise regulations. Residential housing, religious activities, camping and picnic areas are included in NAC 1. Commercial land activities are classified in the NAC 2 category. Industrial fair grounds an amusement parks are classified in the NAC 3 category.

Table 10 identifies the daytime and nighttime noise standards by NAC.

Table 10 Noise Standards by Noise Classification Area (NAC)

Noise Area Classification (NAC)	Daytime		Nighttime	
	L_{50}	L_{10}	L_{50}	L_{10}
1	65	60	55	50
2	70	65	70	65
3	80	75	80	75

Table 11 shows the L_{50} noise levels predicted for a single pole 115 kV transmission line using the Corona and Field Effects spreadsheets developed by the Bonneville Power Administration. Audible L_{50} noise levels measured at the 50 ft and 100 ft from centerline of the proposed HVTL are well below the MPCA limits for the relevant noise area classifications within the Project area.

Table 11 Calculated Audible Noise for Proposed HVTL

Structure Type	Weather Condition	Noise L_{50} at 50 ft. from Centerline (dB)	Noise L_{50} at 100 ft. from Centerline (dB)
115 kV Single Pole	Rainy	22	20

The noise generated by the HVTL is not expected to exceed background noise levels. The HVTL will be designed and constructed to comply with the Minnesota Pollution Control Agency (MPCA) Noise Pollution Control Rules, Chapter 7030.

The major source of noise at the substation is the power transformer. The noise associated with the transformer is caused by the magnetic forces with the core of the transformer. These magnetic forces cause the core laminations to expand and contract creating vibrations.

The noise level of the proposed transformer at the substation is estimated to be 70 dBA at the transformer. DLPU will require the transformer manufacturer to design the transformer so as the noise level will not exceed 70 dBA.

6.2.6.1 Mitigation Measures

The proposed Project is not anticipated to result in significant impacts to the public due to noise pollution. DLPU will advise the contractor that normal construction hours will be 7:00 AM – 7:00 PM. Construction is anticipated to begin late third quarter of 2020. This will also help mitigate impacts of the construction activities during the summer tourism season.

6.2.7 Television and Radio Interference

Corona from transmission line conductors can generate electromagnetic "noise" at the same frequencies that radio and television signals are transmitted. This noise can cause interference with the reception of these signals depending on the frequency and strength of the radio and television signal. The more prominent cause of interference is loose hardware on the transmission line. Tightening the hardware will usually resolve the problem.

If radio interference from transmission line corona does occur, satisfactory reception from AM radio stations previously providing good reception can be restored by appropriate modification of the receiving antenna system. AM radio frequency interference typically occurs immediately under a transmission line and dissipates rapidly to either side.

Television interference is rare but may occur when a large transmission structure is aligned between the receiver and a weak distant signal, creating a shadow effect. Loose and/or damaged hardware may also cause television interference. If television or radio interference is caused by or from the operation of the Proposed Project in those areas where good reception is presently obtained, the Applicant will inspect and repair any loose or damaged hardware in the HVTL, or take other necessary action to restore

6.2.7.1 Mitigation Measures

DLPU does not anticipate that the proposed Project will create interference with radio or television signals, however if radio or television interference occurs due to the Project, the Applicant will work with the affected landowner to restore reception to the original quality.

6.2.8 Aesthetics

Aesthetics refer to the natural and human modified landscape features or visual resources that contribute to the public's experience and appreciation of the environment. Wetlands, surface waters, landforms, forests, and vegetation patterns are among the natural landscape features that define an area's visual character. Buildings, roads, bridges, and other structures reflect human modifications to the landscape.

The scenic value or visual importance of an area is a subjective matter and depends upon the perception and philosophical and/or psychological response of the viewer. Generally, landscapes that exhibit a high degree of variety and harmony among the basic elements of form, line, color, and texture have the greatest potential for high visual and aesthetic quality. The level of impact to visual resources is also subjective and generally depends on the sensitivity and exposure of a particular viewer and can, therefore, vary greatly from one individual to the next.

The proposed Project will be constructed within existing road ROWs, including county and township roads and state highways.

As discussed in Section 5.1.1 the HVTL will primarily be constructed of self-weathering steel monopole structures with an average pole height of 65 feet and approximately 300-foot to 330-foot span length. These proposed HVTL structures will be visible to drivers traveling along US Highway 59 and may be visible to residents located near the HVTL. The number of residences located within the vicinity of the Proposed Route are discussed in Section 6.2.2.

