Consolidated Application for a Certificate of Corridor Compatibility and Route Permit

HVDC Modernization Project
Oliver County, North Dakota

Minnesota Power
HVDC Modernization Project – Oliver County
Siting Application Case No. PU-24-___

Great River Energy
HVDC Modernization Project – Oliver County
Siting Application Case No. PU-24-___

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AC	Alternating-Current
ACSR	aluminum conductor steel reinforced
APE	area of potential effects
APLIC	Avian Power Line Interaction Committee
Application	Consolidated Application for a Certificate of Corridor Compatibility and Route Permit
BGEPA	Bald and Golden Eagle Protection Act
BLE	Base Level Engineering
BMPs	Best Management Practices
CFR	Code of Federal Regulations
Clearinghouse	Military Aviation and Installation Assurance Clearinghouse
CRP	Conservation Reserve Program
CUP	Conditional Use Permit
DoD	U.S. Department of Defense
EMF	electromagnetic fields
EMR	electromagnetic radiation
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FSA	Farm Service Agency
ft^2	foot square
HVDC	High-voltage Direct-Current
HVDC Line	Minnesota Power's 465-mile-long, +/- 250 kV transmission line
ICBM	intercontinental ballistic missile
IPaC	Information for Planning and Consultation
kV	kilovolt
Merjent	Merjent, Inc.
MISO	Midcontinent Independent System Operator, Inc.
MNR	Midwest Natural Resources

MRO	Midwest Reliability Organization
MW	megawatt
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
NDDEQ	North Dakota Department of Environmental Quality
NDDOT	North Dakota Department of Transportation
NDDTL	North Dakota Department of Trust Land
NDDWR	North Dakota Department of Water Resources
NDGFD	North Dakota Game and Fish Department
NDPSC	North Dakota Public Service Commission
NDRAM	North Dakota Risk Assessment Map
NESC	National Electrical Safety Code
NLCD	National Land Cover Database
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OPGW	Optical Ground Wire
OSHA	Occupational Safety and Health Act
PCBs	Polychlorinated biphenyls
Phase 1	Proposed Nelson Lake Substation Phase
Phase 2	Proposed East Oliver HVDC Converter Station Phase
PLOTS	Private Land Open to Sportsmen
Project Corridor	700-foot-wide (350 feet either side of the centerline) of Minnesota Power's proposed transmission lines and the sites for the proposed substations, yards, and HVDC converter station
Proposed Project	Proposed HVDC Modernization Project
ROW	right-of-way
SHSND	State Historical Society of North Dakota
SPCC	Spill, Prevention, Control, and Countermeasure (plan)
Study Area	5,971-acres, 1-mile-wide (0.5 mile on either side) of the Project Survey Area
SWPPP	Storm Water Pollution Prevention Plan
the Applicants	Minnesota Power and Great River Energy
the Project	Proposed HVDC Modernization Project
the Siting Act	North Dakota Century Code Chapter 49-22
the Siting Rules	North Dakota Administrative Code Article 69-06
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United Stated Geological Survey
VSC	Voltage Source Converter

Waiver Request	a request for waiver of procedures and time schedules pursuant to NDCC Section 49-22-07.2
WMA	Wildlife Management Area
yd3	cubic yards

Table 1 below provides a summary of information included in this Application and the section of the document in which each siting requirement is addressed.

TABLE 1

Certificate and Route Permit Completion Checklist

State Authority and Description	Section Addressed
North Dakota Administrative Code 69-06-05-01. Application	
2. The Application must contain:	
a. A description of:	
(1) The type of facility proposed	1.1
(2) Purpose of the facility	1.3
(3) The technology to be used	4.0
(4) The type of product to be transmitted	1.0
(5) The source of the product to be transmitted	1.0
(6) The final destination of the transmission line	1.0
(7) The proposed size and design and any alternate size or design that was considered, including:	
(a) The width of right of way;	1.8
(b) The approximate length of the facility;	1.6
(c) The estimated span length for electric facilities;	4.0
(d) The anticipated type of structure for electric facilities;	4.0
(e) The voltage for electric facilities;	4.0
(f) The requirement for and location of any new associated facilities	1.7
b. The anticipated time schedule for accomplishing major events, including:	
(1) Obtaining the certification of corridor compatibility;	1.10
(2) Obtaining the route permit;	1.10
(3) Completing right-of-way acquisition;	1.10
(4) Starting construction;	1.10
(5) Completing construction;	1.10
(6) Testing operations; and	1.10
(7) Commencing operations.	1.10
c. A copy of each evaluative study or assessment of the environmental impact of the proposed facility submitted to the agencies listed in section 69-06-01-05 and each response received.	8.0
d. An analysis of the need for the proposed facility based on present and projected demand for the product transmitted, including the most recent system studies supporting the analysis of the need.	2.0
e. A description of any feasible alternative methods for serving the need	2.2
f. The width of a corridor must be at least ten percent of its length, but not less than one mile [1.61 kilometers] or greater than six miles [9.66 kilometers] unless another appropriate width is determined by the NDPSC.	1.8
g. A study area that includes a proposed corridor of sufficient width to enable the NDPSC to evaluate the factors addressed in North Dakota Century Code section 49-22-09.	1.8
h. A discussion of the factors in North Dakota Century Code section 49-22-09 to aid the NDPSC's evaluation of the proposed route.	2.0, 3.0, 6.0, 7.0
i. A discussion of the applicant's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	6.0
j. Identification and map of the criteria that led to the proposed route location within the designated corridor, including exclusion areas, avoidance areas, selection criteria, policy criteria, design construction limitations, and economic considerations.	3.0, Appendix A
k. A discussion of the relative value of each criteria and how the applicant selected the proposed corridor location, giving consideration to all criteria and how the location, construction, and operation of the facility will affect each criteria.	3.0
l. A discussion of the general mitigative measures that the applicant will take to minimize adverse impacts that result from a route location in the proposed corridor and the construction and operation of the facility.	6.0
m. The qualifications of each person involved in the corridor location study.	10.0

TABLE 1

Certificate and Route Permit Completion Checklist

State Authority and Description	Section Addressed
n. A map identifying the criteria that led to the proposed route location within the designated corridor and the location of any new associated facilities. Several different criteria may be shown on each map depending on the map scale and the density and nature of the criteria.	Appendix A
o. An eight and one-half-inch by eleven-inch black and white map suitable for newspaper publication depicting the site area.	Electronically submitted
p. A discussion of present and future natural resource development in the area.	6.0
q. Map and GIS requirements. The applicant shall provide information that is complete, current, presented clearly and concisely, and supported by appropriate references to technical and other written material available to the NDPSC.	Electronically submitted
North Dakota Administrative Code 69-06-08-02. Transmission facility corridor and route criteria.	
1. Exclusion areas.	3.1
2. Avoidance areas.	3.2
3. Selection criteria.	3.3
4. Policy criteria.	3.4
North Dakota Century Code 49-22-08 Application for a certificate - Notice of filing - Amendment - Designation of a site or corridor.	
1. An application for a certificate shall be in such form as the NDPSC may prescribe, containing the following information:	
a. A description of the size and type of facility.	1.3
b. A summary of any studies which have been made of the environmental impact of the facility.	6.0
c. A statement explaining the need for the facility.	2.0
d. An identification of the location of the preferred site for any electric conversion facility.	1.9
e. An identification of the location of the preferred corridor for any electric transmission facility.	1.9
f. A description of the merits and detriments of any location identified and a comprehensive analysis with supporting data showing the reasons why the preferred location is best suited for the facility.	6.0
g. A description of mitigative measures that will be taken to minimize all foreseen adverse impacts resulting from the location, construction, and operation of the proposed facility.	6.0
h. An evaluation of the proposed site or corridor with regard to the applicable considerations set out in section 49-22-09 and the criteria established pursuant to section 49-22-05.1.	2.0, 3.0, 6.0
i. Such other information as the applicant may consider relevant or the NDPSC may require.	N/A
North Dakota Century Code 49-22-08.1 - Application for a permit - Notice of filing - Amendment - Designation of a route.	
1. An application for a route permit for an electric transmission facility within a designated corridor must be filed no later than two years after the issuance of the certificate and must be in such form as the NDPSC may prescribe, containing the following information:	
a. A description of the type, size, and design of the proposed facility.	1.3
b. A description of the location of the proposed facility.	1.9
c. An evaluation of the proposed route with regard to the applicable considerations set out in section 49-22-09 and the criteria established pursuant to section 49-22-05.1.	2.0, 3.0, 6.0
d. A description of mitigative measures that will be taken to minimize all foreseen adverse impacts resulting from the location, construction, and operation of the proposed facility	6.0
e. A description of the right-of-way preparation and construction and reclamation procedures.	5.0
f. A statement setting forth the manner in which:	
(1) The utility will inform affected landowners of easement acquisition, and necessary easement conditions and restrictions.	1.11
(2) The utility will compensate landowners for easements, without reference to the actual consideration to be paid.	1.11
g. Such other information as the utility may consider relevant or the NDPSC may require.	N/A
North Dakota Century Code 49-22-09. Factors to be considered in evaluating applications and designation of sites, corridors, and routes.	
1. The NDPSC shall be guided by, but is not limited to, the following considerations, where applicable, to aid the evaluation and designation of sites, corridors, and routes:	
a. Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	6.0

TABLE 1

Certificate and Route Permit Completion Checklist

State Authority and Description	Section Addressed
b. The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	6.0
c. The potential for beneficial uses of waste energy from a proposed energy conversion facility.	N/A
d. Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated.	6.0
e. Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects.	2.0
f. Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated.	N/A
g. The direct and indirect economic impacts of the proposed facility.	6.1
h. Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	6.1
i. The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	6.4
j. The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	6.6, 6.11
k. Problems raised by federal agencies, other state agencies, and local entities.	7.0

1.0 INTRODUCTION

1.1 PROPOSED PROJECT

Minnesota Power, an operating division of ALLETE, Inc., and Great River Energy are jointly submitting to the North Dakota Public Service Commission ("NDPSC") this Consolidated Application for a Certificate of Corridor Compatibility and Route Permit ("Application") for the Proposed High-Voltage Direct-Current ("HVDC") Modernization Project ("the Project" or "Proposed Project") located in Oliver County, North Dakota. The Proposed Project involves modernizing and upgrading the existing HVDC terminal, located near the existing Center HVDC Converter in Center, North Dakota. The Proposed Project will include the construction of a new HVDC terminal and three electric station yards, and transmission line segments to interconnect the new terminal with the local electric grid, which are described further below and throughout this Application. Minnesota Power will own and operate the majority of the proposed facilities; however, two of the proposed new transmission line segments will be owned and operated by Great River Energy.

Minnesota Power and Great River Energy ("the Applicants") are jointly submitting this Application because their respective facilities are part of the same Project. However, because each will separately own and operate their respective facilities, the Applicants request issuance of a separate Certificate of Corridor Compatibility and Route Permit for each entity to cover their respective facilities. A description of the proposed corridor and route for each entity's facilities is provided in Section 1.3 below. Additionally, each entity's Project facilities are separately described and analyzed throughout this Application. The Applicants are also submitting with this Application a request for waiver of procedures and time schedules pursuant to North Dakota Century Code ("NDCC") Section 49-22-07.2 ("Waiver Request"). As discussed in the Waiver Request, the Project is of such length, design, location and purpose that it will produce minimal adverse effects, and therefore, the Applicants request that the NDPSC issue a notice of opportunity for hearing and only conduct a public hearing in the event that a request is properly made and granted by the NDPSC.

1.2 APPLICANTS

Minnesota Power

Minnesota Power is an operating division of ALLETE, Inc. ("ALLETE"), an investor-owned energy company headquartered in Duluth, Minnesota and a reliable provider of competitively-priced energy in the Upper Midwest. Through its portfolio of businesses, ALLETE owns and operates 300 miles of transmission lines and 500 MW of wind energy conversion facilities in North Dakota as well as BNI Energy, a coal mine that supplies the Milton Young Generation Station in Center, North Dakota. ALLETE's Minnesota Power electric utility serves 150,000 retail customers, including some of the nation's largest industrial customer operations, and wholesale electric service to 14 municipalities in a 26,000-square-mile electric service territory. The Company operates a 1,600-megawatt ("MW") peak demand system with electric power generation in the form of renewable wind, solar, and hydropower generation facilities, as well as coal, biomass, and natural gas-fired power plants in Minnesota and North Dakota. Minnesota Power also purchases electricity from independent power producers and other public utilities, including 100 MW of wind energy in Oliver County, North Dakota. ALLETE invests in transmission infrastructure, including the 465-mile-long HVDC +/-250 kilovolt ("kV") transmission line ("HVDC Line") that delivers 550 MW of electricity and is operated by Minnesota Power. The Company's transmission network is interconnected with the regional transmission grid to promote reliability and Minnesota Power is a member of the Midcontinent Independent System Operator, Inc. ("MISO") and the Midwest Reliability Organization ("MRO").

Great River Energy

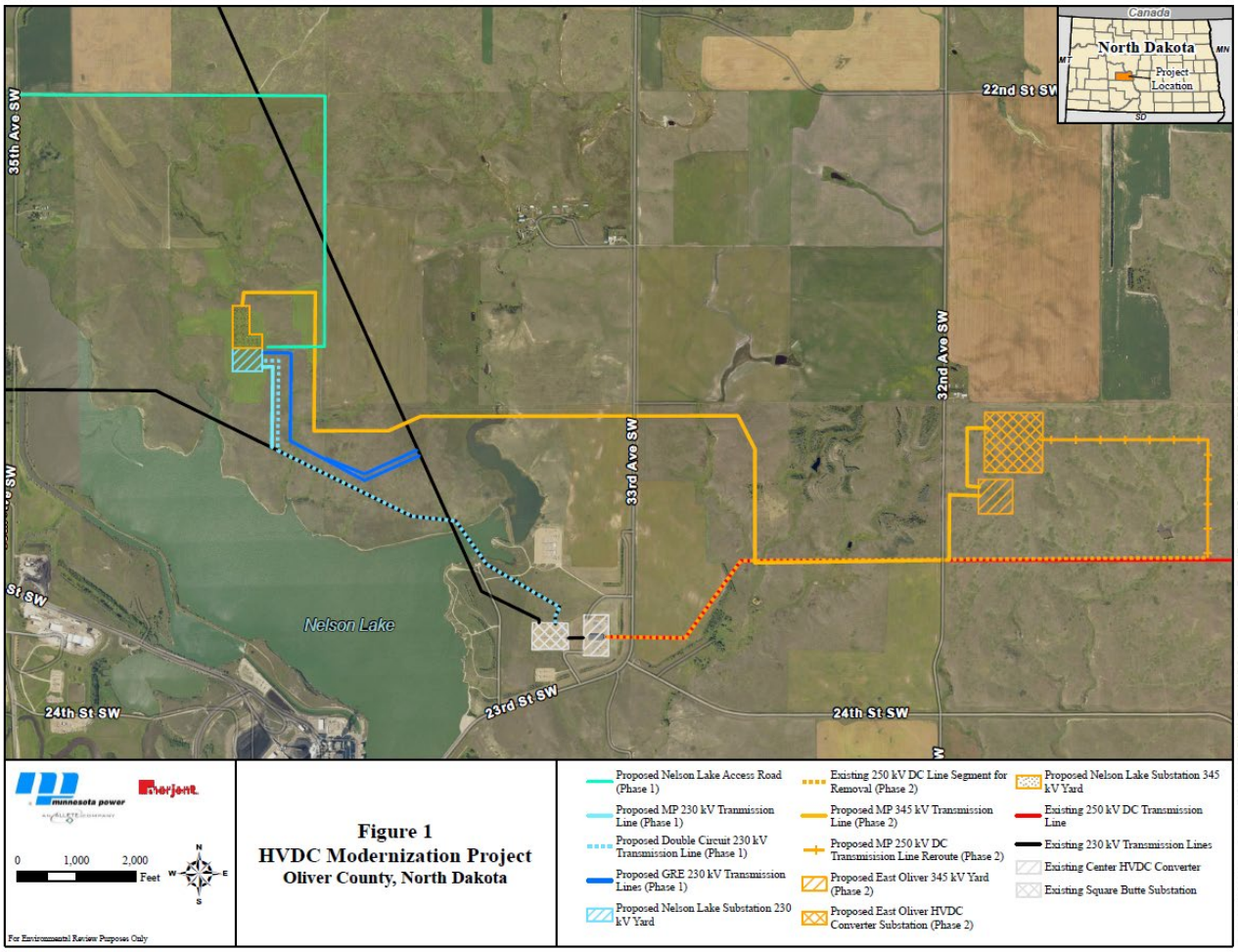
Great River Energy is a not-for-profit wholesale electric power cooperative that provides electricity to approximately 1.7 million people through its 27 member-owner cooperatives and customers. Through its member-owners, Great River Energy serves two-thirds of Minnesota geographically, and parts of Wisconsin. Great River Energy's transmission network is interconnected with the regional transmission grid to promote reliability, and Great River Energy is a member of MISO and the MRO. Great River Energy is based in Maple Grove, Minnesota.

1.3 PROJECT FACILITIES

The HVDC Modernization Project is needed to modernize aging HVDC assets and improve the reliability of the regional transmission system. The existing HVDC terminal has operated for over 45 years, more than 15 years beyond its 30-year design life. In recent years, Minnesota Power has experienced HVDC terminal outages due to failures in the control system, power electronics, transformers, and other components. The orderly replacement of the HVDC terminal equipment is prudent to ensure continuous, efficient delivery of energy resources into the future.

To modernize the HVDC terminal and implement the latest technology, new electrical infrastructure will be constructed on a new site near Minnesota Power's existing HVDC system, located near the existing Square Butte East Substation. The Proposed Project will require construction in two phases as described below (see also Figure 1 below, and Maps 1a and 1b in Appendix A). Phase 1, also referred to as the "Proposed Nelson Lake Substation Phase," involves construction of the Proposed Nelson Lake Substation 230-kV Yard and associated infrastructure. Phase 2, also referred to as the "Proposed East Oliver HVDC Converter Station Phase," involves construction of the Proposed East Oliver HVDC Converter Station and associated infrastructure. Unless identified as the Great River Energy portion of the Project, all facilities will be owned and operated by Minnesota Power.

FIGURE 1: **HVDC Modernization Project Overview**



Pending regulatory approvals, Phase 1 of the Project is scheduled to be in service in 2027 Phase 2 of the Project is scheduled to be in service in the 2028 to 2030 timeframe. A detailed Project schedule is provided in Section 1.10 below.

Voltage and power transfer capabilities on the HVDC Line will remain the same and the Project will ensure bi-directional flow capability through the installation of state-of-the-art equipment.

The Project will enhance HVDC dispatch capability and energy transfer capability within MISO. Modernization of the aging infrastructure will allow the Applicants to continue to provide reliable electric service to their customers. The Project will also greatly reduce the likelihood of an extended outage due to component failures.

1.4 COMPLIANCE WITH THE ENERGY CONVERSION AND TRANSMISSION FACILITY SITING ACT

The North Dakota Energy Conversion and Transmission Facility Siting Act, NDCC Chapter 49-22 ("the Siting Act") requires the proponent of an electric transmission facility to obtain a Certificate of Corridor Compatibility and Route Permit from the NDPSC in order to locate, construct, and operate the facility in the state of North Dakota. An electric transmission facility is defined as an electric transmission line and associated facilities with a design in excess of 115-kV that is one or more miles in length. An application must meet certain criteria set forth in the Siting Act, as well as in North Dakota Administrative Code ("NDAC") Article 69-06 ("the Siting Rules"). The siting of a transmission facility is to be made in an orderly manner compatible with environmental preservation and the efficient use of resources (NDCC 49-22-02).

In this Application, the Applicants present the information required by the Siting Act and the Siting Rules. The Applicants considered the exclusion and avoidance areas, the selection criteria, and the policy criteria in the design of the Project, in accordance with NDAC Section 69-06-05-01, NDAC Section 69-06-08-02, NDCC Section 49-22-08, and NDCC Section 49-22-09. Information regarding Project design and technical information has been included in this Application to allow a thorough understanding of the Project and to aid in review by the NDPSC, regulatory agencies, and the public.

1.5 PROJECT HISTORY AND BACKGROUND

Minnesota Power's HVDC system was commissioned in 1977 to deliver electricity from the Milton R. Young Station Unit-2, a coal-fired power plant, directly to Minnesota Power's customers. At that time, the HVDC system was owned by Square Butte Electric Cooperative. In 2009, Minnesota Power purchased the HVDC system from Square Butte Electric Cooperative. As part of that purchase, Minnesota Power and Square Butte Electric Cooperative filed a joint application with the NDPSC to transfer transmission facility permits and certificates (Case No. PU-09-631). The NDPSC issued an order dated October 28, 2009, approving the joint application for transfer of Certificates and Route Permits.

Also in 2009, Minnesota Power placed into service the approximately 22-mile-long Bison 230-kV transmission line (PU-09-587), and in 2011 Minnesota Power placed into service an additional 10-mile-long western extension of the Bison 230-kV transmission line (PU-11-620). The Bison 230-kV transmission line transmits electricity generated from the Bison 1-4 Wind Energy Centers and Glen Ullin Energy Center to the existing Square Butte East Substation.

In 2013, Minnesota Power upgraded the capacity of the HVDC system to assure deliverability of the Bison Wind Energy Centers. To accomplish this, Minnesota Power requested and received a

50 MW Transmission Service Reservation, which allowed for the completion of the necessary upgrades to increase the HVDC system's capacity from 500 MW to 550 MW.

The Project is essential to transporting the output of the Bison 1-4 Wind Energy Centers and Oliver County 1 and Oliver County 2 Wind Energy Centers located in Oliver, Morton, and Mercer counties. The combined nameplate capacity of these facilities is 596.6 MW (NDPSC, 2021).

The existing HVDC system was designed by General Electric for a 30-year operating lifetime. The existing HVDC terminal has operated for over 45 years, more than 15 years beyond its 30-year design life. General Electric left the HVDC business in the 1980s, and it has been increasingly difficult to procure spare parts, as the technology is becoming obsolete. In recent years, Minnesota Power has experienced HVDC terminal outages due to failures in the control system, power electronics, transformers, and other components. The Project is needed to modernize aging HVDC assets and improve the reliability of the regional transmission system. Replacement of the HVDC terminal equipment is prudent to ensure continuous, efficient delivery of energy resources into the future.

Voltage and power transfer capabilities on the HVDC Line will remain the same and the Project will ensure bi-directional flow capability through the installation of state-of-the-art equipment. The Project will enhance HVDC dispatch capability and energy transfer capability within MISO. Modernization of the aging infrastructure will allow Minnesota Power to continue to provide reliable electric service to its customers. The Project will also greatly reduce the likelihood of an extended outage due to component failures.

1.6 PROJECT DESCRIPTION

Overall, the Project involves construction of two new substations, a new HVDC converter station, an associated yard, and new or re-routed transmission facilities to connect the new substations and HVDC converter station to the existing infrastructure (i.e., the Square Butte East Substation, the Center HVDC Converter Station, the Great River Energy 230-kV transmission line, and the Minnesota Power 250-kV HVDC Line). Essentially, short segments of transmission line are being re-routed through new substations or constructed to interconnect the new substations/HVDC converter station with existing facilities.

