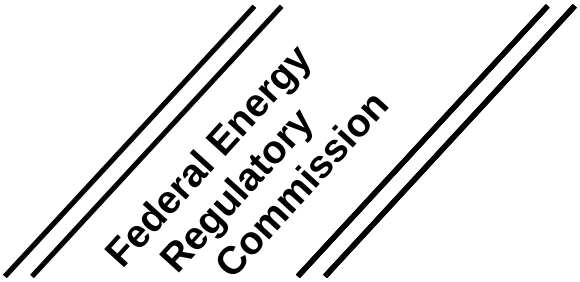

Office of
Energy Projects

September 2017

WBI Energy Transmission, Inc. **Docket No. CP17-257-000**

Valley Expansion Project

Environmental Assessment

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas1
WBI Energy Transmission, Inc.
Valley Expansion Project
Docket No. CP17-257-000

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the Valley Expansion Project (Project), proposed by WBI Energy Transmission, Inc. (WBI Energy) in the above-referenced docket. WBI Energy requests authorization to construct, operate, and maintain new natural gas facilities in Clay County, Minnesota and Cass, Barnes, Stutsman, and Burleigh Counties, North Dakota.

The EA assesses the potential environmental effects of the construction and operation of the Project in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969. The FERC staff concludes that approval of the Project, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The Project includes the following facilities:

- about 37.3 miles of 16-inch-diameter pipeline in Clay County, Minnesota and Cass County, North Dakota;
- a new interconnect at the tie in with the existing Viking Gas Transmission Company Pipeline in Clay County, Minnesota;
- a new 3,000-horsepower compressor station to tie into WBI Energy's existing Mapleton Town Border Station and Line Section No. 24 in Cass County, North Dakota;
- a new regulator station in Barnes County, North Dakota;
- replacement of the existing Jamestown Town Border Station in Stutsman County, North Dakota; and
- replacement of the Apple Valley Town Border Station in Burleigh County, North Dakota.

The FERC staff mailed copies of the EA to federal, state, and local government representatives and agencies; elected officials; Native American tribes; potentially affected landowners and other interested individuals and groups; and newspapers and libraries in the Project area. In addition, the EA is available for public viewing on the FERC's website (www.ferc.gov) using the eLibrary link.

A limited number of copies of the EA are available for distribution and public inspection at:

Federal Energy Regulatory Commission
Public Reference Room
888 First Street NE, Room 2A
Washington, DC 20426
(202) 502-8371

Any person wishing to comment on the EA may do so. Your comments should focus on the potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this Project, it is important that we receive your comments in Washington, DC **on or before October 20, 2017.**

For your convenience, there are three methods you can use to file your comments with the Commission. In all instances, please reference the Project docket number (CP17-257-000) with your submission. The Commission encourages electronic filing of comments and has expert staff available to assist you at 202-502-8258 or FercOnlineSupport@ferc.gov.

(1) You can file your comments electronically using the eComment feature located on the Commission's website (www.ferc.gov) under the link to Documents and Filings. This is an easy method for submitting brief, text-only comments on a project;

(2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to Documents and Filings. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

(3) You can file a paper copy of your comments by mailing them to the following address:

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR section 385.214).[1] Only intervenors have the right to seek rehearing of the Commission's decision. The Commission grants affected landowners and others with environmental concerns intervenor status upon showing good cause by stating that they have a clear and direct interest in this proceeding which no other party can adequately represent. **Simply filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered.**

Additional information about the Project is available from the Commission's Office of External Affairs, at **(866) 208-FERC,** or on the FERC website (www.ferc.gov) using the eLibrary link. Click on the eLibrary link, click on "General Search," and enter the docket number excluding the last three digits in the Docket Number field (in other words, CP17-257). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659. The eLibrary link also provides access to the texts of formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to www.ferc.gov/docs-filing/esubscription.asp.

[1] See the previous discussion on the methods for filing comments.

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TECHNICALABBREVIATIONS AND ACRONYMS

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
AQCR	air quality control regions
ATWS	additional temporary workspace
CAA	Clean Air Act
CFR	Code of Federal Regulations
Certificate	Certificate of Public Convenience and Necessity
CO	carbon monoxide
CO_2	carbon dioxide
CO_{2e}	carbon dioxide equivalents
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
Diversion Authority	Fargo-Moorhead Diversion Authority
dBA	decibels on the A-weighted scale
DOT	U.S. Department of Transportation
Dth/d	dekatherms per day
EA	Environmental Assessment
EI	Environmental Inspector
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
Felton Prairie IBA	Felton Prairie Complex Important Bird Area
FERC	Federal Energy Regulatory Commission
FEMA	Federal Emergency Management Agency
FMADC	Fargo-Moorhead Area Diversion Channel
FMADP	Fargo-Moorhead Area Diversion Project
FSA	Farm Service Agency
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gases
GIS	geographic information system
GWP	global warming potential
HAP	hazardous air pollutant
HCA	high consequence area
HDD	horizontal directional drilling
hp	horsepower
JWRD	Cass County Joint Water Resource District
L_{dn}	day-night sound level
L_{eq}	24-hour equivalent sound level
MBS	Minnesota Biological Survey