6.2.8.1 Mitigation Measures

The HVTL will not have a significant impact on the overall landscape. The HVTL will be visible to the public. The HVTL line will be constructed using a narrow profile and single pole self-weathering steel structures to help minimize the visual impacts to the commercial and residential properties in this area. See Figure 3 in Appendix A for drawing that depicts the typical tangent structure.

6.2.9 Socioeconomic Impacts

The population and economic characteristics based upon the 2017 Community Survey conducted by the U.S. Census are provided in Table 12. The population density of Lake view Township is 63.45 people per square mile. Becker County is 25.51 people per square mile. Lake View Township has a 4.3 percent minority population and 2.1 percent people living in poverty. Becker County has a 13.3 percent minority population and 12.7 percent people living in poverty.

The proposed Project is not anticipated to have disproportionate effect on the county's population living below the poverty level because nominal socioeconomic impacts are anticipated.

Table 12 Population and Economic Characteristics

Location	Population	Minority Population (percent)	Caucasian Population (percent)	Per Capita Income	Percentage of Population Below Poverty Level
Lake View Twp.	1,853	4.3	95.7	$37,865	5.9
Becker County	33,552	13.3	87.7	$28,525	12.7
State of MN	5,490,726	16.3	83.7	$34,712	10.5

Approximately 8 workers will be required for the HVTL construction and 8 workers for the substation construction. These workers will likely be skilled tradesman from outside the Project area.

The transmission line will not have any negative socioeconomic impact. There will be minor short-term impacts to community services as a result of construction activity and an influx of contractor employees during construction of the proposed Project. Contractors will be used for all construction activities. The community may experience a minor short-term positive economic impact through the use of the hotels, restaurants, and other services by the various workers.

It is not expected that additional permanent jobs will be created by any of these actions. The construction activities will 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.

6.2.9.1 Mitigation Measures

Socioeconomic impacts resulting from the proposed Project will be primarily positive with an influx of wages and expenditures made at local businesses during Project construction. No mitigation measures are proposed.

6.2.10 Cultural Values

Cultural values include those perceived community beliefs or attitudes that provide a framework for unity in a given community. The community near the proposed Project appear to value outdoor recreation and the scenic nature of the region.

Detroit Lakes is host to a large musical festival each summer. The proposed project is not expected to impact the framework or sense of unity of the community and will not alter features in the area that contribute significantly to the cultural nature of the region.

6.2.10.1 Mitigation Measures

The transmission line should have no impact to cultural values. Therefore, no mitigation measures are proposed.

6.2.11 Recreation

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

The proposed Project is located within the vicinity of a public golf course. The golf course is located near the northern part of the Project near the substation location. Access to the golf course is from County Rd 17 and 22 which is north and west of the substation location. Access may be limited during construction of the substation when large equipment is moved to the site. Traffic control measures will be in place to manage the traffic flow. Visual impact of the HVTL from the golf course will be minimal due to the natural terrain and trees.

There are no recreational trails within the vicinity of the project corridor. At the time of this application DLPU is not aware of any future recreational trails in the project corridor.

6.2.11.1 Mitigation Measures

Direct impacts to existing recreational opportunities are not expected to occur as the proposed Route is located in an area that is adjacent to a major roadway as well as existing commercial and electrical infrastructure. No mitigation measures are proposed.

6.2.12 Public Services

Public services and facilities in the proposed project area include emergency services, including ambulance, fire, and police, water supply or wastewater disposal systems, and gas and electricity services, and existing and future transportation corridors and projects.

6.2.12.1 Mitigation Measures

No significant impacts to public services are anticipated. DLPU will coordinate construction activity with local emergency services providers to mitigate any impacts to providing their services to the public.

6.2.13 Emergency Services

Any required temporary lane closures on US Hwy 59 or County Roads will be coordinated with the MnDOT, local jurisdictions, local emergency services providers, and will provide for safe access of police, fire, and other emergency vehicles.

6.2.14 Utilities

Construction and operation of the proposed HVTL is not anticipated to impact any public service utilities. DLPU will work with existing foreign utilities that may occupy the existing ROW of US Hwy 59 regarding the placement of the HVTL.

6.2.15 Transportation

Transportation infrastructure in the proposed Project area includes Federal, County, and local roads. The proposed HVTL route runs parallel to US Hwy 59 and crosses some county roads. Roadways can potentially be impacted temporarily during construction activities and during maintenance of the transmission line. Impacts could result from construction vehicles and safety perimeters temporarily blocking public access to streets. Access during construction and maintenance is expected to be primarily from existing roads. Due to the temporary nature of the proposed construction activities, traffic disruptions are expected to be minor and temporary. The appropriate traffic control devices will be utilized during construction, as dictated by the applicable highway authorities (MnDOT, Becker County, etc.).