The Project consists of two phases: Phase 1, Proposed Nelson Lake Substation and associated transmission line infrastructure; and Phase 2, Proposed East Oliver HVDC Converter Station and associated yards and transmission line infrastructure. The entirety of the Proposed HVDC Modernization Project is shown in Maps 2a, 2b, and 2c in Appendix A.

Phase 1 includes the following Project facilities:

- Proposed Nelson Lake Substation 230-kV Yard.
- Proposed Single-Circuit 230-kV Alternating-Current ("AC") transmission line, approximately 0.3 mile long (between the Proposed Nelson Lake 230-kV Substation and the Proposed Double-Circuit 230-kV AC transmission line).
- One proposed Double-Circuit 230-kV AC transmission line, approximately 1.5 miles long (between the Proposed Single-Circuit 230-kV AC transmission line and the existing Square Butte East Substation).

- Re-routing the existing Great River Energy 230-kV AC transmission line through the Proposed Nelson Lake Substation, which requires parallel single-circuit lines for approximately 0.3 mile, then a double-circuit line for approximately 0.6 mile.
- Modifications of the existing Square Butte East Substation (adding one breaker).
- One permanent access road.
- Temporary workspaces (construction extents).
- Temporary laydown yard.

Phase 2 will interconnect to Phase 1 of the Project and includes the following Project facilities:

- Proposed East Oliver HVDC Converter Station.
- Proposed East Oliver 345-kV Yard.
- Proposed Nelson Lake Substation 345-kV Yard.
- Proposed double circuit capable but operated as a single circuit 345-kV AC transmission line, approximately 3.9 miles long (connecting the Proposed Nelson Lake 345-kV Substation, the Proposed East Oliver 345-kV Yard, and the Proposed East Oliver HVDC Converter Station).
- 250-kV HVDC Line Reroute, installing approximately 0.9 mile of new line (connecting the Proposed East Oliver HVDC Converter Station to the existing 250-kV HVDC line) and removing approximately 3.0 miles of existing 250-kV HVDC line.
- Four permanent access roads.
- Temporary workspaces (construction extents).
- Temporary laydown yard.

1.7 ASSOCIATED FACILITIES

Facilities associated with this Project that require improvement and/or modification are described in Section 1.3 above. The Project will also include permanent access roads. It is anticipated that the Proposed Nelson Lake Substation will have a 2.0-mile-long access road; the Proposed Nelson Lake Substation 345-kV Yard will have a 0.25-mile-long access road; the Proposed East Oliver HVDC Converter Station will have two, 0.2-mile-long access roads; and, the Proposed East Oliver 345-kV Yard will have a 0.1-mile-long access road. Stringing areas and temporary access will be within the existing transmission line right-of-way.

The Project will also include temporary facilities, such as temporary construction and laydown areas and temporary access roads. Temporary facilities will be within the construction footprints of the substation and converter yards on land owned by Minnesota Power.

1.8 PROJECT TERMS

Terms used in this Application associated with the Project are defined in Table 1.8-1 below.

TABLE 1.8-1

Project Terms

Term	Definition/Description
Project Route	In accordance with NDCC Section 49-22-03(12), "Route" is defined as the location of an electric transmission facility within a designated corridor and is also referred to as the centerline. Separate Routes have been identified for the Minnesota Power and Great River Energy facilities. The proposed Routes are depicted on Maps 2a, 2b, and 2c in Appendix A.
Project ROW	The Project ROW (right-of-way) consists of the permanent easement for the proposed transmission lines, which are 130-feet wide (for the 230-kV lines), 140-feet wide (for the 250-kV lines) and 150-feet wide (for the 345-kV lines). The proposed ROWs are depicted on Maps 1a and 1b in Appendix A.
Project Survey Area	The Project Survey Area is irregularly shaped but is approximately 3 miles long east to west and 1.25 miles wide north to south and consists of the area field surveyed for cultural resources and wetlands. The Project Survey Area includes the Project Corridors and Project Routes. The Project Survey Area is depicted on Maps 1a and 1b in Appendix A.
Project Corridor	The proposed Project Corridor for both Minnesota Power's and GRE's facilities is shown as the proposed Phase 1 Corridor as depicted on Maps 1a and 1b in Appendix A. Minnesota Power's Phase 2 Project Corridor is depicted in Maps 1a and 1b in Appendix A. The full corridor has been surveyed for cultural, biological and wetland resources.
Study Area	The Study Area analyzed for the Project is one-mile-wide (0.5 mile on either side of the Project Survey Area). The Study Area is depicted on Maps 1a and 1b in Appendix A and encompasses approximately 5,139 acres[a]

[a] NDAC 69-06-05-01(2)(f) states that the "width of the corridor must be at least ten percent of its length, but not less than one mile [1.61 kilometers] or greater than six miles [9.66 kilometers] unless another appropriate width is determined by the NDPSC."

1.9 PROJECT LOCATION

The Project is located in Oliver County, North Dakota, north and east of Nelson Lake, approximately 1 mile northeast of the Milton R. Young Power Plant, and approximately 4 miles southeast of Center, North Dakota (see Maps 1a and 1b in Appendix A). The Proposed Nelson Lake Substation 230-kV Yard will be located northwest of the existing Square Butte East Substation and the Proposed East Oliver HVDC Converter Station will be located east of the existing Center HVDC Converter. These locations were chosen in consideration of their proximity to existing infrastructure and associated facilities, the presence of suitable building surfaces for large station facilities, and utility-owned land. Table 1.9-1 below shows the Township, Range, and Sections of the proposed Project Route, Project Corridor, Survey Area, and Study Area for Minnesota Power's facilities.

TABLE 1.9-1

Minnesota Power: Project Route, Project Corridor, Survey Area, and Study Area Locations

Project Feature	Township	Range	Section [a]
Project Route and Project Corridor Location	142 North	83 West	20, 21, 27,28, 29, 32, 33, 34, 35
Survey Area	142 North	83 West	20, 21, 27, 28, 29, 32, 33, 34, 35
Study Area	142 North	83 West	19, 20, 21, 25, 26, 27, 28, 29, 30, 32 33, 34, 35, 36
	141 North	83 West	2, 3, 4

[a] Note that locations may be located within the Section but may not encompass the entire section.

Table 1.9-2 below shows the Township, Range, and Sections of the proposed 230-kV AC transmission lines that will be owned and operated by Great River Energy (the Survey Area and Study Area locations are the same as noted in Table 1.9-1 above).

TABLE 1.9-2

Great River Energy: Project Route and Corridor Locations

Project Feature	Township	Range	Section [a]
Project Route and Corridor Location	142 North	83 West	29, 32, 33

[a] Note that locations are within the Section but do not encompass the entire section.

1.10 SCHEDULE

The Applicants anticipate that construction will begin on Phase 1 in Q4 2025 and is anticipated to take approximately 18 months. The Applicants expect construction of Phase 2 to begin in Q3 2025 and to be complete within approximately 18 months to 3 years. The expected in-service date is between 2028 to 2030.

Most activities will take place during the North Dakota construction season, usually beginning in March or April and ending in November or December. Depending on Project needs, some work may occur during winter months. Table 1.10-1 below provides a summary of the anticipated schedule for the Project.

TABLE 1.10-1

Anticipated Project Schedule

Activity	Phase 1 (Including Great River Energy Facilities)	Phase 2
Complete Land Acquisition	2024	2024
Oliver County Conditional Use Permit	Q4 2024	Q4 2024
NDPSC Certificate and Route Permit	Q1 2025	Q1 2025
Construction Start	Q2 2025	Q3 2025
Construction Complete	2027	2028 to 2030
Testing operations	2027	2028 to 2030
Commencing commercial operation	2027	2028 to 2030

1.11 OWNERSHIP AND EASEMENT ACQUISTION

Minnesota Power will own and operate the entire Project, except for two 0.9 -mile -long 230-kV lines that will be owned and operated by Great River Energy. Minnesota Power will manage the construction of all equipment and associated facilities. Minnesota Power will own in fee all land required for the Phase 1 and Phase 2 converter station and yards, with the exception of existing utility rights-of-way held by Great River Energy and Minnkota Power Cooperative. The 230-kV and 345-kV Transmission Lines will be constructed within easements held by Minnesota Power on land owned by Minnkota Power Cooperative (see Map 3 in Appendix A). Land owned by Minnesota Power may continue to be farmed or grazed under leases with local farmers.

1.12 PROJECT COST

The estimated cost to construct Minnesota Power's portion of the Project will be approximately $399 to $599 million. Great River Energy's Project costs will be approximately $5.4 million. Costs are presented in 2024 dollars, with an upper and lower range provided to illustrate contingencies in cost estimating assumptions.

2.0 NEED FOR FACILITY

This section provides an analysis of the need for the Project. The primary need for the Project is to improve the reliability of the electric transmission system in North Dakota and Minnesota by modernizing Minnesota Power's existing HVDC system.

2.1 NEED ANALYSIS

2.1.1 HVDC Modernization Project

The HVDC Modernization Project is needed to modernize aging HVDC facilities and to improve the reliability of the transmission system. The existing HVDC terminal has operated for over 45 years, which is more than 15 years beyond its 30-year design life. In recent years, Minnesota Power has experienced HVDC terminal outages due to failures in the control system, power electronics, transformers, and other components. Based on experience with other electric system components, the failure rate is expected to increase, which is of particular concern for the existing HVDC system because of limited availability of replacement components, given the original manufacturer is no longer in business. The orderly replacement of the HVDC terminal equipment is required to ensure continuous, efficient delivery of North Dakota-generated electricity to Minnesota Power's customers.

In addition to the replacement of the existing HVDC terminal, the new HVDC technology implemented for the Project will be designed to provide key reliability attributes including voltage regulation, frequency response, blackstart capability, and bidirectional power transfer capability. These modernizations to the HVDC technology will ensure the continued reliable power transfer across Minnesota Power's HVDC transmission assets.

In addition to the need for the Project as a whole, Phase 1 must be constructed and in service before Phase 2 because the Proposed Nelson Lake Substation 230-kV Yard is the first step in a multi-stage effort: to provide a point of interconnection for the relocated and upgraded Proposed East Oliver HVDC Converter Station; to facilitate new renewable energy interconnections; to establish greater connectivity between MISO transmission owners in North Dakota; and, to support regional transmission expansion planning needs. The Existing Square Butte East Substation, where the Existing Center HVDC Converter is interconnected, does not have the capacity to expand to incorporate new energy interconnections or new HVDC Voltage Source Converter ("VSC") technology. The Existing Center HVDC Converter will remain in operation while the Proposed East Oliver HVDC Converter Station is constructed to minimize the duration of the HVDC line outage. This is most efficiently completed by building the Proposed Nelson Lake Substation 230-kV Yard in Phase 1 to establish the new point of interconnection, followed by building the Proposed East Oliver HVDC Converter Station to interconnect to the Proposed Nelson Lake Substation in Phase 2.

2.1.2 Great River Energy's Proposed 230-kV AC Transmission Lines

Connection to the existing Great River Energy Stanton-Square Butte 230-kV Transmission Line is needed to provide reliability and resiliency to the HVDC system. To enhance reliability and resiliency, the Stanton-Square Butte 230-kV Transmission Line will be brought into the Proposed Nelson Lake Substation 230-kV Yard, resulting in an additional independent path to the existing Minnesota Power Square Butte East Substation, and also an independent path to the existing Great River Energy Stanton Substation. These connections provide variable reactive needs as power transfers fluctuate with wind generation levels.

These connections will also enable excess wind generation to flow on the AC system when capacity is available, including times when the HVDC line is down for maintenance or for a reliability event.

2.2 ALTERNATIVES

As discussed below, the Applicants considered various transmission solutions, including upgrading other existing facilities, different voltage levels, and different endpoints; however, the Proposed Project addresses the need in the most prudent and reasonable manner.

2.2.1 Alternative Upgrades

The Project involves interconnecting the new HVDC system at 345-kV and then stepping down the voltage from 345-kV to 230-kV to interconnect to the transmission system at the Proposed Nelson Lake Substation. Minnesota Power considered interconnecting the new HVDC converters directly to the 230-kV system, which would involve designing the HVDC converter transformers with a 230-kV winding on the AC system side rather than a 345-kV winding, and then building new 230-kV bus and transmission to connect to the Proposed Nelson Lake Substation. While this alternative would have a lower cost in the near term, the long-term cost would likely be significantly higher than developing an initial interconnection at 345 kV.

As the regional transmission system continues to develop to support the clean energy transition, the near-term focus in North Dakota and Northern Minnesota has been on developing a strong 345 kV backbone network, as seen in Tranche 1 of the MISO Long Range Transmission Plan, which was approved by the MISO Board of Directors on July 25, 2022 and consists of 18 individual 345 kV projects totaling over $10 billion. As the use and significance of this existing HVDC system evolves over the life of the proposed VSC Converter Stations, it will become increasingly important for the HVDC system to be directly interconnected to the regional 345 kV network, rather than the underlying local 230 kV network. However, to move the point of interconnection from the 230 kV system to the 345 kV system at a later date would require an expensive replacement of the converter transformers to change the winding voltage on the AC-system side. Since the converter transformers are approximately 20 percent of the overall cost of the HVDC Converter Station itself, there would be a significant sunk cost at the time the transition from 230 kV to 345 kV is made. Therefore, alternative AC transmission voltages are not a cost-effective long-term alternative for the Project.

2.2.2 Alternative Voltages

The Project involves replacing the HVDC System on the North Dakota end of Minnesota Power's existing ±250-kV HVDC transmission line. The 465-mile transmission line itself will continue to be operated using its existing structures, which are designed specifically to operate at ±250-kV DC. To continue using the existing transmission line, the new Converter Stations must be designed for the same operating voltage as the line. To change the HVDC transmission voltage at this time would require rebuilding the entire 465-mile line on new structures designed for a higher operating voltage—a significant increase in scope and cost that is not necessary at this time to support the near-term capacity needs on the HVDC system. Therefore, alternative HVDC transmission voltages are not a necessary improvement or a cost-effective alternative for the Project.

2.2.3 Alternative Endpoints

The Project's endpoint is determined by the endpoint of the existing 465-mile HVDC transmission line. While the implementation of VSC HVDC technology requires that the new HVDC system be

developed on new sites nearby to the existing HVDC system, the new sites have been carefully selected to minimize the amount of new transmission line construction required to interconnect the Proposed Project to the existing HVDC transmission line and AC transmission system. Moving the endpoints farther away from the existing HVDC transmission line endpoints would significantly impact the scope and scale of the Project. Therefore, there are no feasible alternative endpoints for the Project outside of the immediate vicinity of the existing HVDC system.

2.3 TEN-YEAR PLAN

2.3.1 Minnesota Power

In July 2024, Minnesota Power filed a North Dakota Ten-Year Plan pursuant to NDCC § 49-22-04, and a copy of the Ten-Year Plan is included in Appendix B. Minnesota Power's Ten-Year Plan is consistent with this Application.

2.3.2 Great River Energy

In July 2024, Great River Energy filed a North Dakota Ten-Year Plan pursuant to NDCC § 49-22-04, and a copy of the Ten-Year Plan is included in Appendix B. Great River Energy's Ten-Year Plan is consistent with this Application.

3.0 SITE SELECTION CRITERIA

The Project Corridors were selected based on the location of the existing infrastructure, landowner participation, an assessment of area environmental characteristics (including field surveys), review of applicable Oliver County and NDPSC requirements, and communications with local, state, and federal agencies. The Applicants have reviewed the criteria in NDAC Section 69-06-08-02 and considered these criteria in the site/route selection and Project design. These criteria are discussed in this section.

3.1 EXCLUSION AREAS

In accordance with NDAC Section 69-06-08-02(1), which implements NDCC Section 49-22-05.1, the geographical areas listed in Table 3.1-1 below must be excluded in the consideration of a transmission facility route. Exclusion areas may be located within a corridor, but at no given point can such an area or areas encompass more than 50 percent of the corridor width unless there is no reasonable alternative. NDAC Section 69-06-08-02 further specifies that a buffer zone of a reasonable width to protect the integrity of the area must be included. Natural screening may be considered in determining the width of the buffer zone. Map 5 in Appendix A depicts the exclusion areas.

The Corridor was surveyed for cultural resources, wetlands and waterbodies, and the Dakota skipper in 2022, 2023, and 2024. The Applicants are committed to avoiding impacts to these resources.

TABLE 3.1-1

Exclusion Areas

Transmission Facility Corridor and Route Criteria	Present in Corridor or Route	Proposed Buffer	Section Addressed
1. Exclusion areas.			
a. Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas.	Not present within Corridor or Route.	No impacts are anticipated, and no buffer is proposed.	6.5.1
b. Designated or registered state: parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves.	Archaeological sites, as identified through a Class I Literature Search report, addendum report, evaluative testing report, and a Class III Cultural Resources Inventory are present within both Phase 1 and 2 Project corridors. [a]	No impacts are anticipated; resources will be avoided.	6.4.1
c. County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions.	Not present within Corridor or Route.	No impacts are anticipated, and no buffer is proposed.	6.5.1
d. Areas critical to the life stages of threatened or endangered animal or plant species.	Suitable habitat for the Dakota skipper is present within the Corridor or Route; however, no Dakota skippers were observed during surveys.	The Applicants will avoid impacts based on current and future surveys and no buffer is proposed.	6.11.1
e. Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	Suitable habitat for the Dakota skipper is present within the Corridor or Route; however, no Dakota skippers were observed during surveys.	The Applicants will avoid impacts based on current and future surveys and no buffer is proposed.	6.11.1

TABLE 3.1-1

Exclusion Areas

Transmission Facility Corridor and Route Criteria	Present in Corridor or Route	Proposed Buffer	Section Addressed
f. Areas within one thousand two hundred feet of the geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility.	Not present within Corridor or Route.	No impacts are anticipated, and no buffer is proposed.	Not applicable.
g. Areas within 30 feet on either side of a direct line between ICBM launch or launch control facilities to avoid microwave interference.	No ICBM launch or launch control facilities are located near the Corridor.	No impacts are anticipated, and no buffer is proposed.	Not applicable.

[a] Known archaeological sites are not depicted on Map 6 due to confidentiality.

3.2 AVOIDANCE AREAS

In accordance with NDAC Section 69-06-08-02(2), the geographical areas listed in Table 3.2-1 below cannot be approved as a site for routing of a transmission facility unless the applicants show that, under the circumstances, there is no reasonable alternative. Avoidance areas may be located within a corridor, but at no given point can such an area or areas encompass more than 50 percent of the corridor width unless there is no reasonable alternative. NDAC Section 69-06-08-02(2) further requires a buffer zone of a reasonable width to protect the integrity of the area. Natural screening may be considered in determining the width of the buffer zone. Map 5 in Appendix A depicts the avoidance areas.

TABLE 3.2-1

Avoidance Areas

Transmission Facility Corridor and Route Criteria	Present in Corridor or Route	Proposed Buffer	Section Addressed
1. Avoidance areas.			
a. Designated or registered national: historic districts; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.	Not present within Project Corridor or Route.	No impacts are anticipated, and no buffer is proposed.	6.5.1
b. Designated or registered state: wild, scenic, or recreational rivers; game refuges; game management areas; management areas; forests; forest management lands; and grasslands.	Not present within Corridor or Route. The Wilbur Boldt Wildlife Management Area is adjacent to the Project Corridor and Phase 2 facilities.	No impacts are anticipated, and no buffer is proposed.	6.7
c. Historical resources which are not specifically designated as exclusion or avoidance areas.	Not present within Project Corridor or Route.	No impacts are anticipated, and no buffer is proposed.	6.4
d. Areas which are geologically unstable.	Landslide deposits as indicated by the North Dakota Geological Survey landslide mapping program are present within both Phase 1 and 2 Project Corridor/Route. A geotechnical analysis will be performed and areas that are geologically unstable will be avoided and spanned as necessary.	No impacts are anticipated.	6.9
e. Within 500 feet of a residence, school, or place of business.	No residences, schools, or businesses are located within 500 feet of the Corridor. The closest farmstead is approx. 0.56 mile north of the Project's proposed 345kV transmission line right-of-way ("ROW").	No impacts are anticipated, and no buffer is proposed.	N/A

TABLE 3.2-1

Avoidance Areas

Transmission Facility Corridor and Route Criteria	Present in Corridor or Route	Proposed Buffer	Section Addressed
f. Reservoirs and municipal water supplies.	Nelson Lake is located within both Phase 1 and 2 Project Corridors.	The NE arm of Nelson Lake will be spanned by the Proposed HVDC Double-Circuit 230-kV AC Lines (Phase 1) and no impacts are anticipated.	6.10
g. Water sources for organized rural water districts.	Not present within Corridor or Route.	No impacts are anticipated, and no buffer is proposed.	Not applicable.
h. Irrigated land (note – this is no longer part of the siting criteria (NDCC Sec. 49-22-05.1(2)).	Not applicable.	Not applicable.	Not applicable.
i. Areas of recreational significance which are not designated as exclusion areas.	Not present within Corridor or Route.	No impacts are anticipated, and no buffer is proposed.	Not applicable.

3.3 SELECTION CRITERIA

In accordance with NDAC Section 69-06-08-02(3), a site can be approved in an area only when the applicants demonstrate to the NDPSC that any significant adverse effects resulting from the location, construction, and operation of the facility in that area, as they relate to the criteria listed in Table 3.3-1 below, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum.

TABLE 3.3-1

Selection Criteria

Transmission Facility Corridor and Route Criteria	Potential Effects	Section Addressed
5. Selection criteria.		
a. The impact upon agriculture:		
(1) Agricultural production	Negligible/minimal effect anticipated. Where practical, construction activities will be scheduled during periods when agricultural activities will be minimally affected. Based on National Land Cover Database (“NLCD”), approximately 13.3 acres of agricultural land cropland would be permanently removed from production for the substation, converter station, transformer yard, and access roads.	6.5
(2) Family farms and ranches	No impacts to family farms and ranches anticipated. All The access road to the Nelson Lake substation will follow a section line road. The remaining project infrastructure will be on land owned by ALLETE/Minnesota Power or Minnkota Power Cooperative.	6.2
(3) Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation	There is no known irrigation within the Study Area, and, thus, no effects are anticipated.	Not applicable

TABLE 3.3-1

Selection Criteria

Transmission Facility Corridor and Route Criteria	Potential Effects	Section Addressed
(4) Surface drainage patterns and ground water flow patterns	No impacts to surface drainage patterns or groundwater flow patterns are anticipated. The Project will be designed in such a manner that runoff from the upper portions of the watershed can flow unrestricted to the lower portion of the watershed. The Applicants will obtain a National Pollutant Discharge Elimination System permit and prepare a Storm Water Pollution Prevention Plan prior to construction.	6.10
b. The impact upon:		
(1) Sound-sensitive land uses.	Negligible/minimal effect anticipated. Following construction, there will be a minimal amount of sound from the Project substations/converter stations and as a result of corona effects. There are no sound-sensitive land uses within the Corridor and the closest is over 0.56 mile away.	6.3
(2) The visual effect on the adjacent area.	Negligible/minimal effect anticipated. The Project will be visible to landowners and travelers along roadways, but the Project is located in an area with existing transmission lines, substation, coal fired power plant, coal mine, and roads. The nearest residence is 0.56 mile north of the ROW.	Not applicable
(3) Extractive and storage resources.	The Project would not directly affect any wells or drill rigs, because the Corridors/Routes have been designed to avoid these areas and provide sufficient clearance for well maintenance and operation. An abandoned surface mine is adjacent to the northern edge of the Survey Area; however, it will not be impacted by the Project. There are six abandoned surface lignite coal mines within the Study Area; however, none are located within the Project Survey Area or Corridors.	6.9
(4) Wetlands, woodlands, and wooded areas.	The Project will permanently impact approximately 0.77 acres of wetlands and temporarily impact approximately 0.04 acres of wetlands associated with the East Oliver Converter Station. Impacts will be authorized under and the Project will comply with the requirements of Nationwide Permit 57. It is anticipated that tree and shrub removal will account for less than one acre. Trees/shrubs will be replaced consistent with the NDPSCs Tree and Shrub Mitigation Specifications.	6.10
(5) Radio and television reception, and other communication or electronic control facilities.	No effects anticipated.	Not applicable
(6) Human health and safety.	No effect anticipated. The Project will be designed and constructed to meet or exceed the National Electrical Safety Code. Regular maintenance and inspections will be performed during the life of the Project to confirm its continued integrity.	6.3
(7) Animal health and safety.	No effect anticipated. The Applicants will follow APLIC standards.	6.11
(8) Plant life.	The Project will result in approximately 52 acres of permanent ground disturbance. Trees and shrubs will be replaced consistent with the NPPSC's Tree and Shrub Mitigation Specifications. Temporarily disturbed areas will be reseeded in accordance with the Natural Resources Conservation Service ("NRCS") approved seed mixes.	6.6

3.4 POLICY CRITERIA

In accordance with NDAC Section 69-06-08-02(4), the NDPSC may give preference to an applicant who will maximize benefits that result from the adoption of the policies and practices listed in Table 3.4-1 below and may require the adoption of such policies and practices as appropriate.