MDNR	Minnesota Department of Natural Resources
MOU	Memorandum of Understanding
MP	milepost
MPCA	Minnesota Pollution Control Agency
NAAQS	National Ambient Air Quality Standards
NDDH	North Dakota Department of Health
NDGF	North Dakota Game and Fish
NDSWC	North Dakota State Water Commission
NEPA	National Environmental Policy Act
NGA	Natural Gas Act
NHPA	National Historic Preservation Act
NLEB	northern long-eared bat
NNSR	nonattainment area new source review
NOI	Notice of Intent to Prepare an Environmental Assessment for the Planned Valley Expansion Project and Request for Comments on Environmental Issues
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
NSPS	New Source Performance Standards
NSR	New Source Review
OEP	Office of Energy Projects
OTP	Otter Tail Power Company
PEM	palustrine emergent
PHMSA	Pipeline and Hazardous Materials Safety Administration
Plan	FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan*
Procedures	FERC's *Wetland and Waterbody Construction and Mitigation Procedures*
Project	Valley Expansion Project
PSD	Prevention of Significant Deterioration
Red Lake Band	Red Lake Band of Chippewa Indians
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Office(r)
SPCC Plan	*Spill Prevention, Control, and Countermeasure Plan*
SWPPP	Stormwater Pollution Prevention Plan
TBS	town border station
THPO	Tribal Historic Preservation Office
Treaty	Red Lake and Pembina Treaty of 1863

UDP	*Plan for Unanticipated Discovery of Historic Properties or Human Remains during Construction*
USACE	U.S. Army Corps of Engineers
USC	Upper Sioux Community
USGS	U.S. Geological Survey
Viking	Viking Gas Transmission Company
VOC	volatile orgranic compounds
WBI Energy	WBI Energy Transmission, Inc.
WPA	Wellhead Protection Area
WMA	Wildlife Management Area

A PROPOSED ACTION

A.3 INTRODUCTION

The staff of the Federal Energy Regulatory Commission (Commission or FERC) prepared this environmental assessment (EA) to assess the environmental impacts of the proposed Valley Expansion Project (Project). On April 26, 2017, WBI Energy Transmission, Inc. (WBI Energy) filed an application with the Commission pursuant to Section 7(c) of *the Natural Gas Act of 1938* (NGA), as amended, (Docket No. CP17-257-000), seeking authorization to construct, install, operate, and maintain about 37.3 miles of 16-inch-diameter new natural gas pipeline, a new interconnect site at the tie-in with the existing Viking Gas Transmission Company's (Viking) pipeline, a new 3,000-horsepower (hp) compressor station, a new regulator station, and to replace two existing town border stations (TBS)[1] for the purpose of transporting natural gas in interstate commerce. Prior to filing its application, WBI Energy participated in the Commission's pre-filing process for this Project under Docket No. PF16-10-000.

We[2] prepared this EA in compliance with the requirements of the *National Environmental Policy Act of 1969* (NEPA), the Council on Environmental Quality regulations for implementing NEPA (Title 40 of the Code of Federal Regulations [CFR] 1500-1508 [40 CFR 1500-1508]) and the Commission's implementing regulations under 18 CFR 380.

The assessment of environmental impacts is an integral part of our decision on whether to issue WBI Energy a Certificate of Public Convenience and Necessity (Certificate) to construct and operate the proposed facilities. Our principal purposes in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that would result from the implementation of the proposed action;
- identify and recommend alternatives and specific mitigation measures, as necessary, to avoid and minimize environmental impacts; and.
- facilitate public involvement in the environmental review process.

The EA will be used by the Commission in its decision-making process to determine whether to authorize WBI Energy's proposal.

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[1] A town border station is a facility at which interstate and intrastate pipeline companies sell and deliver natural gas to local distribution companies (Interstate Natural Gas Association of America , 2017)

[2] "We," "us," and "our" refers to environmental staff of the Commission's Office of Energy Projects.

A.2 PROJECT PURPOSE AND NEED

WBI Energy's stated purpose of the Project is to provide additional gas for industrial, commercial, and residential uses that cannot be met by WBI Energy's existing infrastructure. The Project, as proposed, would allow WBI Energy to transport an incremental load of approximately 40,000 equivalent dekatherms per day (Dth/d) through the addition of the pipeline and compression facilities that would tie into WBI Energy's existing system.