The Minnesota DOT has conducted traffic counts along US Highway 59. The most recent count was completed in 2018. The AADT for Hwy 59 within the project corridor is 5,400.

Structure placement along roadways can also impact future road expansions, as structures placed within the ROW must be moved to allow a safe distance between structures and the edge of the roadway.

DLPU has consulted with the Minnesota Department of Transportation (MnDOT) to minimize impacts on US Highway 59 and will coordinate placement of the HVTL within the ROW.

Any future maintenance and expansion of US Hwy 59 may impact the proposed Project. DLPU will be responsible for any adjustments and/or relocation of the HVTL if necessary.

Direct impact to the transportation sector would include temporary lane closures and construction work zone within the vicinity of the project.

6.2.15.1 Mitigation Measures

To help alleviate traffic congestions issues during construction, DLPU intends to start construction on the HVTL in the fall of 2020. This will help mitigate any unforeseen traffic obstructions during the busy summer tourism season. Construction on the substation will also likely start in the same timeframe. However, construction of the substation will continue through the summer 2021 season. The substation construction activities will be confined to the substation site. Only some minor temporary traffic delays may occur when large equipment is transported to the substation site.

6.3 Land-Based Economics

The transmission line will have a minimal impact on the land-based economics of this area. The route is being constructed in the existing highway right-of-way and should have no disruption to agricultural, forestry, or mining activities. Tourism, an important activity in this region will be minimally impacted only during the construction of the transmission line and when large equipment is transported to the substation site.

6.3.1 Mitigation Measures

To mitigate effects of the construction on tourism traffic, the Owner is intends to start construction on the HVTL in the fall of 2020. This will help mitigate any unforeseen traffic obstructions during the busy summer tourism season.

6.3.1 Agriculture

The proposed route of the HVTL is located within the public ROW of federal, state, and local roads. A majority of the land adjacent to the propose HVTL is zoned agriculture.

6.3.1.1 Mitigation Measures

The current proposed alignment of the HVTL is within the ROW, there are no anticipated impacts to agriculture land. No mitigation measures are proposed.

6.3.2 Forestry

There are no known tree farms or federal forests located within the proposed HVTL route or proposed substation site. The proposed alignment located within existing ROWs in non-forested areas. Some minimal impacts to forestry resources are anticipated as the result of tree clearing needed to construct the proposed Project and to maintain the HVTL right-of-way.

6.3.2.1 Mitigation Measures

DLPU will limit the amount of tree clearing in the right-of-way to what is necessary to construct the Project and for safe operation of the HVTL. No further mitigation measures are proposed.

6.3.3 Tourism

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

6.3.3.1 Mitigation Measures

To mitigate the impact to tourists and traffic congestion during construction, DLPU is proposing to start construction on the Project in the third quarter of 2020. This timeframe will be after a majority of the summer tourism season and will alleviate some of the traffic congestion. The substation construction activities will be confined to the substation site. Only some minor temporary traffic delays may occur when large equipment is transported to the substation site.

6.3.4 Mining

Based on a review of aerial photographs, no gravel pits, rock quarries, or commercial aggregate sources will be impacted by the Proposed Project.

6.3.4.1 Mitigation Measures

No impacts to mining resources are anticipated and, therefore, no mitigation measures are proposed.

6.4 Archaeological and Historic Resources

The Minnesota Historical Society State Historic Preservation Office (SHPO) was contacted concerning the presence of historic properties in the project vicinity. SHPO recommended that an archaeological survey be completed if the project location could not be documented as previously disturbed or previously surveyed (see letter dated 11/28/2018 in the Appendix).

6.4.1 Mitigation Measures

Since the project location is located in public ROW with existing underground utilities, it was concluded that the project area is located on previously disturbed ground and an archaeological survey would not need to be completed. No impact to historic or archaeological resources are anticipated; therefore, no mitigation measures are proposed.

6.5 Natural Environment

6.5.1 Air Quality

Potential air quality effects related to HVTL facilities include dust emissions during construction, exhaust emissions from construction equipment, and ozone generation during operations. All of these potential effects are considered to be relatively minor, and all but the ozone effects are short term.