TABLE 3.4-1

Policy Criteria

Energy Conversion Facility Siting Criteria	Applicability and Applicants' Response	Section Addressed
6. Policy Criteria		
a. Location and design.	The location is based on land ownership. landowner participation, field surveys, known environmentally sensitive areas, and review of Oliver County and state siting requirements. Project design will meet the requirements of the National Electrical Safety Code for the Heavy Loading District, Minnesota Power, Great River Energy, and other applicable local or national building codes.	1.9, 4.0
b. Training and utilization of available labor in this state for the general and specialized skills required.	The Applicants will use local labor to the extent practicable.	Not applicable
c. Economies of construction and operation.	The Applicants will utilize local contractors to the extent practicable.	Not applicable
d. Use of citizen coordinating committees.	The Applicants have coordinated and will continue to coordinate with the local community through the permitting process with Oliver County.	Not applicable
e. A commitment of a portion of the transmitted product for use in this state.	The Project will improve the reliability of the transmission system in North Dakota and Minnesota.	1.0
f. Labor relations.	No impacts to labor relations are anticipated.	Not applicable
g. The coordination of facilities.	The Project was designed to be near existing infrastructure.	1.0
h. Monitoring of impacts.	The Applicants and the contractor(s) will employ Best Management Practices throughout Project construction and will monitor and avoid or minimize potential impacts. A stormwater pollution prevention plan will be prepared and implemented. During Project operation and restoration, the Applicants will monitor the Project and assess impacts as well as comply with all requirements set forth in the Certificates, Route Permits, and associated orders.	6.0
i Utilization of existing and proposed rights of way and corridors	Not applicable	Not applicable
j. Other existing or proposed transmission facilities.	The Applicants have sited the Project close to existing infrastructure, has coordinated, and will continue to coordinate with existing infrastructure owners to avoid and/or minimize potential impacts.	4.0

3.5 FACTORS TO BE CONSIDERED

The North Dakota Energy Conversion and Transmission Facility Siting Act NDCC Section 49-22-09 lists the factors in Table 3.5-1 below to be considered in evaluating applications and designation of sites.

TABLE 3.5-1

Factors to be Considered

Factors to be Considered	Evaluation	Section Addressed
1. The commission shall be guided by, but is not limited to, the following considerations, where applicable, to aid the evaluation and designation of sites, corridors, and routes:		

TABLE 3.5-1

Factors to be Considered

Factors to be Considered	Evaluation	Section Addressed
a. Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment.	Effects of the location, construction, and operation of the Project on public health and welfare, natural resources, and the environment are described in Section 6.	6.0
b. The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects.	The Project has been designed to minimize adverse environmental effects including using bird flight diverters to minimize the potential for bird mortality.	6.0
c. The potential for beneficial uses of waste energy from a proposed energy conversion facility.	Not applicable.	Not applicable
d. Adverse direct and indirect environmental effects which cannot be avoided should the proposed site be designated.	Adverse direct and indirect environmental effects which cannot be avoided are described for each resource area in Section 6.	6.0
e. Alternatives to the proposed site which are developed during the hearing process and which minimize adverse effects.	As discussed in Section 2.0, alternatives were analyzed, but none were more reasonable and prudent than the HVDC Modernization Project. The Project Routes are the most direct Routes that also minimize impacts on the exclusion, avoidance, selection, and policy criteria identified in NDAC Section 69-06-08-02.	2.0
f. Irreversible and irretrievable commitments of natural resources should the proposed site be designated.	There are few commitments of resources associated with this Project that are irreversible and irretrievable, but these include those resources primarily related to construction.	7.6
g. The direct and indirect economic impacts of the proposed facility.	Direct and indirect economic impacts of the Project include employment, property tax for the substation parcel, transmission line tax payment to the state of North Dakota based on mileage and voltage, and sales/use tax on materials.	3.9
h. Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route.	No conflicts are anticipated with existing state, local government, or private entities' development plans.	6.1
i. The effect of the proposed site on existing scenic areas, historic sites and structures, and paleontological or archaeological sites.	There are no designated scenic areas that will be affected by the Project. A cultural resources report was submitted to the State Historical Society of North Dakota for review, and concurrence was received on June 19, 2024 and December 10, 2024	6.4
j. The effect of the proposed site on areas which are unique because of biological wealth or because they are habitats for rare and endangered species.	The Applicants will avoid impacts based on current and future surveys.	6.11
k. Problems raised by federal agencies, other state agencies, and local entities.	The Applicants and their representatives contacted key local, state, and federal agencies per Section 69-06-01-05 of the NDAC for assistance in identifying concerns or issues within the Study Area. Agency communications are summarized in Section 7.11 and 8.0.	8.0

3.6 SETBACKS

The setbacks used in designing the Project comply with or exceed those required by the NDPSC per NDAC Section 69-06-08-02(1)-(2). Setbacks were measured from the edge of the right-of-way ("ROW") to the nearest point of the applicable feature. Below, Table 3.6-1 includes the setback distances as designated by the NDPSC and used in designing the Project.

TABLE 3.6-1

Setback Distances as Designated by NDPSC

Setback Type	Setback Distance
The geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility.	1,200 feet [a]
Areas on either side of a direct line between ICBM launch or launch control facilities to avoid microwave interference.	30 feet
Residence, school, or place of business.	500 feet [b]

[a] The nearest ICBM launch or launch control facility is approximately 36 miles north of Project Corridor.
[b] Per NDCC 49-22-05.1(2), a residence setback may be waived in writing by the owner of the residence.

All Project facilities will comply with Oliver County's Agricultural district and wetland/waterbody setback requirements. The Applicants will work with Oliver County during the county permitting process to confirm applicable setback requirements and will apply any applicable county setbacks to the facility designs.

The Project has been sited along existing roads and existing infrastructure to the extent possible to minimize impacts to farming and ranching operations and to natural resources. Existing infrastructure was considered in and avoided by the Project design. Existing infrastructure, including natural gas and crude oil pipelines and transmission lines, are included on Map 4 in Appendix A.

3.7 COUNTY CRITERIA

The Project requires a Conditional Use Permit ("CUP") from Oliver County for facilities located in the Agricultural District. Oliver County defines a transmission line as an overhead electrical line with a capacity larger than 115-kV. In accordance with the Oliver County, North Dakota Revised Zoning Ordinances (2016), the following minimum conditions shall apply to transmission lines and substations in the Agricultural District:

a. Transmission line siting shall have minimal interference with farming and irrigation operations, following quarter or section lines if possible.

b. Written evidence of said approval by the landowner shall be submitted with the application for approval of a conditional use.

c. The Applicants shall provide any reasonable information the Planning Zoning deems necessary.

The Applicants have designed the Project in accordance with these conditions and have completed the Oliver County CUP application and compiled required supplemental information. The Applicants obtained the CUP in November 2024 (see Appendix C). The Applicants will also obtain any other necessary permits/approvals from Oliver County.

3.8 DESIGN AND CONSTRUCTION LIMITATIONS

The Project Corridor/Route is the most direct route that also minimizes impacts to the criteria identified in NDAC Section 69-06-08-02. Constraints present within the Project vicinity include wetlands and waterbodies and cultural resources. The Corridor/Route was selected to minimize impacts to these areas to the extent possible. Site control and proximity to existing infrastructure were also critical to the Project.

3.9 ECONOMIC CONSIDERATIONS

There are many economic considerations in the design and routing of a transmission line and associated facilities. In general, minimizing the length of the route and minimizing the number of angle structures decreases the cost of the transmission line by minimizing the material, construction, and ROW costs. The Project Corridor/Route effectively balances the economic considerations of the overall length of the lines and the required number of angle structures with the potential impacts on the environment, agricultural lands, and landowners. The selection of materials and structure types also affects the cost of a transmission line.

4.0 PROJECT DESIGN

Project construction and design will meet the requirements of the National Electrical Safety Code ("NESC") for the Heavy Loading District, Minnesota Power, Great River Energy, and other applicable local or national building codes. The Heavy Loading District refers to those areas (including North Dakota) that are subject to severe ice and wind loading. Minimum conductor clearance is measured at the point of greatest conductor sag and closest proximity to the ground. The transmission lines will be constructed with clearances that exceed standards set by NESC. A Supervisory Control and Data Acquisition system will be used to facilitate data communication.

4.1 PHASE 1: PROPOSED NELSON LAKE SUBSTATION

4.1.1 Transmission Line Design Parameters

At this time, it is anticipated that the majority of the transmission lines in Phase 1 will be built using predominately steel monopole structures with up to four wood H-frame structures used on the Great River Energy lines. The exact quantity and distribution of structure types may change during detailed design and construction.

The monopole structures will range in height from approximately 85 feet to 140 feet, with an average of 105 feet for the single circuit line, and range in height from approximately 95 feet to 145 feet, with an average of 130 feet for the double circuit line, depending on the required span distances between structures and topography along the route. The span between structures will typically range from 250 to 1,000 feet, and average approximately 600 feet, depending on site-specific considerations such as geological, environmental, or engineering constraints identified during the final design. Taller structures could be used for crossing existing distribution and transmission lines, or where unusual terrain exists. The single-circuit and double-circuit monopole structures will be designed to support three conductors and an overhead Optical Ground Wire ("OPGW"). The OPGW will provide lightning suppression and fiber optic communications between the Phase 1 and Phase 2 substations for systems control. Tangent, angle structures (used where the transmission line changes direction) and dead-end structures (used to provide longitudinal stability along the length of the line) will be constructed on reinforced concrete foundations. Guy wires will not be used. Project design figures in Appendix D provide diagrams of the proposed structures. Table 4.1-1 below includes a description of various Project design component characteristics.

TABLE 4.1-1

Project Design Components – Phase 1, Nelson Lake Substation

Description of Design Component	Values		
Component / Voltage (kV)	Double-Circuit 230-kV AC Lines	Single-Circuit 230-kV AC Line	Two 230-kV AC Lines – Great River Energy
Length of transmission line	1.5 miles	0.3 mile	0.9 mile
Approximate total number of structures	8	3	9 double-circuit; 10 single-circuit
Approximate number of single-pole structures	All MP structures will be steel pole concrete foundation	All MP structures will be steel pole concrete foundation	15
Approximate number of H-frame structures	All MP structures will be steel pole concrete foundation	All MP structures will be steel pole concrete foundation	4
Conductor size	1780 ACSS 37/19 TW	1780 ACSS 37/19 TW	954 kcmil 45/7 ACSS

TABLE 4.1-1

Project Design Components – Phase 1, Nelson Lake Substation

Description of Design Component	Values		
Typical minimum and maximum span distances between structures	250 - 1000 feet	400 – 1000 feet	345 - 465 feet
Average span	600 feet	750 feet	350 feet
Minimum and maximum structure height	95 - 145 feet	85 – 140 feet	60-100 feet
Average height of structures	130 feet	105 feet	80 feet
Average number of structures	1 per 0.12 mile	1 per 0.14 mile	1 per 0.07 mile
Minimum conductor-to-ground clearance to agricultural land at 200 degrees Celsius (°C)	27 feet	27 feet	27 feet
Minimum conductor-to-ground clearance to railroad at 100°C	35 feet	35 feet	Not Applicable
Minimum conductor-to-ground clearance to paved highways at 200°C	29 feet	29 feet	NA
Circuit configuration	Vertical	Vertical	Horizontal (single circuit) or Vertical (double circuit)

4.1.2 Substation Design Parameters

The Proposed Nelson Lake Substation 230-kV Yard will be developed on an approximately 4.5-acre site to be owned and operated by Minnesota Power. The substation will require the installation of circuit breakers, bus work, disconnect switches, and protection and control equipment to support the 230-kV interconnections. The Proposed Nelson Lake Substation 230-kV Yard and transmission line take-off structure location are shown on Maps 2a, 2b, and 2c in Appendix A.

4.2 PHASE 2: PROPOSED EAST OLIVER HVDC CONVERTER STATION

4.2.1 Transmission Line Design Standards

Phase 2 will consist of an approximately 3.9-mile-long double circuit capable but operated as a single-circuit 345-kV AC transmission line, a 0.3-mile-long single circuit 345-kV AC transmission line, and an approximately 0.9-mile-long re-route of the 250-kV HVDC transmission line to connect the Project facilities to the existing HVDC system. The exact quantity and distribution of structure types may change during detailed design and construction.

The 345-kV AC transmission line structures will range in height from approximately 100 feet to 199 feet with an average height of 170 feet, depending on the required span distances between structures and topography along the route. The span between 345-kV structures will typically range from 500 to 1,000 feet. The 250-kV HVDC Line Reroute structures will range in height from 70 feet to 87 feet, with an average height of 82 feet. The span between structures will typically range from 550 to 690 feet depending on site-specific considerations such as geological, environmental, or engineering constraints identified during the final design. Taller structures could be used for crossing existing distribution and transmission lines, or where unusual terrain exists. The 345-kV AC Line monopole structures will be designed to support six conductors and two overhead OPGWs. The 250-kV HVDC Line monopole structures will be designed to support two conductors and an overhead shield wire. The OPGW and shield wires will provide lightning suppression. The OPGW will provide fiber optic communications between the Proposed Nelson Lake Substation 345-kV Yard and the Proposed East Oliver HVDC Converter Station. Any 250-kV tangent structures will be

freestanding and directly embedded into the soil. All 250-kV dead-end structures (used to provide longitudinal stability along the length of the line) will be constructed on reinforced concrete foundations. All 345-kV tangent, angle structures (used where the transmission line changes direction) and dead-end structures (used to provide longitudinal stability along the length of the line) will be constructed on reinforced concrete foundations. Table 4.2-1 below includes a description of various Project design component characteristics.

TABLE 4.2-1

Project Design Components – Phase 2, Proposed East Oliver HVDC Converter Station

Description of Design Component	Values	
Component / Voltage (kV)	345-kV AC transmission lines	250-kV HVDC Line Reroute
Length of transmission line	3.9 miles	0.9 mile
Approximate total number of structures	29	8
Approximate number of single-pole structures	All MP structures will be steel pole concrete foundation	MP structures will be a mix of 3 steel pole, concrete foundation and 5 steel pole, direct embed.
Approximate number of H-frame structures	All MP structures will be steel pole concrete foundation	MP structures will be a mix of 3 steel pole, concrete foundation and 5 steel pole, direct embed.
Conductor size	T2-795 aluminum conductor steel reinforced (ACSR) double bundle	2839 ACSR
Typical minimum and maximum span distances between structures	500 ft 1,000 ft	550ft 690 ft
Average span	715 ft	640 ft
Minimum and maximum structure height	100 – 199 feet	70 – 87 feet
Average height of structures	170 feet	82 feet
Average number of structures	1 per .1 mi	1 per .12 mi
Minimum conductor-to-ground clearance to agricultural land at 100 degrees Celsius (°C)	30 Feet	29 feet at 75 °C
Minimum conductor-to-ground clearance to railroad at 100°C	38 Feet	37 feet at 75 °C
Minimum conductor-to-ground clearance to paved highways at 100°C	32 Feet	31 feet at 75 °C
Circuit configuration	Vertical	Horizontal and Vertical

4.2.2 Proposed East Oliver HVDC Convertor Station Design Parameters

The Proposed East Oliver HVDC Converter Station is approximately 23 acres, and the main components include power electronics and their associated cooling system, converter transformers, and DC and AC equipment to complete the conversion between AC and DC.

4.2.3 Proposed East Oliver 345-kV Yard

The Proposed East Oliver 345-kV Yard is approximately 7.82 acres in size and the main components include circuit breakers, bus work, disconnect switches, and control and protection equipment to support the 345-kV interconnection. The Proposed East Oliver 345-kV Yard and transmission line take-off structure location are shown on Maps 2a and 2c in Appendix A.

4.2.4 Proposed Nelson Lake Substation 345-kV Yard

The Proposed Nelson Lake Substation 345-kV Yard is approximately 5.84 acres in size and the main components include the installation of a 345kV/230-kV transformer and the necessary bus, circuit breakers, bus work, disconnect switches, and control and protection equipment to support

the 345-kV interconnection. The Proposed Nelson Lake Substation 345-kV Yard and transmission line take-off structure location are shown on Maps 2a and 2c in Appendix A.

5.0 CONSTRUCTION, OPERATION, AND DECOMMISSIONING

5.1 PRE-CONSTRUCTION SURVEYING AND GEOTECHNICAL ANALYSES

The Applicants and their contractors will perform initial survey work to support facility designs, consisting of survey control, route centerline location, profile surveys, and access surveys prior to construction. These surveys will likely be conducted concurrently with other pre-construction tasks.

Geotechnical analyses will be conducted at transmission line structures, substation yards, the converter station, and other locations to determine engineering requirements for structures, substations, buildings, and other facilities. A truck-mounted auger will be transported to each site to drill a small-diameter borehole. Cuttings from each borehole will be evaluated to determine soil characteristics. Geotechnical analyses will be confined to a relatively small area needed for site access and equipment operations.

5.2 SITE PREPARATION

The first phase of construction activities will involve survey staking of the transmission line alignment and/or pole locations, followed by removal of trees and other vegetation from the full width of the construction right-of-way. Low-growing brush will be cleared initially; however, it will generally be allowed to reestablish at the outer limits of the right-of-way.

The Project Corridor has rolling hills and ravines, with relatively flat areas where the stations will be constructed. Site leveling may be required for the construction of the stations, along with minimal site leveling for transmission structure sites. It is anticipated that at some transmission structure locations, blading of small areas will be necessary.

The Proposed Nelson Lake Substation 230-kV Yard, Nelson Lake Substation 345-kV Yard, East Oliver 345-kV Yard, and East Oliver HVDC Converter Station will be cleared and leveled in a manner similar to the transmission structures. Topsoil will be segregated from underlying soils, stored and replaced in accordance with NDPSC requirements. Excess soil will be spread around the sites and/or used for fill, where needed (topsoil and subsoil will not be mixed). Soil erosion will be controlled during construction using Best Management Practices (“BMPs”).

5.3 SUBSTATION AND YARD CONSTRUCTION

Additional details regarding the Proposed Nelson Lake Substation 230-kV Yard, Nelson Lake Substation 345-kV Yard, East Oliver 345-kV Yard, and East Oliver HVDC Converter Station are provided in Section 4.0 above.

Substation construction will be performed in compliance with the applicable NESC, Occupational Safety and Health Act (“OSHA”), and state and local regulations. North Dakota licensed professional engineers will complete designs as required by North Dakota Statutes and Rules. Contractors will be committed to safe working practices. The local conditions of the station sites will be considered in the final design of the stations. All designs will comply with all applicable safety codes and the Applicants’ standards.

The substations will be designed to allow future maintenance to be done with the minimum impact on station operation and the necessary clearance from energized equipment to ensure safety.

Industry-specific BMPs and standard construction and mitigation practices developed from experience with past projects will be used. BMPs will be determined based on the specific construction design, prohibitions, maintenance guidelines, inspection procedures, and other activities involved in constructing the stations; in other cases, certain BMPs may be specifically required by permit conditions such as the National Pollutant Discharge Elimination System ("NPDES") Construction Stormwater Permit.

When construction activities are completed, the Applicants will restore the station sites in accordance with reclamation procedures outlined in Section 5.13 below.

5.4 BOREHOLE EXCAVATION

Crews will use a truck-mounted auger or tracked vehicle equipped with a power auger to drill holes for the structures within the Project ROW. Total disturbance at each structure location will vary depending on terrain and equipment; however, all disturbance will be confined to the Project Corridor.

Approximately 5 structures will be direct-embed construction; borings for the pole holes will have an average diameter of five feet and an average depth of 20 feet. The single-pole structure will be lowered by crane into boreholes and the annulus around the structure will be backfilled with crushed granular material or excavated material as suitable. Surplus material (expected to total approximately 15 cubic yards ["yd^3"] at each tangent structure site) will be spread around the base of structures or hauled to an off-site location (i.e., area landfills) for disposal.

Approximately 43 structures will require reinforced concrete foundations consisting of an eight-to-twelve-foot diameter boring to an average depth of 40 to 50 feet. An average of approximately 130 yd^3 of surplus material will be either spread in the vicinity of the structure or disposed of in accordance with landowner wishes. Topsoil will be separated and used for restoration. Large volumes of excess soil will be disposed of at local landfills. Landfills typically need additional fill as cover for waste material. Disposal of waste material, including concrete spoil, will be in compliance with applicable regulations and will not include placement in wetlands or aquatic sites. Site-specific borehole diameters, depth, and the use of reinforced concrete foundations will be determined during geotechnical and engineering evaluations.

5.5 STRUCTURE ASSEMBLY AND ERECTION

Structure components (i.e., structure segments, davit arms, hardware, insulators, and related materials) will be trucked to structure work site locations and assembled. Davit arms, insulators, and other appurtenances will be attached to the poles while on the ground at each structure location, within the Project Corridor. Erection crews will place the structure in the borehole (directly imbedded) or on reinforced concrete foundations (i.e., self-supporting angle point and dead-end structures) using cranes or large boom trucks. The structures will then be plumbed and the hole backfilled, as described above.

5.6 CONDUCTOR STRINGING AND TENSIONING

Following structure construction, crews will install the conductors and OPGW using conductor stringing sheave blocks and line pulling and tensioning equipment. The conductor and OPGW will be kept under tension during the stringing process to keep the conductor clear of the ground and obstacles that could damage the conductor and/or OPGW surfaces.

Pulling and tensioning sites are typically located at 5,000 to10,000-foot intervals and at angle point structures. Stringing equipment generally consists of wire pullers, tensioners, conductor reels, OPGW and shield wire reels, and sheave blocks. About 5,000 to 10,000 feet of conductor and OPGW will be installed for each pull. After the conductor/ground wire is pulled for a section of line, it is tightened or sagged to the required design tension in compliance with the NESC. The process will be repeated until all of the conductor, shield wire, and OPGW are pulled through all sheaves. Conductor stringing also will require access to each structure for securing the conductor to the insulators or OPGW and shield wire to each structure, once final line sag is established.

For public safety and property protection, temporary wooden guard structures will be used to provide support when stringing conductor and OPGW across existing power lines, roads, highways, and other linear obstacles. The structures will be removed when stringing is complete; the pole borings will be backfilled and the temporary support structure sites will be reclaimed. All temporary wooden guard structures will be installed within the Project Corridor.

5.7 PROJECT ACCESS AND LAND REQUIREMENTS

5.7.1 Phase 1 – Nelson Lake Substation

5.7.1.1 Station and Transmission Structure Site Access and Traffic

Construction access to station sites and transmission structures will involve the use of existing roads where available and temporary overland access trails, where necessary. The use of temporary overland access trails between structure sites will require new construction but will result in only temporary disturbance. Occasional access from section line trails could result in temporary disturbance; however, such disturbance will be limited to a 24-foot-wide track (approximately), and for only long enough to provide vehicle access directly to structure locations. Some additional access disturbance could occur if truck or vehicle turnarounds are needed; however, the use of structure work sites will be encouraged.

In addition to new private access roads that will be developed for the Project, existing public roads (typically paved or maintained with a gravel or aggregate base) will be used in their original condition. The Applicants will be responsible for reimbursing the appropriate public entity for the repair of any damage caused by construction equipment movement and will return existing public roads to original or better condition following construction. The Applicants will not be responsible for maintaining public roads following construction. The Applicants will maintain fences and gates following construction and restoration to the extent such structures will remain in use on land owned by Minnesota Power. Access gates installed during construction will be left in place following construction.

Station components will be trucked to the site on local highways and roads and off-loaded using cranes and similar equipment. Concrete and aggregate will be trucked in from local sources. A new access road for the Proposed Nelson Lake Substation 230-kV Yard will be constructed to provide vehicle and equipment access to the substation from the adjacent public road and will consist of a compacted aggregate surface. It is anticipated that the Proposed Nelson Lake Substation will have an approximately 2.0-mile-long permanent access road. Stringing areas and temporary access will be within the existing transmission line right-of-way.

The Applicants will restore disturbed areas to pre-construction conditions, to the extent practicable. Any fences, gates, or similar features removed during construction will be replaced or rebuilt.

5.7.1.2 Temporary Overland Access and Land Requirements

Temporary impacts are those impacts that result during construction to accommodate equipment and temporary construction activities outside of the areas that will remain as the permanent Project footprint during operation. Temporary overland access will be used in areas without existing roads. Access through cultivated fields will occur, to the extent practicable, during the non-growing season. Minnesota Power will own all land required for the Proposed Nelson Lake Substation 230-kV Yard. Gates may be installed to facilitate access to some structures and may be left in place following construction activities.

Temporary access routes will result in a 24-foot-wide temporary disturbance and compaction of vegetation and soils. Natural vegetation along these temporary access routes will recover quickly, primarily because grading will not be required. Temporary overland access routes will be subject to the same cultural resource and vegetation surveys as all other Project facilities.

A 200-foot by 130-foot (26,000-foot square ["ft^2"]) temporary work site will be located at each structure location and within the HVDC Phase 1 Project Corridor. The area will be graded, if required, to ensure safe movement and operation of heavy equipment. The Project will require approximately 20.1 acres of temporary impacts for structure installation, as shown in Table 5.8-1 below.

Pulling and tensioning sites and splicing sites will result in temporary disturbance to lands within the Phase 1 Project Corridor. Pulling and tensioning areas will temporarily disturb a total of 78,000 ft^2 (1.7 acres) at each angle and/or dead-end structure location. Due to transmission line design, splicing, pulling, and tensioning sites are not anticipated on tangent structures.

A temporary 2-acre laydown area will be located at the Proposed Nelson Lake Substation 230-kV Yard and would be used for the duration of construction. The Proposed Nelson Lake Substation 230-kV Yard site is shown on Maps 2a and 2b in Appendix A. Alternate laydown areas may be used by the construction contractor, if necessary. Construction laydown areas have been incorporated into the Project's converter and substation designs. Laydown yards consist of flat or gently sloping lands where construction material would be placed on pallets or cribbing. No topsoil would be removed and minimal, if any, grading or re-grading is expected to take place at these facilities. Laydown areas for the Project have been field surveyed for cultural resources and all cultural resources have been avoided.

Estimated temporary land requirements associated with the Proposed Nelson Lake Substation 230-kV Yard access and construction activities are identified in Table 5.8-1 below. As noted in Table 5.8-1, temporary impacts associated with the Proposed Nelson Lake Substation 230-kV Yard will affect approximately 7 acres.

5.7.1.3 Permanent Land Requirements

Permanent impacts are those required for Project operation, consisting mostly of stations, yards, and individual structure locations. Permanent land disturbance has been estimated for each station facility and self-supporting structure. Each structure will occupy 78.54 ft^2 (see Table 5.8-1 below). All structures will be self-supporting, thus guy wires will not be required.

Minnesota Power will own the land required for the Proposed Nelson Lake Substation 230-kV Yard in fee. The Single-Circuit 230-kV AC transmission line and the HVDC Double-Circuit 230-kV AC transmission lines will be constructed on land owned by Minnesota Power, or on land owned by

Minnkota Power Cooperative, subject to utility easements held by Minnesota Power (see Map 3 in Appendix A). Great River Energy's two 230-kV AC transmission lines will be constructed on land owned by Minnkota Power, subject to utility easements held by Great River Energy.

5.7.2 Phase 2 – Proposed East Oliver HVDC Converter Station

5.7.2.1 Station and Transmission Structure Site Access and Traffic

Construction access to transmission structures will involve the use of existing roads where available and temporary overland access trails where necessary. The use of temporary overland access trails between structure sites will require new construction but will result in only temporary disturbance. Occasional access from section line trails could result in temporary disturbance along the HVDC Phase 2 Project Corridor; however, such disturbance will be limited to a 24-foot-wide track (approximately) and for only long enough to provide vehicle access directly to structure locations. Some additional access disturbance could occur if truck or vehicle turnarounds are needed; however, the use of structure work sites will be encouraged.

Existing public roads (typically paved or maintained with a gravel or aggregate base) will be used in their original condition. The Applicants will be responsible for reimbursing the appropriate public entity for the repair of any damage caused by construction equipment movement and will return existing public roads to original or better condition following construction. The Applicants will not be responsible for maintaining public roads following construction. The Applicants will maintain fences and gates following construction and restoration to the extent such structures will remain in use on land owned by Minnesota Power. Access gates installed during construction will be left in place following construction.

The Applicants will restore disturbed areas to pre-construction conditions, to the extent practicable, and will not be responsible for the long-term maintenance of such section line trails. Any fences, gates, or similar features that will be removed during construction will be replaced or rebuilt. Gates and fences installed during construction will be left in place for future use.

New HVDC Modernization Project components will be trucked to the site on local highways and roads and off-loaded using cranes and similar equipment. Concrete and aggregate will be trucked in from local sources. A new access road for the Proposed East Oliver HVDC Converter Station, East Oliver 345-kV Yard, and Nelson Lake Substation 345-kV Yard will be constructed to provide vehicle and equipment access to the yards from the adjacent public road and will consist of a compacted aggregate surface.

5.7.2.2 Temporary Overland Access and Land Requirements

Temporary impacts are those impacts that occur during construction to accommodate equipment and temporary construction activities outside of the areas that will remain as the permanent Project footprint during operation. Temporary overland access will be used in areas without existing roads. Access through cultivated fields will be, to the extent practicable, during the non-growing season. Minnesota Power will own all land required for the Proposed East Oliver HVDC Converter Station, East Oliver 345-kV Yard, and Nelson Lake Substation 345-kV Yard. Gates may be installed to facilitate access to some structures and the HVDC Phase 2 Project Corridor. The gates will be left in place following construction activities. Temporary access roads to the HVDC Phase 2 Route Permit Corridor or structures will not be maintained.

Temporary access routes will result in a 24-foot-wide temporary disturbance and compaction of vegetation and soils. Natural vegetation along these temporary access routes will recover quickly, primarily because grading will not be required. Temporary overland access routes will be subject to the same cultural resource and vegetation surveys as all facilities in the HVDC Phase 2 Route Permit Corridor. The Proposed East Oliver HVDC Converter Station will have a 0.25-mile access road.

A 200-foot by 150-foot (30,000 ft^2) temporary work site will be located at each structure location and within the HVDC Phase 2 Route Permit Corridor. The area will be graded, if required, to ensure safe movement and operation of heavy equipment. The Project will require approximately 29 acres of temporary impacts for structure installation, as shown in Table 5.8-2 below.

Pulling and tensioning sites and splicing sites will result in temporary disturbance to lands within the HVDC Phase 2 Route Permit Corridor. Pulling and tensioning areas will temporarily disturb a total of 78,000 ft^2 (1.7 acres) at each angle and/or dead-end structure location. Due to transmission line design, splicing, pulling and tensioning sites are not anticipated on tangent structures. Stringing areas and temporary access will be within the existing transmission line right-of-way.

A temporary 2-acre laydown area will be located at the Proposed East Oliver HDVC Converter Station and would be used for the duration of construction. The Proposed East Oliver HVDC Converter Station, East Oliver 345-kV Yard, and Nelson Lake Substation 345-kV Yard are shown on Maps 2a and 2c in Appendix A. Alternate laydown areas may be used by the construction contractor, if necessary. To avoid or minimize impacts on sensitive resources, construction laydown areas are typically located at previously disturbed or developed locations, such as vacant lots, existing utility yards, or parking lots. Where existing yard locations are not available, preferred locations for yards are undeveloped areas, such as grazing land or cropland which: are cleared and flat; have all-weather access; and, do not contain streams, wetlands, or other environmentally sensitive resources. Laydown yards consist of flat or gently sloping lands where construction material would be placed on pallets or cribbing. No topsoil would be removed and minimal, if any, grading or re-grading is expected to take place at these facilities. Laydown areas would be returned to pre-construction conditions upon completion of the Project.

Approximately 37 borings are required for geotechnical analyses. Each boring site will temporarily affect as much as 400 ft^2 within the HVDC Phase 2 Route Permit Corridor and at designated structure sites. The geotechnical surveys will be conducted during low precipitation conditions, which will minimize impacts to the soils and crops.

Estimated temporary land requirements associated with Phase 2 access and construction activities are identified in Table 5.8-2 below. As noted in Table 5.8-2, temporary impacts associated with Phase 2 will affect approximately 50 to 55 acres.

5.7.2.3 Permanent Land Requirements

Permanent impacts are those required for Project operation, consisting mostly of individual structure locations. Permanent land disturbance has been estimated for self-supporting tangent structures, self-supporting dead-end structures, and self-supporting angle structures. Dead-end structures will be larger, with one to two, 10- to 12-foot diameter poles, thus occupying approximately 78.54 to 226.2 ft^2 per structure.

Approximately 37 tangent, angle and dead-end structures will be required for the Phase 2 transmission lines. Tangent, dead-end, and angle structures will be self-supporting, thus guy wires will not be required.

Minnesota Power owns the land required for the Proposed East Oliver HVDC Converter Station, East Oliver 345-kV Yard, and Nelson Lake Substation 345-kV Yard in fee. The 345-kV AC transmission line and 250-kV HVDC Line Reroute will be constructed on easements procured by Minnesota Power (see Map 3 in Appendix A). Landowners are contacted several times throughout the routing process. Survey permissions are requested from each landowner along the route to allow access for engineering and environmental surveys. Once a route is finalized, Minnesota Power goes through a series of steps to secure easements or purchase land for the transmission lines. Title searches going back 30+ years are completed to identify current ownership and all encumbrances that need to be addressed. A market analysis was conducted by a third-party appraiser to identify the current land values, which were in turn used to establish monetary offers for the acquisitions.

5.8 ESTIMATED PROJECT IMPACTS

5.8.1 Phase 1 - Proposed Nelson Lake Substation

Estimated permanent ground disturbance impacts at the Proposed Nelson Lake Substation 230-kV Yard are included in Table 5.8-1 below.

TABLE 5.8-1

Estimated Project Ground Disturbance Impacts – Phase 1

Project Component	Disturbance Assumptions	Impact Multiplier [a]	Temporary Impact (acres)[b]	Permanent Impact (acres)[b]
Proposed Nelson Lake Substation 230-kV Yard	-	1 existing substation	6.79	4.40
	-			
	-			
Single-pole structures (Minnesota Power)	Temporary: 200 ft x 130 ft area = 26,000 ft^2 = 0.59 acres	11 new structures/ 11 new foundations and 6 existing structures/ 6 existing foundations	6.6	--
	Permanent: 10 ft diameter = 78.54 ft^2 = 0.0018 acres [c]		-	0.02
Single-pole structures (Great River Energy)	Temporary: 200 ft x 130 ft area = 26,000 ft^2 = 0.59 acres	15	8.8	
	Permanent: 10 ft diameter = 78.54 ft^2 = 0.0018 acres [c]	15		0.03
H-frame structures (Great River Energy)	Temporary: 200 ft x 130 ft area = 26,000 ft^2 = 0.59 acres, per pole	4	2.7	
	Permanent: 10 ft diameter = 78.54 ft^2 = 0.0018 acres [c]	4		0.07
Structure site access	Temporary: 24 ft wide	2.29 miles of structure site access along Project Corridor	6.66	None
	Permanent: None			
Laydown area(s)	Temporary: 2 acres	-	2	None
	Permanent: None			
Access Roads	Permanent		1.98	11.37
Total			35.53	15.89

[a] Impact multipliers are based on preliminary engineering design and could change during final design.

[b] Total impact areas may overestimate actual impacts.

[c] Impact calculations are based on the largest diameter possible for temporary disturbance

5.8.2 Phase 2 – Proposed East Oliver HVDC Converter Station

Estimated Phase 2 permanent ground disturbance impacts are included in Table 5.8-2 below.

TABLE 5.8-2

Estimated Project Ground Disturbance Impacts

Project Component	Disturbance Assumptions	Impact Multiplier [a]	Temporary Impact (acres) [b]	Permanent Impact (acres) [b]
Proposed East Oliver HDVC Converter Station	-	1 existing substation	4.73	23.00
Proposed Nelson Lake Substation 345-kV Yard	-	1 new substation	10.78	5.84
Proposed East Oliver 345-kV Yard	-	1 new yard	6.44	7.82
Single-pole structures [c]	Temporary: 200 ft x 150 ft area = 30,000 ft^2 = 0.69 acres	52 structures (41 for the 345kV and 11 for the 250kV)	28.92	
	Permanent: 12 ft diameter = 113.1 ft^2 = 0.0026 acres			0.14
Structure site access	Temporary: 24 feet wide	0.5 miles of structure site access along Project Corridor	1.45	None
	Permanent: None			
Laydown area(s)	Temporary: 2 acres	-	2	None
	Permanent: None			
Access Roads	Permanent		0.25	1.26
Total			54.57	38.06

[a] Impact multipliers are based on preliminary engineering design and could change during final design.
[b] Total impact areas may overestimate actual impacts.
[c] Impact calculations are based on the largest diameter possible for temporary disturbance

5.9 CONSTRUCTION WASTE MANAGEMENT

Typical waste materials generated from construction activities include miscellaneous lumber and shipping materials used to protect equipment during transportation, paper products, soda cans, food-related materials, and sanitary waste. Waste from construction materials and rubbish from all construction areas will be collected, hauled away, and disposed of in an approved landfill. Sanitary waste will be disposed of through arrangements with local municipal sanitary waste treatment facilities. All solid waste must be managed and transported in accordance with North Dakota's solid and hazardous waste rules.

Material staging areas and vehicle maintenance and refueling areas will not be located near waterways. If any of the material staging areas include vehicle and equipment refueling or storage of petroleum products in excess of 1,320 gallons, a Spill Prevention, Control, and Countermeasure ("SPCC") plan will be developed. The SPCC plan will address: 1) operating procedures to prevent spills; 2) control measures to prevent a spill from reaching navigable waters; and 3) countermeasures to contain, clean up, and mitigate the effects of a spill that reaches navigable waters. Additionally, spill containment and clean up materials (e.g., absorbent material, shovels) will be available at every work site. The materials will be used to contain and clean up oil and hydraulic spills that may result from equipment leaks. Workers will be trained in procedures to follow to contain and clean up released hazardous materials.

5.10 CONSTRUCTION SEQUENCE, WORK FORCE, AND EQUIPMENT

Project construction will generally follow a sequential set of activities performed by crews proceeding along the length of the line. Each Phase will include the same tasks in the same order and will generally include the same number of personnel. Table 5.10-1 below lists the construction activities. The sequential nature of construction will minimize activities at a given work site.

TABLE 5.10-1

Conventional Personnel, Equipment, and Time Requirements for Construction

Task	Number of Personnel	Equipment	Length of Time
Structure and station site clearing and vegetation management	4–6	Pickups, all-terrain vehicles (ATVs)	1 month
Gate and fence installation	3	Flatbed and pickup trucks	1 month
Structure assembly	6–8	Pickups, cranes, material trucks, rubber-tired crane, 4x4 pickups	4 months
Hole excavation	2–3	Rotary drilling rigs, backhoes, pickups, rubber-tired digging equipment, ATVs, portable compressors	4 months
Structure erection	6–8	Rubber-tired cranes, boom trucks, 4x4 pickups	5 months
Ground wire and conductor stringing	16–20	Pickups, manlifts/boom trucks, hydraulic tensioning machines, reel trailers	3 months
Cleanup	4	Pickups, dump trucks, flatbed trucks	Duration of Project
Concrete foundations	10	Excavators, concrete trucks, skid steer, cranes	1–2 months
Equipment installation	10	Cranes and trucks	3–4 months

5.11 WORKER SAFETY AND HEALTH PROTOCOL

All construction and maintenance activities will be carried out in compliance with applicable federal and state worker safety regulations, as defined under the OSHA Act of 1979. Worker safety and health is administered by both Minnesota Power's and Great River Energy's Transmission Systems Maintenance Divisions, who are members of the National Safety Council.

5.12 ENVIRONMENTAL PROTECTION MEASURES AND POLICIES

Project-specific mitigation measures have been developed to avoid or minimize potential impacts. The measures are applicable to Project construction and operation. These measures are discussed under the "Avoidance and Minimization" sections of each resource in Chapter 6.0, Environmental Analysis, below.

5.13 RECLAMATION

Following construction, disturbed areas will be graded and/or re-sloped to their approximate original contours to minimize erosion and visual alteration. In grassland or pasture areas, disturbed areas will be reseeded with native species in accordance with the Natural Resources Conservation Service ("NRCS") or requested by the landowner and approved by the NDPSC. Rangeland from which vegetation has been removed, destroyed, or damaged will be reclaimed and revegetated. Cultivated land will be tilled and returned to production. Fences and gates damaged as a result of the Project will be repaired. Topsoil that was segregated from underlying soils will be redistributed on disturbed areas.

Reclamation activities, weather permitting, will be ongoing throughout construction and will take place as soon as construction activities are completed in a particular area. Drainage structures and similar improvements will be removed from areas to be reclaimed, where appropriate.

Ruts and scars from overland travel will be leveled to break up compacted soils and aid in returning areas to approximate original contours. Cultivated areas disturbed by overland travel will be leveled and tilled to break up compacted soils (if necessary) and returned to production.

The optimal timing for revegetation success will be spring or fall to coincide with seasonal rains. Mulching may be required to protect seeded areas from erosion. Other erosion control devices, such as water bars, terracing, or water diversion structures will be constructed where needed. Follow-up inspections will be carried out during the next growing season. Areas that did not become revegetated will be reseeded again, as necessary.

The reclamation procedures described above will be applied to disturbed areas including temporary access, staging areas, temporary construction areas, and other areas disturbed by Project activities.

5.14 OPERATION AND MAINTENANCE

For facilities owned by Minnesota Power, the following operation and maintenance activities will be implemented throughout the life of those facilities.

- Minnesota Power's preventive maintenance program for the transmission line includes aerial and ground inspections. Aerial inspections will be conducted at least two times each year. Ground patrols will be conducted annually for the first three or four years, and less frequently thereafter. Climbing inspections of structures will be conducted on a five-year cycle with every fifth structure inspected each year. Inspections and patrols will involve the use of vehicles in areas where there is suitable vehicle access.

- Maintenance activities will include repairing damaged conductors, inspecting and repairing structures, replacing damaged and broken insulators, and tightening hardware.

- Minnesota Power will maintain any gates it initially installs and continually uses for access.

- Minnesota Power will remove trees that pose a clearance or safety problem to the operation of the transmission line. Specific requirements of the National Electric Reliability Council will be followed. This activity will be completed in accordance with the easement.

- Minnesota Power will own and operate the entire Project throughout the Project life, with the exception of the two 230-kV AC transmission lines that will be owned and operated by Great River Energy.

For facilities owned by Great River Energy, access to the ROW of its transmission lines is required to perform periodic inspections, conduct maintenance, and repair damage. Regular maintenance and inspections will be performed during the life of its transmission lines to ensure its continued integrity. Generally, Great River Energy will inspect the condition of its transmission line and structures once per year. Inspections will be limited to the ROW. If problems are found during

inspection, repairs will be performed, and property restoration will occur, or the landowner will be provided reasonable compensation for any damage to the property.

Although no vegetation clearing is anticipated to be required on the Great River Energy facilities, the ROW will be managed to remove vegetation that interferes with the operation and maintenance of its transmission lines. Shrubs that will not interfere with the safe operation or accessing and traversing of the transmission line ROW will be allowed to reestablish in the ROW.

6.0 ENVIRONMENTAL ANALYSIS

6.1 DEMOGRAPHICS AND LOCAL ECONOMICS

6.1.1 Description of Resources

In Oliver County, agriculture is an important part of the economy, with 234 farms located in the county (U.S. Department of Agriculture [“USDA”] National Agricultural Statistics Service, 2017). According to the 2017 Census of Agriculture, the total market value of agricultural products produced in Oliver County was $47,326,000, 46 percent of which was from crops and 54 percent from livestock. The principal crops include corn, wheat, grains, and soybeans, and the primary livestock is cattle. The percentage of individuals below the poverty level in Oliver County and North Dakota is 11.5 percent (Census, 2024).

According to the Census Bureau, Oliver County's 2020 resident population was 1,877, (Census, 2024). The unemployment rate for Oliver County in June 2023 was 3.1 percent. One year prior, the unemployment rate was 3.3 percent. There were 29 job openings in Oliver County in June 2023. On average in Q1 (January to March) 2023, the private industry employing the largest number of workers in North Dakota was health care and social assistance. The private industry with the highest average weekly wage in Q1 2023 was management of companies and enterprises (North Dakota Labor Market Information, 2022).