State and federal governments currently regulate permissible concentrations of ozone and nitrogen

oxides. Ozone forms in the atmosphere when nitrogen oxides and volatile organic compounds react in the presence of heat and sunlight. Air pollution from cars, trucks, power plants, and solvents contribute to the concentration of ground-level ozone through these reactions. Currently, both state and federal governments regulate permissible concentrations of ozone and nitrogen oxides. The national standard is 0.075 parts per million (ppm) during an 8-hour averaging period. The state standard is 0.08 ppm based upon the fourth-highest 8-hour daily maximum average in 1 year.

The only potential air emissions from an HVTL result from corona, and such emissions are limited. Corona consists of the breakdown or ionization of air within a few centimeters immediately surrounding conductors and can produce ozone and oxides of nitrogen in the air surrounding the conductor. This process is limited because the conductor electrical gradient of a 115 kV HVTL is usually less than that necessary for the air to break down. Typically, some imperfection such as a scratch on the conductor or a water droplet is necessary to cause corona.

Thus, humidity (or moisture), the same factor that increases corona discharges from HVTLs, inhibits the production of ozone. Ozone is a reactive form of oxygen and combines readily with other elements and compounds in the atmosphere. Because of its reactivity, it is relatively short-lived.

During construction of the proposed Project, minor emissions from vehicles and other construction equipment and dust from construction activities will occur, but will be limited. Air quality impacts during the construction phase will also be temporary. The magnitude of construction emissions is heavily influenced by weather conditions and the specific construction activity. Exhaust emissions, primarily from diesel equipment, will vary according to the phase of construction, but will be minimal and temporary.

6.5.1.1 Mitigation Measures

Adverse impacts on the surrounding environment will be minimal because of the short and intermittent nature of the emission and dust-producing construction phases.

The Owner will employ BMP's to help reduce the amount of dust during construction when necessary.

6.5.2 Water Quality

The proposed Project may have minor, short term effects on water quality. Impacts on water quality are possible during the construction phase of the proposed Project, when sediment could possibly reach surface waters as excavation, grading, and construction traffic disturb the ground.

Every precaution will be taken during construction to prevent disruption to the surrounding lakes and wetlands including erosion prevention and sediment control where applicable. Once built, the transmission line will not affect any water resource.

The MPCA regulates construction activities that may impact storm water under the Clean Water Act. A National Pollutant Discharge Elimination System (NPDES) construction storm water permit and Storm Water Pollution Prevention Plan (SWPPP) are required for any construction activity disturbing: 1) one acre or more of soil; 2) less than one acre of soil if that activity is part of a "larger common plan of development or sale" that is greater than one acre; or 3) less than one acre of soil, but the MPCA determines that the activity poses a risk to water resources. The SWPPP outlines strategies and steps that will be taken to prevent nonpoint source pollution discharging from construction areas. DLPU will obtain an NPDES permit and prepare a SWPPP for the Proposed Project.

Additionally, the proposed Substation will have a crushed aggregate surface which will limit impacts to ground water and BMPs, such as silt fence, will be installed to minimize water quality impacts during construction.

6.5.2.1 Mitigation Measures

Installation of the HVTL structures near bodies of water will utilize BMP's, such as silt fence, to minimize any impacts to water quality during construction.

6.5.3 MDNR Public Waters Inventory

The MDNR Public Waters Inventory (PWI) identifies basins (lakes and wetlands) and watercourses over which the MDNR has regulatory jurisdiction (Minn. Stat. § 103G.005, subd. 15 and 15a). The proposed Project does not cross any PWI waterbody.

6.5.3.1 Mitigation Measures

The proposed project corridor is adjacent to Meadow, Cottage, and Lind lakes on the east side of US Hwy 59. The proposed transmission line alignment will be located on the west side in the public ROW of US Hwy 59. See Figure 6 in Appendix A. No impacts are anticipated; therefore, no mitigation measures are proposed.

6.5.4 Wetlands

Wetland locations within the proposed project area were identified using the United States Fish and Wildlife Service National Wetland Inventory (NWI) maps. The NWI indicated a wetland along the line route near Lind Lake and near the south terminus of the Project. No wetlands were identified at the substation site. See Figure 6, Appendix A for the NWI map.

6.5.4.1 Mitigation Measures

DLPU will design the HVTL to avoid and minimize impacts to wetlands. DLPU will utilize BMP's as identified in the SWPPP, such as using silt fences. The HVTL will be designed to span the wetland near Lind Lake. In addition, DLPU plans to start construction on the HVTL

in the fall of 2020. The structures that are planned to cross the wetland near the south terminus can be constructed during the winter months to minimize any impacts to the wetland.