6.1.2 Impacts and Avoidance/Minimization Measures

The Applicants have designed the Project to minimize impacts to family farms and ranches to the extent practicable. Through voluntary negotiation with the landowners, Minnesota Power acquired one farmstead adjacent to the Proposed East Oliver Converter Site and plans to remove the existing structures from the farmstead. Existing agricultural uses will be able to continue around the substation/yard/converter sites, and in the transmission line ROWs between structures.

The Project will have positive economic impacts for the local population, including employment, property tax and transmission line tax payments to the state of North Dakota based on mileage and voltage, and sales/use tax on materials purchased in the state. Economic losses to producers of the farmland are anticipated to be minimal in comparison to the additional income provided by the Project and will be offset in part by land purchase or easement payments to landowners.

Project construction will not cause additional impacts to leading industries within Oliver County. There is no indication that any minority or low-income population is concentrated in any one area of the Project, or that the Project will be placed in an area occupied primarily by any minority or low-income group. In fact, no residences exist within the Project Survey Area; the closest residence is 0.56 mile north of the ROW.

In addition, wages and salaries paid to contractors and workers in Oliver County will contribute to the personal income of the region. Additional personal income will be generated for residents in the county as well as the state by circulation and recirculation of dollars paid out by the Applicants as business expenditures and state and local taxes. Expenditures made for equipment, energy, fuel, operating supplies, and other products and services will benefit businesses in the county and the state.

Specialized labor will be required for certain components of the Project. It is likely that some labor will be imported from other areas of the state or from other states, as the relatively short duration of construction does not warrant special training of local or regional labor.

No effects on permanent housing are anticipated. During construction, out-of-town laborers will likely use lodging facilities in and around the cities of Center, New Salem, Mandan, and Bismarck.

The Project is anticipated to have positive impacts on local economies; therefore, mitigation is not anticipated.

6.2 PUBLIC SERVICES

6.2.1 Description of Resources

6.2.1.1 Local Government Services

The Project is located in a sparsely populated, rural area in west-central North Dakota. Within the Study Area, several established roads and utilities provide access and necessary services to communities, homesteads, and farms. There are no incorporated or unincorporated cities within the Study Area. The Project Corridor is located adjacent to the eastern side of Nelson Lake, approximately 1 mile north of the Minnkota Power Cooperative, Milton R. Young Power Plant. The closest town to the Project site is the City of Center, which is located approximately 4.0 miles northwest of the northwestern corner of the Project Corridor. The city is incorporated and has one pre-K through 12 school, and recreational facilities that include an indoor pool, a golf course, and several parks. The city has an ambulance service and is supported by the Oliver County Fire and Sherriff's Departments (Center, 2023).

6.2.1.2 Roads

Roads located within the Study Area are 32nd Avenue Southwest, 33rd Avenue Southwest, 23rd Street Southwest, 24th Street Southwest and several private roads. These are under the jurisdiction of Oliver County. There are no railroads in the Study Area.

6.2.1.3 Traffic

Existing daily traffic counts for county and township roads located within and in close proximity to the Study Area are documented in Table 6.2-1 below. In general, the North Dakota Department of Transportation ("NDDOT") indicates that roads with vehicle traffic counts under 100 annual average daily traffic are rarely counted, and roads with no count data are likely lower than those with count data.

TABLE 6.2-1

Existing Daily Traffic Levels

Roadway Segment	Average Daily Traffic	Average Daily Truck Traffic	Year
33rd Avenue Southwest	395	NA	2022
32nd Avenue Southwest	NA	NA	NA
23rd Street Southwest	NA	NA	NA
24th Street Southwest	95	NA	NA

Source: NDDOT's Transportation Information Map (NDDOT 2023)

6.2.1.4 Aerospace, Military Operations and Air Traffic

The nearest intercontinental ballistic missile ("ICBM") launch or launch control facility to proposed Project infrastructure is approximately 36 miles away (Air Force Historical Research Agency, 2023).

There are no public airports or private airports/airstrips within the Study Area. The closest airport is a private airport for Minnkota located 1.5 miles west of the Study Area and 2.0 miles from the Project Corridor. The nearest public airport is the Mercer County Regional airport, 21.5 miles northwest of the Study Areas and 22 miles from the Project Corridor. Crop-duster planes used for aerial application of pesticides or fertilizer operated by local operators may be present within the Study Area.

6.2.1.5 Water Supply

Townships typically have limited public infrastructure services, with homes using septic systems and water wells for their household needs. There are no homes or businesses within the Project Corridor; however, there are five homes within the Study Area. Table 6.2-2 below lists wells within the Study Area from North Dakota's Department of Water Resources Well Driller Contractor Logs.

Aquifers are further discussed in Section 6.10 below.

TABLE 6.2-2

Wells Within the Project Study Area

Location ID	Use	Date Drilled	Depth (feet)	Aquifer
14208320D	Domestic/Stock	7/14/1980	66	Not specified in well data
14208320DAA	Stock	8/12/1983	40	Not specified in well data
14208328D	Domestic	5/6/1974	130	Not specified in well data
14208329CCA	Domestic/Stock	9/18/1980	180	Not specified in well data
14208333DD	Industrial	6/20/2007	160	Not specified in well data
14208320DAD	Domestic	8/11/2014	58	Not specified in well data

6.2.1.6 Electrical Service

Electrical service in the Study Area is provided by Montana Dakota Utilities and Roughrider Electric Cooperative. Transmission infrastructure includes overhead transmission lines and distribution lines.

6.2.1.7 Telephone, Fiber Optic and Microwave Communications Systems

The Applicants will comply with North Dakota One-Call requirements. Existing telephone and fiber optic cables within the Project Corridor will be located in the field by the respective utility companies prior to construction to ensure that impacts to telephone and fiber optic cables will be avoided.

6.2.2 Impacts and Avoidance/Minimization Measures

The Project is expected to have a minimal effect on the existing services and infrastructure. The following is a brief description of the impacts that may occur during construction and operation.

6.2.2.1 Local Government Services

Based on the Project's location in a sparsely populated, rural area in west-central North Dakota and outside any incorporated or unincorporated cities, no impact to local government services is anticipated therefore, mitigation is not anticipated.

6.2.2.2 Roads

The Applicants' road use is expected to have a minimal effect on existing road infrastructure and will comply with all applicable federal, state, and local requirements. The transportation of materials and equipment will be conducted in accordance with NDDOT regulations. All necessary provisions will be made to conform to safety requirements for maintaining the flow of public traffic. During Project review, NDDOT indicated the Project should have no adverse effect on NDDOT highways. Public roads, section lines and existing trails will be used, to the extent practicable. Fugitive dust emissions may be generated as a result of surface disturbance activities. Fugitive dust emissions generated as a result of surface disturbance activities and vehicle use of access roads will be controlled by the periodic application of water, if necessary. The speed of vehicles traveling on unpaved roads will be limited, to the extent practicable, to reduce the generation of fugitive dust. Vehicles and equipment will be properly maintained to avoid excessive emission of exhaust gases due to poor engine adjustments. The Applicants will enter into road use agreement(s) with the County or townships, as necessary; therefore, mitigation is not anticipated.

6.2.2.3 Traffic

There will be a temporary increase in vehicular traffic during construction activities. The maximum construction workforce is expected to generate approximately 200 additional vehicle trips per day during peak construction within the Project Corridor and decrease to existing levels post-construction. While there may be some noticeable increase in heavy vehicle traffic in discrete locations for limited amounts of time, the capacity of route and level-of-service to the traveling public will be negligible, as any combination of state and county highways and other township roads will be used. Specific truck routes will be dictated by delivery location. Additional operating permits will be issued by the state or county for over-sized truck movements. The capacity of any route and level-of-service to the traveling public will not be affected; therefore, mitigation is not anticipated.

After construction is complete, traffic impacts during the operations phase of the Project will be minimal; therefore, mitigation is not anticipated

6.2.2.4 Aerospace, Military Operations and Air Traffic

The Project will not be considered an obstruction to air navigation under Federal Aviation Administration ("FAA") regulations. No part of the Project will exceed 200 feet in height above ground level or be within proximity to an airport that will exceed the regulatory slope ration. The Project will include bird flight diverters, which can provide visibility during the day for low flying aircraft. No active private registered airports or airstrips have been identified near the Project.

The Applicants and their representatives have notified the following aerospace and military operations agencies/organizations to notify them of the Project and solicit feedback concerning the development of the Project. Aerospace and military operations agencies/organizations include the FAA, North Dakota Aeronautics Commission, Grand Forks Air Force Base, Minot Air Force Base, 91st Missile Maintenance Squadron, U.S. Department of Defense ("DoD"), and Military Aviation and

Installation Assurance Siting Clearinghouse (“Clearinghouse”). As of the submittal of this application, no response has been received to this request. Copies of these communications are included Appendix E.

6.2.2.5 Water Supply

Construction and operation of the Project will not significantly impact the water supply. No wells are required to be abandoned for the Project. The Project will not require appropriation of surface water or permanent dewatering; temporary dewatering of groundwater is not anticipated during construction. As such, construction and operation of the Project will not significantly impact the water supply; therefore, mitigation is not anticipated.

6.2.2.6 Electrical Service

The Project is expected to improve the reliability of the transmission system in the region, and as a result, will have a positive effect on the electrical services in the region; therefore, mitigation is not anticipated

6.2.2.7 Telephone, Fiber Optic and Microwave Communications Systems

The corona-induced broadband electromagnetic radiation (“EMR”) from transmission lines can produce interference with some communications signals if there is an overlap in the signal and EMR frequencies. Broadband corona EMR discharge typically occurs in the frequency spectrum from below 100 kilohertz to approximately 1,000 megahertz, which overlaps with the frequencies used for AM and FM radio and some television signals.

With sufficient corona activity, some radio and television interference can be noticeable; however, the radio sound generated by a transmission line is very low in power and interference is generally only experienced in very close proximity to the transmission line. These effects are most pronounced directly underneath the line conductors and decrease with distance from the transmission line. The level of interference with reception of a radio signal also depends on the relative locations of the radio transmitter, the radio receiver, and the transmission line. A transmission line that is directly between a radio transmitter and a listener’s receiver may be more likely to interfere with that listener’s reception, whereas a transmission line behind or beside the listener in relation to the transmitter will not necessarily cause interference, depending on the radio receiver’s antenna.

As digital signal processing has been integrated into television and radio receivers, the potential interference impact of corona-generated radio sound has been further reduced. Moreover, the advent of cable and satellite television service, and the federally mandated conversion to digital television broadcast in June 2009 have greatly reduced the occurrence of corona-generated interference.

Newer digital television receivers are equipped with systems to filter out interference. Construction and operation of the Project is not anticipated to impact telephone and/or fiber optic service to the Project; therefore, mitigation is not anticipated.

6.3 PUBLIC HEALTH, WELFARE, AND SAFETY

6.3.1 Description of Resources

6.3.1.1 Sound

The Study Area is primarily rural and agricultural. There are no populated towns within the Study Area. Existing transmission lines, substations, switchyards, and associated utility infrastructure are located within the Study Area. The Milton R. Young Power Plant and associated coal facilities are just outside the southwest boundary of the Study Area. The existing acoustic environment is defined primarily by distant traffic sound from the nearby arterial highways, low level audible noise from utility infrastructure, and also sound from intermittent aircraft overflights and agricultural operations. In addition to anthropogenic sound sources, the windy conditions of this site define a somewhat elevated ambient sound level, which increases with wind speed. Windy conditions can generate sound caused by the rustling of grass and tree leaves.

6.3.1.2 Electromagnetic Fields

Power frequency electromagnetic fields (“EMF”) are created wherever electricity flows. EMF refers to two separate fields: electric fields and magnetic fields. Electric fields arise from the voltage or electrical charges, and magnetic fields arise from the flow of electricity or current that travels along transmission lines, power collection (feeder) lines, substation transformers, house wiring, and electrical appliances. Voltage on any wire produces an electric field in the area surrounding the wire. The voltage on the conductors of a transmission line produces an electric field extending from the energized conductors to other nearby objects, such as the ground, structures, vegetation, buildings, and vehicles. The intensity of transmission line electric fields is proportional to the voltage of the line and rapidly decreases with distance from the transmission line conductors. The presence of trees, buildings, and other solid structures nearby can also significantly reduce the magnitude of the electric field. Because the magnitude of the voltage on a transmission line is near-constant, the magnitude of the electric field will be near-constant for each of the proposed transmission lines, regardless of the power flowing on the line. EMF can occur indoors and outdoors.

When an electric field reaches a nearby object, such as a vehicle or a metal fence, it induces a voltage on the object. The magnitude of the induced voltage is dependent on many factors, including the object’s capacitance, shape, size, orientation, location, resistance to ground, and weather conditions. If the object is insulated or semi-insulated from the ground and a person touches it, a small current would pass through the person’s body to the ground. This might be accompanied by a spark discharge and mild shock, similar to what can occur when a person walks across a carpet and touches a grounded object such as a doorknob or another person.

The main concern with induced voltage is not the magnitude of the voltage induced, but the current that would flow through a person to the ground should the person touch the object. To ensure that any such spark discharge associated with transmission line-induced voltage does not reach unsafe levels, the NESC requires that any discharge be less than five milliamperes. The Project will be designed consistently with this NESC requirement.

6.3.1.3 Hazardous Materials/Hazardous Waste

Based on data from the North Dakota Department of Environmental Quality (“NDDEQ”), and review of the U. S. Environmental Protection Agency hazardous materials databases, approximately 27 spills have been reported within the Study Area and are generally associated with non-PCB mineral

oil or transformer oil. There are no registered brownfield sites, underground storage tanks, or hazardous material sites within the Study Area (NDDEQ 2024, NDDEQ 2024a, NDDEQ 2024b, USEPA 2024).

Fuels, hydraulic fluids, and other hazardous substances may be used during construction of the Project. Potentially hazardous materials may also be encountered during construction associated with aboveground storage tanks containing water, brine, condensate, or hydrocarbon mixtures associated with oil/gas development. Other potential hazards may exist in rural areas from farm dumps and agricultural chemicals.

6.3.1.4 Security

The Project is located in an area that has a low population density with few security measures.

6.3.2 Impacts and Avoidance/Minimization Measures

6.3.2.1 Sound

Project construction and maintenance may cause short-term but unavoidable sound impacts due to construction and equipment. Construction and maintenance activities will also generate traffic that will have potential sound effects, such as trucks travelling to and from the Project on public roads. Sound generated by construction activities is generally exempt from state and local noise regulation.

Generally, noise levels during the operation and maintenance of transmission lines are minimal. Transmission conductors can emit a noise that is called corona under certain conditions. Corona from transmission line conductors can generate electromagnetic “noise” at the same frequencies transmitted by radio and television signals. Corona noise has a crackling sound and is due to corona discharges—the small amount of electricity ionizing the moist air near the conductors. Corona consists of the breakdown or ionization of air within a few centimeters of conductors and hardware. The level of noise depends on conductor conditions, voltage level, and weather conditions. During heavy rain, the background noise level of the rain is usually greater than the noise from the transmission line. As a result, people do not normally hear noise from a transmission line during heavy rain. During light rain, dense fog, snow, and other times when there is moisture in the air, noise from transmission lines (corona noise) may be more perceivable because it is not being masked by the sounds of rain, but the noise levels produced are equal to approximately household background levels. During dry weather, noise from transmission lines is barely perceptible by humans. Several other factors, including conductor voltage, shape and diameter, and surface irregularities such as scratches, nicks, dust, or water drops can affect a conductor’s electrical surface gradient, and therefore, its corona noise emission levels. The way conductors are arranged on the support poles also affects corona noise production. Corona effects are expected to be low enough that no objectionable audible sound will result outside the Study Area.

Aeolian vibration is produced when a steady flow of wind interacts with an object such as a transmission line. Wind must blow steadily and perpendicular to the lines to set up oscillating forces. The resulting vibration can produce resonance if the frequency of the vibration matches the natural

frequency of the line. However, aeolian vibration is expected to be minimal outside of the Project Corridor.

The main sources of audible noise associated with the Project will be the four new substations. Noise contributions from these facilities are highly dependent on the layout of the buildings and equipment within the fenced area. The most significant sources of noise within the stations are transformers with integrated cooling fans, followed by the outdoor components of the valve cooling system, smoothing reactors, and other electrical equipment. Corona effect noise associated with transmission lines is typically only within the threshold of human hearing during rainy or foggy conditions and is often imperceptible due to background noise (CH2M Hill, 2012). Once the Project has been built, no significant construction sound or aeolian vibration impacts are anticipated. Project maintenance will occur periodically but is not expected to result in significant sound generation and aeolian vibration is expected to be minimal outside the Project Corridor, therefore, no mitigation is proposed.

The nearest residence is 0.56 mile north of the Project ROW. No additional mitigation measures are necessary since there will be minimal noise impacts from the operation of the Project.

6.3.2.2 Electromagnetic Fields

Leading U.S. and international scientific organizations, such as the National Cancer Institute and the World Health Organization, have evaluated EMF research. These organizations generally conclude that overall, the body of scientific research does not show that exposure to EMF causes or contributes to any type of cancer or any other disease or illness (National Institute of Environmental Health Sciences, 1999). Based on this information, no impacts from EMF are anticipated; therefore, mitigation is not anticipated.

6.3.2.3 Hazardous Materials/Hazardous Waste

It is not anticipated that hazardous waste sites will be encountered within the Project Corridor during construction. If hazardous waste sites are encountered during construction of the Project, construction will be suspended and the North Dakota Department of Health will be contacted immediately to determine the best method for removal or clean up.

As with any construction activity, there is the possibility of accidentally spilling fuel, hydraulic fluid, or other hazardous substances during construction of the Project. The potential of such events will be minimized through implementation of a SPCC plan, which will include the following:

- Construction equipment will be equipped with spill cleanup kits.
- Equipment refueling will take place at secure areas, away from wetlands or drainages.
- Workers will be trained in spill clean-up and the use of spill cleanup kits.
- Burning waste materials within the Project Corridor will not be permitted and all waste materials will be disposed of at permitted waste disposal areas or landfills.

These measures will ensure that surface and groundwater quality will not be degraded through inadvertent spillage of contaminants. The SPCC plan measures implemented will ensure that surface and groundwater quality will not be degraded through inadvertent spillage of contaminants,

therefore, mitigation is not anticipated. Disposal and/or transportation of solid and hazardous will be managed in accordance with the NDDEQ Hazardous Waste Program.

The NDDEQ responded to the Project introduction letter (see Section 8 below and Appendix E) indicating that polychlorinated biphenyls ("PCBs") containing waste must be handled, stored, and disposed of appropriately. PCBs are regulated under the Toxic Substances Control Act. In North Dakota, PCBs are not considered to be a hazardous waste. Regulations concerning PCBs may be found in Title 40 Code of Federal Regulations ("CFR"), Chapter I, Subchapter R, Part 761. Since the Project consists of new construction of utility infrastructure and PCBs were banned in 1979, no PCB waste generation is anticipated; therefore, mitigation is not anticipated.

6.3.2.4 Security

The Project site is located in an area that has a low population density with limited existing security measures; construction and operation of the Project will have minimal impacts on the security and safety of the local populace. The converter and substations will include a security fence with specific NERC locks and access card readers. Security cameras will be installed for the Project and there will also be a security notification requirement prior to any access to the Project site. Since construction and operation of the Project will have minimal impacts on the security and safety of the local populace, additional mitigation is not anticipated.

6.4 CULTURAL RESOURCES

6.4.1 Description of Resources

6.4.1.1 Survey Area

Merjent, Inc. ("Merjent") conducted a Class I Literature Review and Class III Cultural Resources Inventory in a 2,119-acre area surrounding the Proposed Phase I and Phase 2 Project Corridors. The results of these studies are summarized in the cultural resources reports included in Appendix F. The cultural resources survey area is shown on Map 6 in Appendix A.

In August 2022, July 2023, and May 2024, Merjent staff conducted Class I Literature Reviews through file searches of the North Dakota Cultural Resources Survey data files maintained by the State Historical Society of North Dakota ("SHSND") to determine if any cultural resources have been recorded or if any cultural resource investigations have been conducted within the 2,119-acre survey area and the surrounding one-mile Study Area.

The Class I Literature Review search revealed that 28 cultural resource surveys have been conducted in the Study Area. These surveys consisted of 1 related to oil and gas development, 1 to borrow pit activities, 11 to electric utility projects, 4 to water projects, 6 to wind farm projects, and 5 to coal mining projects.

The Class I Literature Review search revealed that 30 cultural resources have been recorded in the Study Area. These resources consisted of 14 precontact sites, 10 precontact isolated finds, 2 architectural site leads, and 4 historic site leads. The majority of the precontact sites were stone feature sites and precontact lithic scatters.

Merjent conducted a Class III Cultural Resources Inventory of the Survey Area, which is also referred to as the area of potential effects ("APE"; see Map 6 in Appendix A). The objective of the inventory was to locate any cultural resources located within the APE, to determine whether those

resources qualify for inclusion on the National Register of Historic Places ("NRHP") and assess the effect that the Project may have on those cultural resources that qualify for the NRHP. Fieldwork was conducted during the following time periods: September 12 to 19, 2022; July 21 and 22, 2023; May 23 and 24, 2024; July 1, 2024; and August 16 to 17, 2024. Surveys were conducted in accordance with industry best practices, North Dakota State Historic Preservation Office guidelines (SHSND, 2021) and the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 CFR 44716), which does not require pre-consultation with the SHSND. Merjent also conducted evaluative archaeological testing at sites 32OL445 and 32OL859 to determine eligibility for listing on the NRHP. Site testing took place from August 19 to 23, 2024, and on October 25, 2024. Results of the testing indicated that both sites have been disturbed by the presence of a two-track road (32OL859) and agricultural activities (32OL445). Merjent recommended both sites as not eligible for listing in the NRHP. No avoidance of these two sites is recommended for this project.

A cultural resources report, addendum report, and evaluative testing report were submitted to the SHSND for review. The SHSND accepted the reports' findings in letters dated June 19, 2024, and December 10, 2024 (see Appendix F). The reports discuss the results of the survey conducted within the Class III pedestrian inventory area and testing of two sites.

6.4.1.2 Phase 1 – Proposed Nelson Lake Substation

Seven precontact sites (32OL445, 32OL575, 32OL624, 32OL629, 32OL859, and newly recorded sites 32OL976 and 32OL977) and four precontact isolated finds (32OLX254, 32OL324, and newly recorded finds 32OLX461 and 32OLX462) were noted as being within the Phase 1 Corridor. The seven precontact sites within the Phase 1 Corridor consist of stone feature and lithic scatter sites that should be avoided (see Table 6.4-1). Four of the precontact sites are unevaluated for listing in the NRHP. One precontact site (32OL575) is recommended eligible for listing in the NRHP. The precontact isolated finds consisted of single pieces of chipped stone. The four isolated finds (32OLX254, 32OL324, 32OLX461, and 32OLX462) are recommended as not eligible for listing in the NRHP and need no further work.

No further archaeological work is recommended for Phase 1. Table 6.4-1 below lists the previously recorded and newly recorded sites and the avoidance strategies for each site. SHSND did not recommend any avoidance buffers for any sites. All unevaluated or eligible sites will be avoided.

TABLE 6.4 -1

Phase 1: Recorded Sites and Avoidance Strategies

Smith #	Site Category	Site Type	Eligibility for NRHP	Avoidance Strategies
32OL445	Precontact	Lithic Scatter	Not Eligible	No Further Work
32OL575	Precontact	Stone Features	Eligible	Avoidance
32OL624	Precontact	Lithic Scatter	Unevaluated	Avoidance
32OL629	Precontact	Stone Feature	Unevaluated	Avoidance
32OL859	Precontact	Cultural Material Scatter	Not Eligible	No Further Work
32OL976*	Precontact	Stone Feature, Lithic Scatter	Unevaluated	Avoidance
32OL977*	Precontact	Lithic Scatter	Unevaluated	Avoidance
32OLX254	Precontact	Isolated Find	Not Eligible	No further work
32OLX324	Precontact	Isolated Find	Not Eligible	No further work
32OLX461*	Precontact	Isolated Find	Not Eligible	No further work
32OLX462*	Precontact	Isolated Find	Not Eligible	No further work

* Newly Recorded Site

6.4.1.3 Phase 2 – Proposed East Oliver HVDC Converter Station

Within the Phase 2 Corridor, six previously recorded sites (32OL446, 32OL575, 32OL624, 32OL857, 32OL858, and 32OL960) and one isolated find were revisited (32OLX441); an attempt was made to relocate one historic mining site lead (32OLX122); and three newly recorded precontact sites were identified (32OL977, 32OL1001, and 32OL1028), along with a single newly recorded isolated find (32OLX460). Of the previously identified sites, six are recommended as unevaluated for listing on the NRHP (32OL446, 32OL624, 32OL857, 32OL858, 32OL960, and 32OL1001). One of the stone feature sites, 32OL575, was recommended eligible for listing on the NRHP and avoidance is recommended. Avoidance of any ground disturbing activities adjacent to, or within, these sites was recommended and accepted by the NDSHPO. Isolated find 32OLX460 is recommended not eligible for listing. No further work or avoidance is recommended for this resource. Isolated find 32OLX441 has been recommended as unevaluated regarding eligibility for listing on the NRHP. Avoidance or further work is recommended. Previously recorded site lead, 32OLX122, consists of a reported open pit coal mine. An effort was made to locate the remains of the mine within the project area, but no evidence was noted. The site boundary outside of the survey area is recommended as unevaluated for listing on the NRHP and avoidance or further work is recommended. No further work is recommended for the portion of the site lead boundary within the Corridor. The three newly recorded sites consist of a lithic scatter (32OL977), a stone feature site (32OL1001), and the archaeological remains of a farm site (32OL1028). Merjent recommends avoidance of any ground disturbing activities adjacent to, or within, the three sites and that each is recommended as unevaluated regarding eligibility for listing on the NRHP.

Table 6.4-2 below lists the previously recorded and newly recorded sites within the Phase 2 Corridor and the avoidance strategies for each site. The SHSND did not recommend avoidance buffers for any sites. All unevaluated or eligible sites will be avoided.

TABLE 6.4-2

Phase 2: Recorded Sites and Avoidance Strategies

Smith #	Site Category	Site Type	Eligibility for NRHP	Avoidance Strategies
32OL446	Precontact	Lithic Scatter and Stone Features	Unevaluated	Avoidance
32OL575	Precontact	Stone Features	Eligible	Avoidance
32OL624	Precontact	Lithic Scatter	Unevaluated	Avoidance
32OL857	Precontact	Stone Features	Unevaluated	Avoidance
32OL858	Precontact	Stone Features	Unevaluated	Avoidance
32OL960	Precontact	Stone Features	Unevaluated	Avoidance
32OL977*	Precontact	Lithic Scatter	Unevaluated	Avoidance
32OL1001*	Precontact	Stone Features	Unevaluated	Avoidance
32OL1028*	Historic	Farm Site	Unevaluated	Avoidance
32OLX122	Historic Site Lead	Site Lead – Coal Mine	Unevaluated	No further work
32OLX441	Precontact	Isolated Find	Unevaluated	Avoidance
32OLX460*	Precontact	Isolated Find	Not Eligible	No further work

* Newly Recorded Site

6.4.2 Impacts and Avoidance/Minimization Measures

Any ground disturbing activity within the Project Corridor can potentially impact known or unknown cultural resources. The Applicants will avoid impacts to unevaluated or eligible cultural resources during construction as recommended by the Merjent Class III report, which received acceptance

from SHSND on June 19, 2024. The Applicants will implement the following avoidance measures for the Project:

- Avoidance strategies have been developed for all eligible, potentially eligible, or unevaluated sites along the Project Corridor and in most cases involve placing protective fencing around site features during construction.
- The Applicants' personnel, contractors, and subcontractors will be directed not to engage in the illegal collection, damage, or vandalism of historic and prehistoric resources.
- An Unanticipated Discoveries Plan has been prepared that outlines the procedure used to address any unanticipated discoveries of cultural resources, including possible human remains (see Appendix G).

6.5 LAND USE AND LAND COVER RESOURCES

6.5.1 Description of Resources Study Area

The Study Area is located in rural North Dakota in an area predominantly comprised of pastureland, hay fields, grassland, wetlands, and an impoundment for Nelson Lake. Accordingly, much of the Study Area is used for livestock grazing and hay production. One wooded area is present within the Study Area and additional areas of shrubs and small trees are limited to shelterbelts between fields, along drainages, and near wetlands. There are no incorporated or unincorporated cities within the Study Area.

6.5.1.1 Land Cover

Land cover classifications, including acreage within the Project Study Area and each Phase's ROW, are shown in Table 6.5.-1 below and on Map 7 in Appendix A. The Project Study Area is comprised primarily of herbaceous (56 percent) and cultivated lands (24 percent).

TABLE 6.5-1

Land Cover

Land Cover	Acreage within Study Area	Acreage within Phase 1 ROW	Acreage within Phase 2 ROW
Barren Land	0.22	0.0	0.0
Cultivated Crops	1229.19	2.36	9.65
Deciduous Forest	10.39	0.0	0.0
Developed, High Intensity	8.40	0.0	0.0
Developed, Low Intensity	18.96	0.21	0.04
Developed, Medium Intensity	9.78	0.0.0	0.0
Developed, Open Space	92.71	0.0	1.17
Emergent Herbaceous Wetlands	30.39	0.0	0.0
Hay/Pasture	362.10	1.52	0.56
Herbaceous	2876.94	21.11	68.56
Open Water	471.90	1.29	0.25
Shrub/Scrub	11.78	0.0	0.45
Woody Wetlands	15.60	.16	0.12
TOTAL	**5,139**	**26.65**	**84.24**

Source: NLCD; Homer et al. 2015

6.5.1.2 Public Lands

There are no designated public lands such as municipal, state or federal parks, surface tracts of school trust lands, National Wildlife Refuges, Waterfowl Production Areas, Wildlife Management Areas, or designated scenic trails within the Project Corridors. The North Dakota Department of Trust Land ("NDDTL") indicated that there are two surface tracts, managed by NDDTL on behalf of the Board of University and School Lands located near the Project, one of which is located within the Study Area but approximately 770' from the ROW.

The Wilbur Boldt Wildlife Management Area ("WMA") is located outside of the Project Corridor and Survey Area, but is located within the Study Area.

6.5.1.3 Easements and Agreements

Private landowners hold voluntary agreements with North Dakota Game and Fish Department ("NDGFD") as part of the Private Land Open to Sportsmen ("PLOTS") program, which allows walk-in public hunting access to otherwise private land. The landowner is allowed to conduct normal farming and ranching activities, and the PLOTS agreements are subject to change on an annual basis at the private landowner's discretion should land use change. No PLOTS land is present within the Project Corridor or Study Area.

The U.S. Fish and Wildlife Service ("USFWS") manages lands including their easements within the Project Area (see Map 5 in Appendix A). These easements are agreements between landowners and USFWS to protect wetlands and grasslands that are vital to wildlife habitat. There are no USFWS wetlands easements or USFWS grassland easements within the Project Corridor or Study Area.

Conservation Reserve Program ("CRP") lands are administered by the Farm Service Agency ("FSA") through the U.S. Department of Agriculture ("USDA"). In exchange for yearly compensation, CRP lands are removed from agricultural production and planted with species that will improve environmental quality and health, with a long-term goal of establishing valuable land cover to improve water quality, prevent soil erosion, and reduce the loss of wildlife habitat (USDA, FSA, 2023). There are no CRP lands within the Project Corridor.

6.5.2 Impacts and Avoidance/Minimization Measures

At the time of construction, Minnesota Power will own the land required for all four substations in fee. The 230-kV and 345-kV transmission lines will be constructed within Applicant-held easements on land owned by Minnkota Power Cooperative, and the Applicants will minimize impacts to the extent possible. Project infrastructure was sited as close to existing infrastructure as possible. Once construction activities have been completed, temporary construction areas will revert back to their previous use.

The development of the Project will not result in a significant change in land use within the Project Area; therefore, mitigation is not anticipated.

6.5.2.1 Land Cover

Construction of the Project will permanently convert approximately 52 acres (6 percent of the Project Area), and temporarily impact approximately 67 acres (8.3 percent of the Project Area).

Approximately 13.4 acres of cultivated crops will be removed from production; cropland temporarily impacted by the Project will return to agricultural use after construction. Table 6.5-2 below shows the land cover impacts for the Project.

Table 6.5-2

Land Cover Impacts (acres)

Land Cover	Phase 1 Temporary Impacts	Phase 1 Permanent Impacts	Phase 2 Temporary Impacts	Phase 2 Permanent Impacts
Barren Land	0.0	0.0	0.0	0.0
Cultivated Crops	6.78	7.94	8.95	5.41
Deciduous Forest	0.0	0.0	0.0	0.0
Developed, High Intensity	0.0	0.0	0.0	0.0
Developed, Low Intensity	0.03	0.0	0.09	0.05
Developed, Medium Intensity	0.0	0.0	0.0	0.0
Developed, Open Space	0.0	0.0	0.33	0.02
Emergent Herbaceous Wetlands	0.0	0.0	0.0	0.0
Hay/Pasture	0.90	0.0	0.91	0.0
Herbaceous	8.59	7.79	40.30	32.57
Open Water	0.0	0.0	0.0	0.0
Shrub/Scrub	0.0	0.0	0.29	0.0
Woody Wetlands	0.0	0.0	0.0	0.0
TOTAL	**16.3**	**15.73**	**50.87**	**38.04**

The Applicants will minimize land use impacts to the extent practicable by allowing temporarily impacted lands to revert to their original use after Project construction. In addition, the Proposed Project is in an area with existing electrical substations, transmission lines, and associated facilities. The Applicants propose the following measures to minimize potential impacts:

- Develop and implement a Noxious Weed Management and Control Plan to eliminate the spread of weeds during construction and to implement prescribed treatments to eliminate, to the maximum extent possible, the invasion of weeds from surrounding lands. The Applicants will provide the Noxious Weed Management Control Plan to the Oliver County Weed board.

- Protect existing trees and shrubs by avoiding tree removal for access roads, and underground collector lines, or if removal is necessary, replace consistent with the NDPSC's Tree and Shrub Mitigation Specifications.

- Reseed temporarily disturbed areas or restore to crop land, based on the conditions of the area prior to construction and based on landowner preference or in accordance with NRCS seed mixes.

BMPs will be employed, including the use of erosion and sediment control during and after construction, noxious weed control, segregating topsoil from subsurface materials, reseeding of disturbed areas, the use of construction equipment appropriately sized to the scope and scale of the Project, ensuring access road grades fit closely with the natural terrain, properly disposing of on-site soil cuttings from foundation construction, and maintaining proper drainage. Perimeter sediment controls will be used in areas under construction as needed to control erosion and storm water runoff. Surface flows will be directed away from cut-and-fill slopes and into ditches that discharge to natural drainages. Mitigation is not anticipated.

6.5.2.2 Public Lands

The Project will not affect properties that the North Dakota Parks and Recreation owns, leases, or manages and does not appear to affect any properties protected under Section 6(f) of the Land and Water Conservation Fund; therefore, no public lands will be impacted by the Project.

The Project will not impact land managed by NDDTL or the Wilbur Boldt WMA; therefore, mitigation is not anticipated.

6.5.2.3 Easements and Agreements

No PLOTS, USFWS grasslands, or CRP land are present in the Study Area; therefore, impacts are not anticipated. Mitigation is not anticipated.

6.6 VEGETATION RESOURCES

6.6.1 Description of Resources

The Project is located within the Missouri Plateau Region. This region is gently sloping and rises above the flatter plains. Existing vegetation within the Project Corridor and each Phase, are shown in Table 6.5-1 above and on Map 7 in Appendix A. The Project Corridor is comprised primarily of herbaceous (56 percent) and cultivated lands (23 percent).

North Dakota has 13 state noxious weeds that are enforced by all cities and counties in North Dakota (NDDA, 2012). Counties and cities do have the option to add additional weeds onto a list for enforcement only in their jurisdiction. Oliver County has not added any additional noxious weeds to a list for enforcement and while a Noxious Weed Plan isn't required by the county, the Applicants will prepare one in compliance with NDCC requirements. Based on a response from the North Dakota Parks and Recreation Department, one plant species of special concern, the sheathed pondweed, was documented within one mile of the Project site in 1978. This species is typically found in deepwater zones and near-shore areas of alkaline lakes.

Midwest Natural Resources ("MNR") conducted a field-based habitat assessment and indicated that the overall landscape consists of rolling terrain, and land use is primarily rangeland and pasture, with several large agricultural fields under row crop production (see Appendix J). Remnant native dry prairie is generally restricted to steep slopes within the rangeland.

Collective field efforts delineated 88 total Dakota skipper habitat polygons, totaling 139 acres between 2022 and 2024. All of the mapped habitat polygons are Type B habitat, and most are located on hillsides in grazed rangeland, generally protected from heavy grazing. These areas are typically dominated by little bluestem or porcupine grass (*Hesperostipa spartea*) with abundant narrow-leaved purple coneflower. Prairie groundsel (*Packera plattensis*), American pasqueflower (*Anemone patens*), blazing stars (*Liatris* spp.), purple prairie clover (*Dalea purpurea*), side-oats grama, thimbleweed (*Anemone cylindrica*), prairie sagewort (*Artemisia frigida*), and western wheatgrass (*Pascopyrum smithii*) are also common.

In general, the quality of each area varies based on impacts from factors such as grazing, invasive species, and shrub cover. Still, each patch includes a number of the requisite species for the Dakota skipper, including larval host grasses (mainly little bluestem) and the nectar source plant (primarily narrow-leaved purple coneflower).

6.6.2 Impacts and Avoidance/Minimization Measures

The Applicants have designed the Project to minimize impacts to natural vegetation communities to the extent practicable. Vegetation will be removed from areas of permanent infrastructure footprints. The Project will permanently remove approximately 52 acres of vegetation.

Construction of the Project will temporarily impact approximately 67 acres of vegetation. Following construction, disturbed areas will be graded and/or re-sloped to their approximate original contours to minimize erosion and visual alteration. In grassland or pasture areas, disturbed areas will be reseeded with native species in accordance with the NRCS, or requested by the landowner and approved by the NDPSC. Suitable habitat for the sheathed pondweed will not be impacted by the Project; therefore, no mitigation is anticipated.

6.7 RECREATIONAL RESOURCES

6.7.1 Description of Resources

No recreational resources are located within the Project Corridor; however, the Wilbur Boldt WMA is located within the Study Area.

6.7.2 Impacts and Avoidance/Minimization Measures

The Project will not impact the Wilbur Boldt WMA; therefore, no mitigation is anticipated.

6.8 VISUAL RESOURCES

6.8.1 Description of Resources

There are existing transmission lines, substations, switchyards, and associated utility infrastructure visible throughout the Study Area. No residences are located within the Project Corridor; however, 8 are located within the Study Area. The nearest residence is 0.56 mile north of the ROW.

6.8.2 Impacts and Avoidance/Minimization Measures

Visual and aesthetic impacts would result from construction of the Proposed Project. Measuring the aesthetic value of a specific landscape is difficult and may vary based on an individual's personal values, experiences, or preferences. The degree of visual contrast will vary based on the viewpoint distance and location in relation to the Project. The Project is consistent with the existing infrastructure in the viewshed. The Project is located 0.56 mile from the nearest residence; therefore, mitigation is not anticipated.

6.9 GEOLOGICAL AND SOIL RESOURCES

6.9.1 Description of Resources

The Study Area and Project Corridors are located south and west of the Missouri River and within the Central Lowland Province (Carlson, 1973). Surficial deposits within the Study Area and Project Corridors include Pleistocene aged till and fine-grained ground moraine deposits (Colton et al., 1986); however, these surficial deposits may vary greatly in thickness and be patchy due to the Study Area's location on the western extent of the Late Wisconsinan Glaciation. Alluvium deposits are also present within the Study Area and Project Corridors due to the proximity to Nelson Lake

and attributing channels. The Paleocene aged Sentinel Butte Formation and Bullion Creek Formation, which is comprised of silt, sand, clay, sandstone, and lignite underly alluvial and glacial deposits within the Study Area and Project Corridors. Both Sentinel Butte Formation and Bullion Creek Formation are approximately 600 feet thick (Clayton, 1980; North Dakota geographic information systems [“ND GIS”] Hub, 2023b).

There are no oil and gas wells within the Study Area or Project Corridors. There is a confidential well located within the Study Area; however, no SPUD date (the day when drill bit begins drilling into ground for the well) is listed. (North Dakota Department of Mineral Resources, 2023). There are no active sand and/or gravel mines located within the Study Area or Project Corridors (North Dakota State Soil Conservation Committee, 2021). There are six abandoned surface lignite coal mines within the Study Area; however, none are located within the Project Corridors (see Map 8 in Appendix A; ND GIS Hub, 2023c; Moxness, Anderson, Maike, and York, 2023). Several landslide deposits as indicated by North Dakota Geological Survey landslide mapping programs are present within the Study Area. One landslide deposit intersects ND HVDC Project Corridor 2 in Sec. 33 T142N R83W (see Map 8 in Appendix A; Moxness et al., 2023).

USDA soils data was reviewed to determine soil type within the approximately 5139-acre Study Area (USDA; 2023a). The majority of the Study Area is loams and silt loams. Approximately 293 acres (6%) of the Study Area is prime farmland, 2,731-acres (53%) not prime farmland, and 2,114acres (41%) farmland of statewide importance. Table 6.9-1 below contains additional information about each soil type in the Study Area.

TABLE 6.9-1

Soil Types within the Study Area

Soil ID	Soil Type	Acres	Percent of Total
E0415A	Belfield-Daglum complex, 0 to 2 percent slopes	13.14	0.26
E0454B	Daglum-Rhoades complex, 0 to 6 percent slopes	3.04	0.06
E0515C	Rhoades-Daglum complex, 6 to 9 percent slopes	30.50	0.59
E0617B	Belfield-Savage-Daglum complex, 2 to 6 percent slopes	30.66	0.60
E0651B	Regent-Janesburg complex, 3 to 6 percent slopes	26.61	0.52
E0651C	Regent-Janesburg complex, 6 to 9 percent slopes	2.94	0.06
E0812A	Grail silt loam, 0 to 2 percent slopes	7.45	0.14
E0814B	Grail-Farland silt loams, 2 to 6 percent slopes	20.85	0.41
E1333D	Vebar-Cohagen fine sandy loams, 9 to 15 percent slopes	19.64	0.38
E1625B	Vebar-Parshall fine sandy loams, 3 to 6 percent slopes	12.19	0.24
E1865B	Tally-Parshall fine sandy loams, 2 to 6 percent slopes	0.60	0.01
E2107A	Arnegard loam, 0 to 2 percent slopes	99.36	1.93
E2107B	Arnegard loam, 2 to 6 percent slopes	51.97	1.01
E2439B	Sen-Janesburg silt loams, 3 to 6 percent slopes	10.19	0.20
E2439C	Sen-Janesburg silt loams, 6 to 9 percent slopes	32.08	0.62
E2607D	Amor-Werner loams, 9 to 15 percent slopes	28.04	0.55
E2609C	Amor-Werner-Farnuf loams, 6 to 9 percent slopes	482.98	9.40
E2651F	Werner-Amor-Arnegard loams, 9 to 50 percent slopes	310.50	6.04
E2747D	Werner-Chama-Sen silt loams, 9 to 15 percent slopes	748.63	14.57
E2765C	Sen-Werner loams, 6 to 9 percent slopes	9.01	0.18
E2803B	Amor-Shambo loams, 3 to 6 percent slopes	28.40	0.55
E2933C	Morton-Werner silt loams, 6 to 9 percent slopes	0.03	0.00
E3002F	Ringling-Cabba complex, 9 to 35 percent slopes	1.87	0.04
E3107F	Cabba-Badland complex, 6 to 70 percent slopes	13.23	0.26

TABLE 6.9-1

Soil Types within the Study Area

Soil ID	Soil Type	Acres	Percent of Total
E3527A	Williams-Bowbells loams, 0 to 3 percent slopes	6.02	0.12
E3527B	Williams-Bowbells loams, 3 to 6 percent slopes	644.89	12.55
E3531C	Williams loam, 6 to 9 percent slopes	888.22	17.28
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	537.82	10.47
E3725B	Flaxton-Williams loams, 3 to 6 percent slopes	27.88	0.54
E3733B	Flaxton-Williams complex, 3 to 6 percent slopes	54.23	1.06
E3733C	Flaxton-Williams complex, 6 to 9 percent slopes	62.55	1.22
E3733D	Flaxton-Williams complex, 9 to 15 percent slopes	14.24	0.28
E3755A	Temvik-Wilton silt loams, 0 to 3 percent slopes	174.10	3.39
E3763B	Temvik-Wilton-Williams silt loams, 3 to 6 percent slopes	225.31	4.38
E3813A	Grassna silt loam, loess, 0 to 2 percent slopes	16.59	0.32
E4139A	Korchea-Fluvaquents complex, channeled, 0 to 2 percent slopes, frequently flooded	55.06	1.07
E4161A	Straw loam, 0 to 2 percent slopes, rarely flooded	118.43	2.30
E4195A	Velva fine sandy loam, 0 to 2 percent slopes, occasionally flooded	0.73	0.01
E4757A	Regan silt loam, 0 to 2 percent slopes, occasionally flooded	5.36	0.10
E4763A	Tonka silt loam, 0 to 1 percent slopes	11.66	0.23
E4915F	Dumps, mine-Ustorthents complex, 0 to 75 percent slopes	6.79	0.13
E4999	Water	305.15	5.94
E0415A	Belfield-Daglum complex, 0 to 2 percent slopes	13.14	0.26
E0454B	Daglum-Rhoades complex, 0 to 6 percent slopes	3.04	0.06
E0515C	Rhoades-Daglum complex, 6 to 9 percent slopes	30.50	0.59
	TOTAL	**5138.93**	**100.00**

USDA soils data was reviewed to determine soil type within the approximately 860.79-acre Project Corridors (USDA; 2023a). Most of the Project Corridors are loams and silt loams. Approximately 23.7-acres (3%) of the Project Corridor is prime farmland, 444.61-acres (52%) not prime farmland, and 392.5-acres (45%) farmland of statewide importance. Table 6.9-2 below contains additional information about each soil type in the Project Corridors.