6.5.5 Floodplain

The Project area does not have any floodplain areas map by the Federal Emergency Management Agency (FEMA).

6.5.5.1 Mitigation Measures

No impacts to floodplains are anticipated, therefore, no mitigation measures are proposed.

6.5.6 Flora

The US Department of the Interior Fish and Wildlife Service (FWS), was contacted regarding potential wildlife and vegetation resources in the vicinity of the project. Additionally, the Minnesota DNR rare species database was queried for Becker County. The FWS indicated no comments concerns for the project (See email dated 3/6/2019).

The Minnesota DNR rare species database was reviewed regarding potential wildlife and vegetation resources in the project vicinity. Threatened and endangered species within Becker County were identified. Table 1 in Appendix A provides a listing of the identified species. Measures may be required for protection of state threatened and endangered species upon final review from DNR permitting.

6.5.6.1 Mitigation Measures

DLPU will limit the amount of tree clearing in the right-of-way to what is necessary to construct the Project and for safe operation of the HVTL.

6.5.7 Fauna

The primary potential impact presented to fauna by transmission lines is the potential injury and death of migratory birds such as raptors, waterfowl, and other large bird species. The electrocution of large birds, such as raptors, is more commonly associated with small distribution lines than large transmission lines. However, birds have the potential to collide with all elevated structures, including transmission 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. Because the proposed Project is located adjacent to a wetland, it is anticipated that there will be minimal impacts on birds.

6.5.7.1 Mitigation Measures

To help mitigate any avian collisions with the HVTL, DLPU will install bird flight diverters in areas that are migratory bird flight areas and near wetlands. In addition, the structure design will have a phase - phase spacing greater than 60". This design will mitigate any potential electrocution of raptors.

6.6 Rare and Unique Natural Resources

The Minnesota Department of Natural Resources Division of Ecological and Water Resources were contacted regarding rare features within the project area.

The MN DNR's Natural Heritage Review Specialist indicated that some rare features may be adversely affected (See letter dated 1/3/2019).

Meadow Lake is a Lake of Moderate Biological Significance and contains records of a fish species, the least darters (*Etheostoma microperca)*, which the state has listed as a species of special concern. Part of the project is also adjacent to the Meadow Lake Aquatic Management Area. The alignment of this project is on the opposite side of the road ROW from Meadow Lake, so no negative impact to the least darters is anticipated. See Figure 6 in Appendix A.

6.6.1 Mitigation Measures

No direct impacts are anticipated, and no mitigation measures are proposed.

7.0 Agency Involvement, Public Participation and Required Permits and Approvals

7.1 Project Notices to Agencies, LGUs, and Interested Parties

On October 29, 2018, DLPU submitted letters to the Local Governmental Unit (LGU) within the Project area to provide the LGU notice of the proposed Project, requesting comments and concerns. This LGU letter is included in Appendix E.

On January 7, 2019, DLPU sent notice letters describing the proposed Project, and announcing a public informational meeting scheduled for February 26, 2019 to adjacent landowners (Appendix D). The public informational meeting was held at the Detroit Lakes City Council Chambers on February 26, 2019 at 5:30 p.m. Four people attended the meeting. A copy of the notice letter, and meeting attendance list is included in Appendix F.

7.2 United States Fish and Wildlife Service

On October 29, 2018, a letter was sent to the USFWS requesting review of the proposed Project. An email was received from the USFWS stating that they had reviewed the material submitted and had no comments or concerns.

7.3 Minnesota Department of Natural Resources

On October 29, 2018, a letter was sent to the MnDNR requesting review of the proposed Project. The MN DNR's Natural Heritage Review Specialist indicated that some rare features may be adversely affected.

7.4 Minnesota State Historic Preservation Office

On October 29, 2018 a letter was sent to SHPO notifying the agency of the Proposed Project. On November 28, 2018, SHPO recommended that an archaeological survey be completed if the project location could not be documented as previously disturbed or previously surveyed (see letter dated 11/28/2018 in the Appendix E). Since the project location is located in Public ROW with existing underground utilities, it was concluded that the project area is located on previously disturbed ground and an archaeological survey would not need to be completed.

7.5 Identification of Landowners

A list of landowners is included in Appendix C. Addresses of the landowners have been removed from the landowner list due to privacy concerns.

7.6 Required Permits and Approvals

In addition to a Route Permit, other federal, state, and local permits could potentially be required for the proposed Project. These are identified below in Table 13.

Table 13 Permit and Approvals

Agency	Permit or Approval	Regulated Activity	Status
Becker County	Highway Crossing Permits	Crossing Permit to install transmission line across county roads	Permits will be obtained prior to construction.
MN Dept. of Natural Resources (MN DNR)	Environmental Review – Threatened and Endangered Species, Wetlands, Other Resources	Review of Project Impacts	Use of soil erosion and mitigation practices required.
MN Dept. of Natural Resources (MN DNR)	Minnesota Natural Heritage Database Review	Review of Project Impacts	Recommendation given– letter dated 1/3/19
Minnesota State Historical Preservation Office	Review of Historic Places	Historic Preservation	Recommendation given – letter dated 11/28/18
US Dept. of Interior Fish and Wildlife Service	Environmental Review – Threatened and Endangered Species and Critical Habitat	Review of Project Impacts	No foreseen impacts – email dated 3/6/19
Agency	**Permit or Approval**	**Regulated Activity**	**Status**
Minnesota Department of Transportation (MnDOT)	Utility Accommodation Permits	Permits occupy ROW of US Hwy 59.	Permits will be obtained prior to construction.
United States Army Corps of Engineers	Utility Regional General Permit	Section 404 of the Clean Water Act	Pre-Construction Notice may be required prior to construction

For the other permits listed in Table 12, and any additional permit requirements identified during subsequent agency consultations, the Applicant will acquire the necessary authorizations and develop the appropriate plans associated with any permit or authorization (e.g., stormwater pollution prevention management plan prior to construction).

7.6.1 Federal Permits

7.6.1.1 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (ACOE) regulates the placement of fill material into wetlands that are located adjacent to, or hydraulically connected to, interstate or navigable waters under the authority of Section 404 of the Clean Water Act. After coordination and application submission,

authorization from the ACOE will likely fall under the utility line discharge provision of a Regional General Permit (RGP-3-MN) which provides for utility line discharges.

7.6.2 State of Minnesota Permits

7.6.2.1 Minnesota Public Utilities Commission

Minn. Stat. § 216E.03, subd. 2, provides that no person may construct a HVTL without a Route Permit from the Commission. DLPU is seeking a Route Permit from the Commission with this Application.

7.6.2.2 Minnesota Department of Natural Resources

The MnDNR Division of Lands and Minerals regulates utility crossings on, over or under any state land or public water identified on the Public Waters and Wetlands Maps. A license to cross Public Waters is not required under Minn. Stat. § 84.415 and Minn. R., chapter 6135. 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 for the proposed Project.

7.6.2.3 Minnesota Pollution Control Agency

MPCA requires an NPDES construction storm water permit and SWPPP for owners or operators for any construction activity disturbing: 1) one acre or more of soil; 2) less than one acre of soil if that activity is part of a "larger common plan of development or sale" that is greater than one acre. The MPCA may also require the proposed Project to have an individual NPDES/SDS construction storm water permit. Most construction activities are covered by the general NPDES storm water permit for construction activity. Individual NPDES/SDS permits may be required for very large projects or projects that have a high potential to impact environmentally sensitive areas. DLPU will determine if their project exceeds the one-acre threshold, and, if so, obtain the permit or notice of permit coverage from the MPCA. The MPCA would notify DLPU if they will need to obtain an individual NPDES/SDS permit for their project.

7.6.3 Local Permits

Once the Commission issues a Route Permit, zoning, building and land use regulations and rules are preempted per Minn. Stat. § 216E.10, subd. 1. Applicable permits from Becker County concerning road access, road ROW, and wetlands under Minnesota Wetland Conservation Act (WCA) will be secured as needed for the proposed Project.

8.0 APPENDICES

- Appendix A:
  - Figure 1 - Project Location Map
  - Figure 2 - Proposed Transmission Line Routing Map
  - Figures 3a, 3b, 3c - Typical Structure Details
  - Figure 4 – South Substation Layout
  - Figure 5 – Existing Electric Infrastructure Map
  - Figure 6 - National Wetlands Inventory Map
  - Figure 7 – Existing Land Use Map
  - Figure 8 – Becker County Zoning Map
  - Table 1 - Threatened and Endangered Species in Becker County

- Appendix B: Owner Letter to MnPUC

- Appendix C: - Property Owner Parcel Map
  - Landowner Database

- Appendix D: Public Information Meeting Attendance List

- Appendix E: LGU and Agency Responses

APPENDIX A

APPENDIX B

APPENDIX C

APPENDIX D

APPENDIX E