TABLE 6.9-2

Soil Types within the Project Corridors

Soil ID	Soil Type	Acres	Percent of Total
E0415A	Belfield-Daglum complex, 0 to 2 percent slopes	0.18	0.02
E0515C	Rhoades-Daglum complex, 6 to 9 percent slopes	4.85	0.56
E0651C	Regent-Janesburg complex, 6 to 9 percent slopes	1.24	0.14
E0814B	Grail-Farland silt loams, 2 to 6 percent slopes	4.17	0.48
E1333D	Vebar-Cohagen fine sandy loams, 9 to 15 percent slopes	16.02	1.86
E1625B	Vebar-Parshall fine sandy loams, 3 to 6 percent slopes	0.52	0.06
E2107A	Arnegard loam, 0 to 2 percent slopes	20.29	2.36
E2107B	Arnegard loam, 2 to 6 percent slopes	3.41	0.40
E2439C	Sen-Janesburg silt loams, 6 to 9 percent slopes	5.30	0.62
E2609C	Amor-Werner-Farnuf loams, 6 to 9 percent slopes	59.62	6.93
E2651F	Werner-Amor-Arnegard loams, 9 to 50 percent slopes	22.08	2.57
E2747D	Werner-Chama-Sen silt loams, 9 to 15 percent slopes	132.18	15.36
E2765C	Sen-Werner loams, 6 to 9 percent slopes	0.28	0.03

TABLE 6.9-2

Soil Types within the Project Corridors

Soil ID	Soil Type	Acres	Percent of Total
E3527B	Williams-Bowbells loams, 3 to 6 percent slopes	157.23	18.27
E3531C	Williams loam, 6 to 9 percent slopes	219.29	25.48
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	130.58	15.17
E3725B	Flaxton-Williams loams, 3 to 6 percent slopes	10.94	1.27
E3733B	Flaxton-Williams complex, 3 to 6 percent slopes	0.47	0.05
E3733C	Flaxton-Williams complex, 6 to 9 percent slopes	12.69	1.47
E3733D	Flaxton-Williams complex, 9 to 15 percent slopes	0.76	0.09
E3755A	Temvik-Wilton silt loams, 0 to 3 percent slopes	7.10	0.82
E3763B	Temvik-Wilton-Williams silt loams, 3 to 6 percent slopes	44.89	5.21
E4139A	Korchea-Fluvaquents complex, channeled, 0 to 2 percent slopes, frequently flooded	5.13	0.60
E4999	Water	1.57	0.18
E0415A	Belfield-Daglum complex, 0 to 2 percent slopes	0.18	0.02
	TOTAL	**860.79**	**100.0**

6.9.2 Impacts and Avoidance/Minimization Measures

Surface disturbance caused by construction of the transmission line would result in the soil surface becoming more prone to erosion and the use of heavy equipment could result in soil compaction. However, any such impacts to site soils will be localized and BMPs will be implemented to minimize these impacts. Additionally, if needed, the Applicants will obtain coverage under the NPDES General Stormwater Construction Permit, which requires preparation of a Storm Water Pollution Prevention Plan ("SWPPP"). The Project will not result in significant impacts to soil and geologic resources. A geotechnical analysis will be performed and areas which are geologically unstable will be avoided and spanned as necessary. The Applicants will implement the following measures to minimize impacts:

- Landslide deposits will be spanned by transmission line infrastructure.
- Excess subsoils and rock will either be used on-site or hauled off-site to an approved landfill.
- Erosion and sediment controls will be established prior to construction, then maintained and controlled through application of the SWPPP.
- Sediment control measures (e.g., installation of silt fences) will be used, where appropriate, to prevent sediment from moving off-site and into waterbodies.
- Maintenance operations will be scheduled during periods of minimum precipitation to minimize the potential of surface runoff and to reduce the risk of erosion, rutting, sedimentation, and soil compaction. However, emergency repairs to the transmission line may occur during periods of inclement weather. Ruts, scars, and compacted soils resulting from emergency activities will be repaired by subsoiling, paraplowing, scarifying, harrowing, or disking, as appropriate.
- Temporary laydown areas will be located in previously disturbed areas and/or areas previously surveyed for cultural and biological resources.

6.10 SURFACE WATER, WETLAND, FLOODPLAIN, AND GROUNDWATER RESOURCES

6.10.1 Description of Resources

6.10.1.1 Project Corridor

The Project is located within the Missouri Plateau Region. This region is gently sloping and rises above the flatter plains. The region is cut by braided rivers, and the land is often used for livestock pastures and farming. Intermittent wetlands associated with waterways are present in the Study Area.

Merjent conducted wetland and other waters field delineations in support of the Project (see Appendix H). Prior to field surveys, a desktop assessment was completed to identify wetland and other waters areas within the Project Study Area. USFWS National Wetlands Inventory data and the U.S. Geological Survey ("USGS") National Hydrography Dataset were used to identify potential surface waters within the Study Area (USFWS, 2020a; USGS, 2020). The data were used as a precursor for field delineations. Field surveys were conducted to confirm desktop boundaries and to update wetland/upland vegetation breaks, slope, and hydrology indicators. A total of 29 wetlands were identified during the wetland and other waters delineation within the Survey Area. One waterbody, Nelson Lake, and five waterway areas were identified within the Survey Area (see Map 9 in Appendix A).

Nelson Lake, several unnamed streams, small drainages, and wetlands are found within the Study Area. Due to the Study Area's rural location, the Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map, Panel 3800770175A, which has not been updated since 1987, is listed as Not Printed and is not available electronically for download (FEMA, 2023). Furthermore, according to the North Dakota Department of Water Resources ("NDDWR") in a Project review letter dated August 30, 2023, there are no FEMA National Flood Insurance Program floodplains identified or mapped within both Project Corridors. Also according to NDDWR, the North Dakota Risk Assessment Map Service ("NDRAM") and Base Level Engineering ("BLE") is considered to be the best available data and is recommended to be considered in the design process. According to the NDRAM and BLE, surface water elevations with a 1 percent annual chance of flood risk boundary corresponds with the previously identified waterbodies of Nelson Lake and unnamed streams (NDRMA, 2023).

Groundwater resources in the Study Area are generally derived from shallow aquifers of the Sentinel Butte and Bullion Creek Formation (Carlson, 1973). Additionally, Square Butte Creek Aquifer is within the Study Area to the west as part of Nelson Lake, although not present within the Project Corridor (see Map 9 in Appendix A; ND GIS Hub, 2023). There are no sole sourced aquifers within the Project Corridor.

Sensitive groundwater areas are referenced by NDAC 33-25-01 and are vulnerable hydrogeologic settings, such as glacial outwash deposits or alluvial or aeolian sand deposits, that are critical to protecting current or future underground sources of drinking water. The Project Corridor does not intersect sensitive groundwater areas; however, Square Butte Creek Sensitive Groundwater Area is within the Study Area to the west of the Project Corridor. Square Butte Creek Sensitive Groundwater Area includes Square Butte Creek and parts of Nelson Lake (ND GIS Hub, 2023). According to EPA's NEPAssist, there are no impaired waters or waterbodies within the Project Corridor.

The Project Corridor does not intersect Source Water Protection Areas; however, 3 non-community Source Water Protection Areas are located west of the Project Corridor near the Milton R. Young Power Plant and associated coal facilities (NDDEQ, 2023).

6.10.1.2 Phase 1 – Proposed Nelson Lake Substation

According to NEPAssist Tool, Phase 1 is located within the Nelson Lake-Square Butte Creek Watershed and includes a portion of Nelson Lake, an unnamed stream, small drainages, and riverine and small wetlands. Due to the area's rural location, FEMA floodplain data is limited for the Project, as discussed in Section 6.10.1.1 above.

There are no sole sourced aquifers within Phase 1, however, a surficial Aquifer, Square Butte Creek Aquifer, is within the Study Area to the west of Phase 1, but not present within the Phase 1 boundary (see Map 9 in Appendix A; ND GIS Hub, 2023). There are no sensitive groundwater areas, impaired waters, or source water protection areas within Phase 1.

Merjent conducted wetland and other waters field delineations in support of the Project, as discussed in Section 6.10.1.1 above. A total of 7 wetlands, one waterbody (Nelson Lake), and 2 waterways were identified during the wetland and other waters field survey efforts within Phase 1 (see Map 9 in Appendix A).

6.10.1.3 Phase 2 – Proposed East Oliver HVDC Converter Station

According to NEPAssist, Phase 2 is located within the Nelson Lake-Square Butte Creek and Square Butte Creek Watersheds and includes several unnamed streams, small drainages, and riverine and small wetlands. There are no sole sourced aquifers, sensitive groundwater areas, impaired waters, or source water protection areas within Phase 2.

As referenced in 6.10.1.1 above, Merjent conducted wetland and other waters field delineations in support of the Project. A total of 16 wetlands, two waterways, and one waterbody were delineated during the wetland and other waters field survey efforts within the Phase 2 Corridor (see Map 9 in Appendix A).

6.10.2 Impacts and Avoidance/Minimization Measures

Phase 1 of the Project has been sited to avoid or minimize impacts to surface waters, wetlands, floodplains, and groundwater resources, to the extent practicable. The Project will avoid direct, permanent impacts to all wetlands and waterbodies within Phase 1. All wetlands and waterbodies will be spanned or otherwise avoided and no temporary impacts are anticipated. No mitigation is anticipated to be required for Phase 1 of the Project.

Phase 2 of the Project has been sited to avoid or minimize impacts to surface waters, wetlands, floodplains, and groundwater resources, to the extent practicable. The Proposed East Oliver HVDC Converter Station will permanently impact (fill) 0.77 acre of wetlands and will temporarily impact approximately 0.04 acre of wetlands during construction. No waterbodies or other surface waters will be impacted by the HVDC Modernization Project. Permanent impacts to 0.77 acre of isolated wetlands will result from the grading and filling of an area for the construction of the Proposed East Oliver HVDC Converter Station. While Minnesota Power has designed the Project to avoid impacts to surface waters to the extent practicable, this impact cannot be avoided. The nature of the station and yard facilities proposed as part of the Project must be built within close proximity to existing electrical transmission infrastructure.

The Project will not result in a significant change to surface water and groundwater resources. Minnesota Power will confirm jurisdiction, permitting, and mitigation (if required) in coordination with the U.S. Army Corps of Engineers ("USACE"), Omaha District. If it is determined that the wetland impacts associated with the Proposed East Oliver HVDC Converter Station are regulated by USACE, Minnesota Power will work with USACE to determine the appropriate permit process and impact mitigation procedures.

Applicants will implement the following mitigation measures for the protection of water resources and waters of the state for the Project:

- A pre-construction wetland and other waters field delineation has been conducted to determine the location and spatial extent of wetlands and waterbodies within the Project Corridor (see Appendix H).
- A 100-foot buffer will be established adjacent to wetlands and streams, where practicable, to prevent or minimize impacts to those ecosystems. Construction vehicles and equipment will not traverse through wetlands and riparian areas, thereby avoiding direct impacts to these sensitive areas.
- Transmission line structures have been sited so that all wetlands and waterbodies will be spanned or otherwise avoided and will remain undisturbed. Construction and maintenance access will also avoid wetland impacts.
- Staging areas and refueling areas will not be located near surface waterbodies.
- Areas cleared during construction will be revegetated with an approved seed mix as soon as technically feasible to minimize soil erosion and sediment runoff.
- Minnesota Power and its construction contractor will employ Best Management Practices during construction to monitor soil impacts and segregate topsoil. A SWPPP will be prepared for the Project.
- A SPCC plan will be developed to prevent the potential for spills of hazardous substances into streams and drainages, and potential contamination of groundwater.

The Applicants will obtain coverage under the NPDES General Stormwater Permit, which requires preparation of a SWPPP. A SWPPP will be developed and implemented prior to initial construction activities. The SWPPP will include an analysis of materials that will be used and site activities that could impact storm water and the associated mitigation measures to minimize that potential. SWPPP implementation will include regular inspections of areas under construction, material storage and laydown areas, and structural devices for storm water management. All construction personnel will be trained and required to comply with SWPPP requirements and the maintenance of all environmental protection measures. The SWPPP will be maintained until final stabilization of all disturbed areas has been completed.

6.11 WILDLIFE RESOURCES

6.11.1 Description of Resources

The most common land use within the Project Area is active agriculture fields. Animals that commonly use this type of habitat include white tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), and wild turkey (*Meleagris gallopavo*). Other animals that are likely present in this habitat type include common small mammals like mice, voles, raccoon (*Procyon lotor*), and similar small mammals. Avian species are also common visitors to agricultural fields. According to a 2009 study at least 30 North Dakota bird species use agricultural fields. Horned lark (*Eremophila alpestris*), killdeer (*Charadrius vociferus*), red-winged blackbird (*Agelaius phoeniceus*), and Canada goose (*Branta canadensis*) where observed most often in an agricultural field (Galle et al, 2009). Other habitat types within the Project Area include waterways, and wetlands. Wildlife typical of these habitat types include muskrat (*Ondatra zibethicus*), beaver (*Castor canadensis*), mink (*Neovison vison*), mallard (*Anas platyrhynchos*) and other ducks (Galle, 2009).

The USFWS administers the Endangered Species Act ("ESA"), which establishes protections for species listed through the ESA as threatened and endangered, including those species' associated designated critical habitats. An endangered species is a species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is a species that is likely to become endangered in the foreseeable future. Critical habitat for these species can be designated if that habitat includes specific areas that are occupied by a species at the time of listing or unoccupied areas that are considered essential to the conservation of a species. Candidate species receive no statutory protection under the ESA until they are formally listed as threatened or endangered.

North Dakota does not have a state threatened and endangered species list; however, it recognizes those federally listed under the ESA.

As discussed further in Section 8.0 and Appendix E, the Applicants coordinated with USFWS and NDGFD regarding the Project. Species-specific recommendations by these agencies are provided below. NDGFD did not express concerns about non-protected common species or Species of Conservation Priority, which is a list maintained by the State of North Dakota.

The USFWS Information for Planning and Consultation ("IPaC") tool indicated that five threatened or endangered species and one candidate species have been previously documented within the vicinity of the Project Corridor (see Table 6.11-1 below; USFWS, 2024a). No federally designated critical habitat is present within the Project Corridor. The Official Species List is provided in Appendix I.

TABLE 6.11-1

Threatened and Endangered Species

Common Name	Scientific Name	Status	Designated Critical Habitat
Whooping crane	*Grus americana*	Endangered	The Project is outside the designated critical habitat
Piping plover	*Charadrius melodus*	Threatened	The Project is outside the designated critical habitat
Red knot	*Calidris canutus rufa*	Threatened	The Project is outside the designated critical habitat
Monarch butterfly	*Danaus plexippus*	Candidate	No designated critical habitat
Dakota skipper	*Hesperia dacotae*	Threatened	The Project is outside the designated critical habitat

Source: U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (USFWS 2024)

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act ("BGEPA"), which is also enforced by USFWS. The BGEPA protects bald and golden eagles throughout their range in the United States. Although it does not designate critical habitat, BGEPA protects individual eagles and nests from disturbance.

6.11.1.1 Whooping Crane

A 200-mile-wide migration corridor has been delineated for this population that contains 95 percent of all verified sightings. Spring migration occurs primarily in April and May, whereas fall migration occurs primarily in October and November (Urbanek and Lewis, 2015). Stopover habitat during migration includes a variety of croplands with roosting occurring in shallow, freshwater inland wetlands. The Project is located within the USFWS-defined 75 percent occurrence frequency band of the whooping crane migration corridor (USFWS, 2010). This entire corridor area includes a swath of the central U.S. and extends from southcentral North Dakota along the Missouri River to northwest North Dakota through Oliver County. Based on coordination with the USFWS, it is unlikely that this area is heavily used by whooping cranes and the nearest known whooping crane sighting occurred 3.5 miles northeast of the Project Corridor.

6.11.1.2 Piping Plover

Critical habitat has been federally designated for the piping plover in North Dakota mainly along the shores of the Missouri River and wildlife refuge areas. No designated critical habitat is located within the Study Area. The closest designated critical habitat is more than 10 miles from the Project Corridor (USFWS, 2024b).

6.11.1.3 Red Knot

There are no stopover sites consistently used by red knots in North Dakota. The entire state of North Dakota is within the possible range of the red knot (Dyke et al. 2015).

6.11.1.4 Monarch Butterfly

The monarch butterfly is a large butterfly with an approximate 3- to 4-inch wingspan and characterized by bright orange coloring on the wings, with distinctive black borders and veining. The species can be found in a wide variety of habitats including prairies, grasslands, urban gardens, road ditches, and agricultural fields, provided a supply of nectaring plants are available for adult foraging and milkweed plants are present for laying eggs and as a food source for caterpillars (USFWS, 2024c).

On December 17, 2020, the USFWS published the results of its 12-month review of the monarch butterfly and determined that listing the species under the ESA was "warranted but precluded," meaning the species meets the criteria for listing as an endangered or threatened species, but the USFWS cannot currently implement the listing because there are other listing actions with a higher priority. The USFWS intends to reassess the species and determine if it is warranted for listing under the ESA by December 4, 2024. If listing is still warranted and an endangered or threatened status is proposed at that time, a final rule would be published within 12 months of the proposed rule and protections would be effective within 30 to 60 days or around January 2026.

Suitable habitat for monarchs may be present within the Project area. If the USFWS determines the species should be listed and protections for the species coincide with Project planning, permitting,

and/or construction, the Applicants will review Project activities for potential impacts to the species and develop appropriate avoidance and mitigation measures.

6.11.1.5 Dakota Skipper

MNR botanists conducted a Dakota skipper habitat assessment and delineation in October 2022, September 2023, and September 2024. Field surveys were led by Otto Gockman, Principal Botanist, who holds a USFWS Recovery Permit (Permit #TE28570D-0) for the Dakota skipper.

The habitat assessment targeted both Type A and Type B habitats as defined by the USFWS Protocol. Surveys within the project area followed the data collection described in the Protocol and included the field delineation of all areas meeting the criteria for either habitat type. The cover of requisite species was categorized based on the Braun-Blanquet cover scale, with presence and cover reflecting the conditions when surveys were conducted. Additionally, each habitat area was further documented with a representative photo. Collective field efforts delineated 88 total habitat polygons, totaling 139 acres between 2022 and 2024. with 23 polygons mapped in the most recent efforts. Of the mapping efforts conducted in 2024, 7 polygons are considered extensions of previously delineated habitat polygons.

All of the mapped habitat polygons are Type B habitat, and most are located on hillsides in grazed rangeland, generally protected from heavy grazing. These areas are typically dominated by little bluestem or porcupine grass (*Hesperostipa spartea*) with abundant narrow-leaved purple coneflower. Prairie groundsel (*Packera plattensis*), American pasqueflower (*Anemone patens*), blazing stars (*Liatris* spp.), purple prairie clover (*Dalea purpurea*), side-oats grama, thimbleweed (*Anemone cylindrica*), prairie sagewort (*Artemisia frigida*), and western wheatgrass (*Pascopyrum smithii*) are also common.

In general, the quality of each area varies based on impacts from factors such as grazing, invasive species, and shrub cover. Still, each patch includes a number of the requisite species for the Dakota skipper, including larval host grasses (mainly little bluestem) and the nectar source plant (primarily narrow-leaved purple coneflower).

Due to changes in the proposed Project footprint, most of the mapped potential Dakota skipper habitat polygons were eliminated when occupancy surveys were implemented. As a result, only 26 of the 88 habitat polygons were surveyed during occupancy surveys in 2023 and 2024.

Dakota skipper occupancy surveys were led by Otto Gockman and Senior Biologist Jake Walden[1]. In 2023, surveys were conducted between June 27 - July 3 within 15 previously mapped habitat polygons. In 2024, occupancy surveys were conducted in the original 15 polygons, plus 11 additional habitat polygons mapped in 2023 and 2024, between June 25 - July 14, 2024. Occupancy surveys during both flight periods in 2023 and 2024 were initiated following correspondence with the USWFS indicating the Dakota skipper flight period was underway.

Occupancy surveys followed the *USFWS 2024 Dakota Skipper (Hesperia dacotae) Survey Protocol* document and involved visiting each mapped habitat polygon three times, at least 48 hours apart, when possible. In some cases, during the 2024 survey, sites were only visited one or two times. This was based on conversations the MNR staff had with USFWS staff regarding another project. USFWS indicated that low-quality habitat could be eliminated with fewer than three visits if approved

[1] Surveyor is also under (Permit #TE28570D-0)

surveyors deem them unlikely to support Dakota skippers. Surveys were conducted between 10:00 am and 5:30 pm on clear days with average wind speeds less than 30 kilometers per hour. Weather conditions (temperature, cloud cover, and wind speed) and other notes were recorded at each survey location. In addition, GPS tracking was used to record the survey routes, and the survey crews recorded a tally of all butterfly species observed at each site.

No Dakota skippers were observed during occupancy surveys in 2023 or 2024. During the 2023 occupancy surveys, 21 species of butterflies were observed within the targeted habitat polygons, and 20 species of butterflies were during the 2024 survey effort.

In 2024, only two visits to each polygon occurred; a third visit was not conducted due to the lack of high-quality habitat. The highest quality areas were prioritized during the second site visit to maximize the potential to locate Dakota skippers if present.

According to the USFWS occupancy survey Protocol, follow-up surveys should be conducted next year since there were no positive detections within the proposed areas of impact(s). Furthermore, surveys will also be required in the habitat documented in Project areas added following the 2024 flight period.

The closest designated critical habitat to the Project Corridor is more than 10 miles away.

6.11.1.6 Bald Eagle

Bald eagles may occur in North Dakota as breeders, winter residents, migrants or year-round residents. In North Dakota, the key nesting areas and primary range are the Missouri River system including Lake Sakakawea, the Heart River, Cannonball River, Sheyenne River, Red River, Souris River, and the Devils Lake basin. Bald eagles can also nest in areas not considered traditional nesting habitat, such as small stands of large cottonwood trees completely surrounded by cropland or grassland. The Study Area is located within the secondary range of the key nesting areas (Dyke et al., 2015).

During the non-breeding season bald eagles will concentrate near large bodies of water where the water remains unfrozen and will roost up to 20 miles from foraging sites, depending on abundance of prey (Buehler, 2000). The largest large body of water within the Study Area is Nelson Lake.

6.11.1.7 Golden Eagle

Golden eagles may occur in North Dakota as breeders, winter residents, migrants or year-round residents (NDGFD, 2015). Golden eagles are most commonly associated with open and semi-open habitats such as shrublands, grasslands, woodland-brushlands, and coniferous forests as well as in farmland and riparian habitats. In North Dakota the golden eagle primary range for nest site selection is along the badlands and Lake Sakakawea breaks. Golden eagles in North Dakota nest mainly west of the Missouri River (Dyke et al., 2015).

6.11.2 Impacts and Avoidance/Minimization Measures

To minimize impacts to threatened and endangered species, the Applicants will implement mitigation measures in the list below. No irreversible damage to rare or unique animal or plant species is anticipated. The Applicants will implement the following mitigation measures for the Project:

- Standard measures to minimize avian collision risk with overhead transmission lines, as outlined in the Avian Power Line Interaction Committee ("APLIC") *Reducing Avian Collisions with Power Lines* (APLIC, 2012), will be examined and appropriate measures will be developed in coordination with applicable state and federal agencies.

- Adequate raptor proofing designs, as described in the APLIC *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC, 2006), will be implemented on the structures in coordination with applicable state and federal agencies.

- Holes that are drilled or excavated for pole placement or foundation construction and left unattended overnight will be marked and secured with temporary fencing and plywood covers to reduce the potential for livestock and wildlife entering the holes and for public safety.

6.11.2.1 Whooping Crane

Power lines represent a documented collision mortality risk for whooping cranes (Stehn and Wassenich, 2008). In accordance with USFWS recommendations, the Project will minimize direct impacts to and span wetlands to the extent possible. Standard measures to minimize avian collision risk with overhead transmission lines, as outlined in the APLIC *Reducing Avian Collisions with Power Lines* (APLIC, 2012), will be examined and appropriate measures will be developed in coordination with applicable state and federal agencies. In addition, per USFWS recommendations, construction crews will be educated on how to avoid disturbance if whooping cranes occur in the Project area during construction. No mitigation is anticipated.

6.11.2.2 Piping Plover

The piping plover's preferred nesting habitat is limited to sandy or gravelly beaches and sandbars or alkaline wetlands, which do not occur within the Project Corridor. Therefore, impacts to the piping plover are not anticipated. No mitigation is anticipated.

6.11.2.3 Red Knot

The species is known to occur in Oliver County; however, there are no stopover sites consistently used by red knots in North Dakota. With the absence of preferred stopover habitat, impacts to the red knot are not anticipated. No mitigation is anticipated.

6.11.2.4 Dakota Skipper

Suitable habitat for Dakota skippers is present within the Project Corridor as was identified during field surveys in 2022, 2023, and 2024. The Applicants have designed the Project so that suitable Dakota skipper habitat will be avoided by Project activities and facilities. No mitigation is anticipated.

6.11.2.5 Bald and Golden Eagle

The transmission lines will be outfitted with bird flight diverters following APLIC guidelines, which will also increase visibility of the lines for large raptors such as eagles, thereby reducing collision risk with the transmission lines. Therefore, the impacts of the Project on eagles are likely to be low. No mitigation is anticipated.

7.0 FACTORS CONSIDERED

As previously listed in Table 3.5-1 above, the North Dakota Energy Conversion and Transmission Facility Siting Act lists 11 factors to guide the NDPSC in the evaluation and designation of the site of the facility (NDCC Section 49-22-09).

7.1 PUBLIC HEALTH AND WELFARE, NATURAL RESOURCES, AND THE ENVIRONMENT

The preceding sections discuss the research and investigations relating to the effects of the Project on public health and welfare, natural resources, and the environment. These effects and the proposed mitigation to minimize these effects are summarized in Section 6.0 above.

7.2 TECHNOLOGIES TO MINIMIZE ADVERSE ENVIRONMENTAL EFFECTS

The Applicants will use the most current technologies that minimize impacts to the environment. The Project will be designed and constructed according to APLIC (2012) standards to limit potential impacts to raptors, bat, and avian species.

7.3 POTENTIAL FOR BENEFICIAL USES OF WASTE ENERGY

This factor is not applicable to the Project. No waste energy is produced by a transmission line.

7.4 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Unavoidable adverse environmental effects are described for each resource area in Section 6 above. The Project is expected to permanently impact approximately 52 acres which will not be available for other uses. Additional unavoidable effects include visual effects and sound and air emissions related to construction; however, these will be temporary in nature.

7.5 ALTERNATIVES TO PROPOSED SITE

Other alternatives were considered for the Project as described in Section 2.2 above. The Applicants believe that the Project is the only viable route alternative based on available land and proximity to existing infrastructure, and that it is the most direct route that also minimizes impacts on the exclusion, avoidance, selection, and policy criteria identified in NDAC Section 69-06-08-02.

7.6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF NATURAL RESOURCES

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 use or destruction of a specific resource that cannot be replaced within a reasonable timeframe. There are few commitments of resources associated with this Project that are irreversible and irretrievable, but these include those resources primarily related to construction.

Labor and natural resources will be used in the fabrication and preparation of construction materials. These materials are usually not retrievable. Construction resources that will be used include aggregate resources, concrete, steel, and hydrocarbon fuel. During construction, vehicles will be traveling to and from the site, using hydrocarbon fuels. These resources are not in short supply, and their use will not have an adverse effect on the availability of these resources. In addition, the

anticipated benefits of the Project will balance the irretrievable commitment of resources resulting from the construction of the Project.

7.7 DIRECT AND INDIRECT ECONOMIC IMPACTS

Direct and indirect economic impacts are discussed in sections 1.12, 3.9, and 6.2 above. The Project is expected to have net positive direct and indirect economic benefits through improvements in efficiency, reliability, and longevity for the local electric transmission system.

7.8 EXISTING DEVELOPMENT PLANS OF THE STATE, LOCAL GOVERNMENT, AND PRIVATE ENTITIES AT OR IN THE VICINITY OF THE SITE

No conflicts are anticipated with existing state and local government and private entities' development plans.

7.9 EFFECT OF SITE ON CULTURAL RESOURCES

In consultation with the SHSND and as described in Section 6.4 above, the Applicants have conducted surveys and identified eligible, potentially eligible, and unevaluated cultural resources within the Project Route, and have designed the Project to avoid impacts to the identified resources.

7.10 EFFECT OF SITE ON BIOLOGICAL RESOURCES

Detailed discussion of potential impacts and proposed mitigation measures on biological resources is provided in Section 6.11 above. The Project will be designed and constructed following APLIC (2012) recommendations to minimize the risk of electrocution for raptor, bat, and avian species.

7.11 AGENCY COMMENTS

Agency coordination and potential permits/approvals are discussed throughout this application, including in Section 8.0 and Section 9.0, respectively. A copy of agency response letters and documentation of other agency communications are included in Appendix E. Agency communications of note are summarized below.

North Dakota Game and Fish Department: NDGFD received a Project introduction letter in August of 2023 and responded to Minnesota Power in a letter dated August 28, 2023. In that letter, NDGFD stated that "(w)e do not believe this project will have any significant adverse effects on wildlife or wildlife habitat provided these recommendations are implemented where appropriate and disturbed areas are reclaimed to pre-project conditions." Minnesota Power contacted NDGFD by email on May 20, 2024, and held a video conference call with agency staff on June 4, 2024. NDGFD and Minnesota Power discussed the Project and impacts on potential Dakota skipper habitat. Notes from this meeting are included Appendix E.

State Historical Society of North Dakota: SHSND received a Project introduction letter in August of 2023. Minnesota Power contacted SHSND by email on May 20, 2024, and held a video conference call with agency staff on May 24, 2024. SHSND and Minnesota Power discussed that there is no federal Section 106 jurisdiction over the Project, and that the Project's revised archaeology survey report was under review and a response could be expected in mid-June. Notes from this meeting are included Appendix E.

United States Fish and Wildlife Service: USFWS received a Project introduction letter in August of 2023. Minnesota Power contacted USFWS by email on May 20, 2024, and held a video conference call with agency staff on May 23, 2024. Minnesota Power provided updates on the Project's environmental field studies, including Dakota skipper habitat and presence/absence surveys. The Project conducted Dakota skipper habitat and presence/absence surveys in 2023 and 2024, along with habitat surveys of the project design change areas. The 2023 surveys were negative for the presence of Dakota skipper.

In response to a suggestion from USFWS staff, Minnesota Power will use the Neimeth Model to determine the potential for whooping crane presence in the Project area. Construction crews will be educated on how to avoid disturbance if whooping cranes occur in the Project area during construction. The Project will prepare a comprehensive summary of investigations, studies, and findings at the completion of 2024 Dakota skipper field surveys and will submit the summary, with a recommendation regarding the Project's compliance with the Endangered Species Act, to the USFWS for the Project record. The USFWS indicated that they will not be able to provide concurrence on the comprehensive summary because there is no federal action requiring Section 7 consultation; therefore, no regulatory mechanism for concurrence. Notes from this meeting are included Appendix E.

United States Air Force, Minot Air Force Base: Minot AFB received a Project introduction letter in August of 2023 and responded to Minnesota Power by email on August 8, 2023. In that email, Minot AFB requested design details for the Project, specifically the heights of the proposed structures. Minnesota Power contacted Minot AFB by email on May 20, 2024 to request a meeting, and provided additional information regarding proposed transmission line structure heights on May 31, 2024. In response, Sam Warren, the Community Planner at Minot AFB, requested that Minnesota Power submit a review request to the Department of Defense Clearing House to receive project review from multiple agencies. On June 7, 2024, Minnesota Power submitted an Informal Review Request Form to the Department of Defense Clearing House. On August 29, 2024, the Department of Defense Clearing House indicated that the Project will have minimal impact on military operations conducted in the area. Copies of these communications are included Appendix E.

8.0 PUBLIC AND AGENCY COORDINATION

The Applicants and their representatives contacted local, state, and federal agencies including those listed in Section 69-06-01-05 of the NDAC to request assistance in identifying concerns or issues within the Study Area. The Applicants will continue to meet with various federal, state and county officials as the Project moves forward and will secure all federal, state and local permits and other approvals prior to construction. The Project notification letters dated August 2, 2023, included a description of the Project and a map of the Study Area. Table 8.0-1 below summarizes the agency notification letter sent by the Applicants and the responses and correspondence to date. Appendix E includes agency notification letters, emails, and correspondence received as of November 2024. Table 8.0-1 and Appendix E are organized by the order in which the agency appears in Section 69-06-01-05 of the NDAC.

Table 8.0-1

Summary of Agency Comments from Applicant's Agency Notification Letters and Other Correspondence

Agency	Comment Date	Comment Summary	Section Addressed
North Dakota Aeronautics Commission (NDAC)	NA	No response	NA
North Dakota Attorney General	NA	No response	NA
North Dakota Department of Agriculture	NA	No response	NA
North Dakota Department of Health	NA	No response	NA
North Dakota Department of Human Services	NA	No response	NA
North Dakota Department of Labor and Human Rights	NA	No response	NA
North Dakota Department of Career and Technical Education	NA	No response	NA
North Dakota Department of Commerce	NA	No response	NA
Energy Infrastructure and Impact Office	NA	No response	NA
North Dakota Game and Fish Department (NDGFD)	August 28, 2023	The Department manages the Wilbur Boldt Wildlife Management Are and a Special Use Permit would be required if this land will be impacted. They do not believe the project will have significant adverse effects on wildlife or wildlife habitat	6.7
North Dakota Industrial Commission	NA	No response	NA
Office of Governor Doug Burgum	NA	No response	NA
North Dakota Department of Transportation (NDDOT)	August 17, 2023	NDDOT indicated the Project should have no adverse effect on the NDDOT highways	6.2
State Historical Society of North Dakota	September 5, 2023	They recommend a Class III survey of cultural resources.	6.4
North Dakota Indian Affairs Commission	NA	No response	NA
Job Service North Dakota	NA	No response	NA
North Dakota Department of Trust Lands	August 7, 2023	NDDTL provided a list of surface tracts they manage that are located near the Proposed Project Corridor. Tracts are located outside of the Study Area.	6.5

Table 8.0-1

Summary of Agency Comments from Applicant's Agency Notification Letters and Other Correspondence

Agency	Comment Date	Comment Summary	Section Addressed
North Dakota Parks and Recreation Department (NDPRD)	August 21, 2023	The Project does not appear to affect properties NDPRD owns, leases, or manages and does not appear to affect properties protected under Section 6(f) of the Land and Water Conservation Fund. Based on a review of the North Dakota Natural Heritage biological conservation database, only one known plant species of concern has been documented or immediately adjacent to the Project site.	6.7
Natural Resources Conservation Service	August 8, 2023	NRCS has a major responsibility with the Farmland Protection Policy Act (FFPA) in documenting conversion of prime farmland. The Project is not supported by federal funding; therefore, FFPA does not apply	NA
North Dakota Department of Water Resources	August 30, 2023	There are no FEMA floodplains. The DWR requests that they be notified if impacts are anticipated to water resources. A permit for water appropriation is not necessary. If an observation well is encountered, please contact the DWR.	6.10
United States Department of Defense (DoD)	NA	No response	6.2
United States Fish and Wildlife Service	NA	No response	NA
	NA	No response	
United States Army Corps of Engineers (USACE)	August 14, 2023	A U.S. Army Corps of Engineers Section 404 permit may be required for your project	6.10
Federal Aviation Administration (FAA)	NA	No response	6.2.2
Oliver County	NA	No response	3.7
	NA	No response	
	NA	No response	
North Dakota Transmission Authority (NDTA)	NA	No response	NA
North Dakota Pipeline Authority	NA	No response	NA
North Dakota Department of Environmental Quality (NDDEQ)	August 17, 2023	NDDEQ provided the follow comments: 1) care is to be taken during construction activities near any water of the state 2) projects disturbing one or more acres are required to have a discharge stormwater permit 3) the project overlies the Square Butte Creek surficial aquifer which is a sensitive groundwater area and within three non-community wellhead protection areas. Care should be taken to avoid spills. 4) All solid waste must be managed and transported in accordance with the state's solid and hazardous waste rules. 5) Polychlorinated biphenyls (PCBs) waste must be handled, stored, and disposed of properly. In addition, they believe the Proposed Project is consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota	5.8 6.3 6.7 6.7 NA
North Dakota Geological Survey	NA	No response	NA
North Dakota Forest Service	NA	No response	NA
Bureau of Land Management (BLM)	NA	No response	NA
Military Aviation and Installation Assurance Siting Clearinghouse (Clearinghouse)	NA	No response	N/A
91st Missile Maintenance Squadron	NA	No response	N/A

Table 8.0-1

Summary of Agency Comments from Applicant's Agency Notification Letters and Other Correspondence

Agency	Comment Date	Comment Summary	Section Addressed
Minot Air Force Base (AFB)	August 8, 2023	Sections within the Study Area are within a military training route for aircraft and they would need more detail to make sure the project will not interfere with this route. They requested more detail in what the project will be upgrading specifically with heights of structures. On August 29, 2024, the Department of Defense Clearing House indicated that the Project will have minimal impact on military operations conducted in the area.	6.2
Grand Forks AFB	NA	No response	6.2
National Telecommunications and Information Administration (NTIA)	NA	No response	NA

9.0 POTENTIAL PERMITS/APPROVALS

Table 9.0-1 below outlines the federal, state, and county permits or approvals that have been identified as potentially required for the construction and operation of the Project. Permits dependent on the final Project layout will be sought after receiving NDPSC approval, but prior to construction. Documentation of related agency correspondence is included in Appendix E: Agency Correspondence.

TABLE 9.0-1

Potential Permits and Approvals Required for Construction and Operation

Agency	Permit or Approval	Status[a]	Applicability to Phase[b]	Requirement
FEDERAL APPROVALS				
United States Army Corps of Engineers	Section 404 CWA permit	3	P2	Required if dredging or filling of waters of the U.S.
	Section 10 Rivers and Harbors Act permit	N/A		Required for work in or affecting Section 10 waters
Federal Aviation Administration	Form 7460-1, Notice of Proposed Construction	N/A		Required for construction or alteration of structures higher than 200 feet Above Ground Level, structures near airports, or siting within line of sight of radar of an air defense facility.
U.S. Environmental Protection Agency	Spill Prevention, Control, and Countermeasure Plan	3	P1/P2	Required for aboveground oil storage with 1,320 gallons
U.S. Fish and Wildlife Service	Section 7, Endangered Species Act	3	P2	Required if the Project has a federal nexus. Consultation is the responsibility of the lead federal agency.
U.S. Fish and Wildlife Services	Section 9, Endangered Species Act	1	P1/P2	Compliance with Section 9 of the ESA is mandatory. Without a federal nexus, no "unauthorized take" can occur without a Habitat Conservation Plan.
U.S. Fish and Wildlife Service	Special Use Permit	N/A		Required for temporary disturbances to USFWS Grassland Easements/Wetland Easements (basins).
State Historical Society of North Dakota	Section 106, National Historic Preservation Act (NHPA) Compliance	N/A		Required for any projects that receive federal funding, permits, or approvals.
STATE OF NORTH DAKOTA				
North Dakota Public Service Commission	Certificate of Site Compatibility and Route Permit Transmission Facility	2	P1/P2	Required for construction of transmission facility (transmission line greater than 115-kV and one mile or longer).
State Historical Society of North Dakota	Concurrence with Effect Determinations	1	P1/P2	Consultation required in connection with other agency permitting requirements, such as the NDPSC.
North Dakota Department of Environmental Quality	National Pollutant Discharge Elimination System General Permit for Stormwater Discharge Related to Construction (includes SWPPP)	3	P1/P2	Required for activities disturbing of over one acre of land; stormwater pollution prevention plan must be prepared.
North Dakota Department of Environmental Quality	401 Water Quality Certification	3		Required in conjunction with Section 404 permit for filling jurisdictional WOTUS. Coverage is automatic under Nationwide permits
North Dakota Highway Patrol	Over Size/Overweight Permit(s)	3	P1/P2	Required for hauling oversized/overweight loads on State Highways.

TABLE 9.0-1

Potential Permits and Approvals Required for Construction and Operation

Agency	Permit or Approval	Status[a]	Applicability to Phase[b]	Requirement
North Dakota Department of Transportation	Road Approach/Access Permit(s)	3	P1/P2	Required for construction of access roads from State Highways.
	Utility Permit(s)	3	P1/P2	Required to install electrical lines within State-owned right-of-way.
North Dakota Department of Water Resources	Drainage Permit	N/A		The Project will not drain a pond, slough, lake or sheetwater, or any series thereof, that has a watershed area (*i.e.*, drainage area) of 80 acres or more.
	Conditional or Temporary Permit for water appropriation	N/A		No water appropriation required.
	Water Permit	N/A		Required if drilling a well.
OLIVER COUNTY				
Oliver County	Conditional Use Permit	1	P1/P2	Electrical Power transmission lines and Electrical Substations are allowed as Conditional Use within lands zoned for Agriculture. Conditional uses will be allowed after review, public hearings, and approval by the Planning and Zoning Commission and the Board of Commissioners in accordance with district regulations and procedures established in Section 17.3 of the Oliver County Revised Zoning Ordinance (2016).
Oliver County	Building Permit(s)	3		May be required.
Oliver County	Floodplain Development Permit(s)	N/A		N/A
Oliver County	Temporary Use Permit(s)	3		May be required for temporary uses/facilities associated with Project construction.
Oliver County	Utility Road Crossing Permit(s)	3	P1/P2	May be required to install electrical lines on/across county road ROW.
Oliver County	Approach Permit(s)	3	P1/P2	May be required for the installation of approaches/driveways abutting county road ROW.
Oliver County	Transportation Permit(s) (Oversize/Overweight Permit(s))	3		May be required to transport oversize/overweight loads.
Oliver County	Temporary Approach, Road Improvements/Modifications and/or Utility Permit(s)	3		May be required for temporary facilities/modifications affecting Oliver County roadways.
ORGANIZED TOWNSHIP(S)				
Organized Township(s)	Utility Road Crossing Permit(s)	3		May be required to install electrical lines on/across township road ROW.
Organized Township(s)	Approach Permit(s)	3		May be required for the installation of approaches/driveways abutting township road ROW.
Organized Township(s)	Transportation Permit(s) (Oversize/Overweight Permit(s))	3		May be required to transport oversize/overweight loads.

[a] Status Explanation: 1 Completed and approved, 2 Applied and/or decision pending, 3 Will obtain prior to activity subject to permit, as needed

[b] P1 Proposed Nelson Lake Substation Phase, P2 Proposed East Oliver Converter Station

10.0 QUALIFICATIONS OF CONTRIBUTORS

The qualifications of each significant contributor involved in the facility site location study and this Application are provided below in Table 10.0-1.

TABLE 10.0-1

Qualifications of Contributors

Name and Project Role	Education and Professional Experience
Daniel McCourtney Strategic Environmental Initiatives Manager ALLETE Inc.	Mr. McCourtney has acted as Minnesota Power's environmental and permitting manager for large capital projects over the last 14 years. Dan has over 24 years in various positions in resource management and environmental compliance. Mr. McCourtney manages a team responsible for permitting and compliance for transmission line, pipeline and renewable electric generation facilities. Dan also manages hydro project relicensing efforts and environmental remediation projects. He has a BS degree in forest management and soil science from the University of Wisconsin-Stevens Point, WI.
Mollie Smith Attorney at Law Frederikson & Byron, P.A	Mollie Smith assists clients with wind farm, transmission line, and pipeline permitting matters in North Dakota, South Dakota, and Minnesota. At the state level, Mollie represents clients in certificate of corridor compatibility, route permit, certificate of site compatibility, and rulemaking proceedings before the North Dakota Public Service Commission; energy facility permit proceedings before the South Dakota Public Utilities Commission; and certificate of need, route permit and site permit proceedings before the Minnesota Public Utilities Commission. At the local level, Mollie advises and assists clients with a variety of permitting-related matters, including obtaining conditional use/special exception permits, variances and subdivision approvals, and participating in zoning ordinance amendment processes. Mollie has a Bachelor of Arts in English from Northern State University, Aberdeen, SD; a Master of Arts in Literature from Colorado State University, Fort Collins, CO; and a Juris Doctor from the University of Minnesota Law School, Minneapolis, MN.
Daniel Flo Project Manager Merjent, Inc	Mr. Flo has over 20 years of experience with regulatory compliance, environmental review, and site and route permitting for a variety of energy development projects including renewable energy generation, electric transmission, oil and gas transmission, and refinery upgrades. Mr. Flo manages teams of specialists performing agency consultation, environmental field surveys, major permitting, environmental review, and construction compliance. Mr. Flo has a JD from Lewis & Clark Law School in Portland, Oregon and a BS in Geography from Minnesota State University, Mankato.
Mandy Bohnenblust Deputy Project Manager Merjent, Inc	Ms. Bohnenblust has over 15 years of experience providing environmental consulting services to energy companies, focusing on project management, local, state, and federal permitting, construction compliance, surveys and consultations for biological resources and protected species. Mandy routinely works on power related projects, including transmission lines, throughout the Midwest. She is trained in Section 7 consultation and consults with state and federal agencies to comply with endangered species laws. She has a Master of Science in Environmental Pollution from Penn State and Bachelor of Science in biology from Truman State University.
Damien Reinhardt Cultural Resources Merjent, Inc.	Mr. Reinhart is an Environmental Consultant with 18 years of experience in consulting and working for federal agencies, focusing on cultural and natural resource management. His expertise includes all facets of cultural resource management, natural resource project management with experience in all levels of NEPA analysis, paleontological services; and project permitting with state and federal agencies. Mr. Reinhart has worked on oil and gas, wind, transmission, fiber optics, and mining projects in North Dakota, South Dakota, Montana, Minnesota, Wisconsin, Iowa, and Nebraska. Mr. Reinhart has nearly a decade of experience working for federal agencies, where he excelled at consultation with Native American tribes, stakeholders, other state and federal agencies, municipalities, and the public regarding compliance with cultural resources, natural resources, land management and recreation laws and standards. He holds a Master of Arts degree in Anthropology from the University of Minnesota, Twin Cities, a Bachelor of Arts in Anthropology from North Dakota State University, an Associate of Arts degree in History from Bismarck State College.

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