Under Section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decision on technical competence, financing, rates, market demand, gas supply, environmental impact, long-term feasibility, and other issues concerning a Project. Approval would be granted if, after consideration of both environmental and non-environmental issues, the Commission finds that the Project is in the public interest.

A.2 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

The topics addressed in this EA include geology and soils; groundwater, surface water, and wetlands; fisheries, vegetation, wildlife, and special status species; cultural resources; socioeconomics; land use and visual resources; air quality and noise; reliability and safety; and cumulative impacts. The EA also assesses the no-action, route, and site alternatives. The EA describes the affected environment as it currently exists, discusses the environmental consequences of the Project, and presents our recommended mitigation measures.

A.2 PUBLIC REVIEW AND COMMENT

On November 23, 2016, we issued a *Notice of Intent to Prepare an Environmental Assessment for the Planned Valley Expansion Project and Request for Comments on Environmental Issues* (NOI). Subsequent to the original issuance of the NOI, we issued an Errata Notice on November 28, 2016 to clarify project location information in the NOI, and on December 28, 2016 we issued a supplemental NOI because the environmental mailing list was not provided copies of the previous NOIs and to extend the public scoping period. The supplemental NOI was mailed to about 340 entities including federal, state, and local officials; Native American groups; agency representatives; potentially affected landowners and other interested individuals; and local libraries and newspapers.

This EA addresses the potential environmental impacts of WBI Energy's Project and the concerns identified by the public in response to the NOI. To date, we have received 11 comment letters in response to the NOI, including six from regulatory agencies, including the North Dakota Department of Health (NDDH), North Dakota State

Water Commission (NDSWC), Minnesota Historical Society, Wild Rice Watershed District, and two from the Cass County Joint Water Resource District (JWRD); one from the Red Lake Band of Chippewa Indians (Red Lake Band); three from landowners ; and one from the Teamsters National Pipeline Labor Management Cooperation Trust. We also received letters from the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Natural Resources (MDNR) providing comments on the draft Resource Reports that were provided for review by WBI Energy. Table A.4-1 summarizes the issues that were raised during the scoping period and notes the section of this EA that addresses the issue.

TABLE A.4-1

Issues Identified During the Public Scoping Process

Issue	EA Section Addressing Issue
General Project Description, Water Resources, Fisheries, and Wetlands	
Permitting requirements for watershed crossings	Sections A.10 and B.3.1
Permitting requirements and construction methods for waterbody crossings	Sections A.8.2.3, A.10, and B.3.2
Permitting requirements for stormwater discharge	Sections A.10 and B.3.4
Impacts on groundwater from spills during construction	Sections A.8 and B.3.1
Flood zone impacts and permitting requirements	Sections A.10 and B.3.2
Request for a third-party monitor to be used during construction.	Section A.8
Reseeding and species review requirements	Sections B.4.2 and B.4.4
Cultural Resources	
Section 106 consultation between FERC and Minnesota SHPO	Section A.4
Red Lake Band concerns about cultural resources on lands potentially encumbered by the 1863 “Treaty of the Old Crossing”	Sections B.6.2 and C.3
Socioeconomics	
Red Lake Band concerns about land valuation impacts on lands potentially encumbered by the 1863 “Treaty of the Old Crossing”	Section B.7
Economic impact of an accidental release or other incident	Section B.7
Land Use, Recreation, and Aesthetics	
Project impacts on the Fargo-Moorhead Area Diversion Project	Section B.5.2
Air and Noise	
Fugitive dust emissions	Section B.8.1.3
Construction noise calculations and noise impacts	Section B.8.2.1
Alternatives	
Route variations proposed by the Red Lake Band of Chippewa Indians	Section C.3
Suggested route variation to avoid crossing Maple and Sheyenne Rivers	Section C.3
Landowner request to keep the proposed route on the west side of the Sheyenne River	Section C.3

Minnesota SHPO = Minnesota State Historic Preservation Office

A.2 PROPOSED FACILITIES

A.5.1 New and Modified Facilities

The Project would include 37.3 miles of 16-inch-diameter natural gas pipeline in Clay County, Minnesota and Cass County, North Dakota; interconnect facilities at the tie-in with the existing Viking pipeline in Clay County, Minnesota; and a new 3,000-hp compressor station (Mapleton Compressor Station) in Cass County, North Dakota. WBI Energy also would construct a new regulator station (Sanborn Regulator Station) in Barnes County, North Dakota, and replace two TBSs in Stutsman (Jamestown TBS) and Burleigh (Apple Valley TBS) Counties, North Dakota. New valve settings would be installed at midway points along the pipeline; one valve setting would be in Clay County, Minnesota and the other would be in Cass County, North Dakota. The general location of the facilities is shown in figure A.5.1-1 and detailed maps are provided in appendix A.

A.5.2 Section 2.55 (a) and (b) Activities

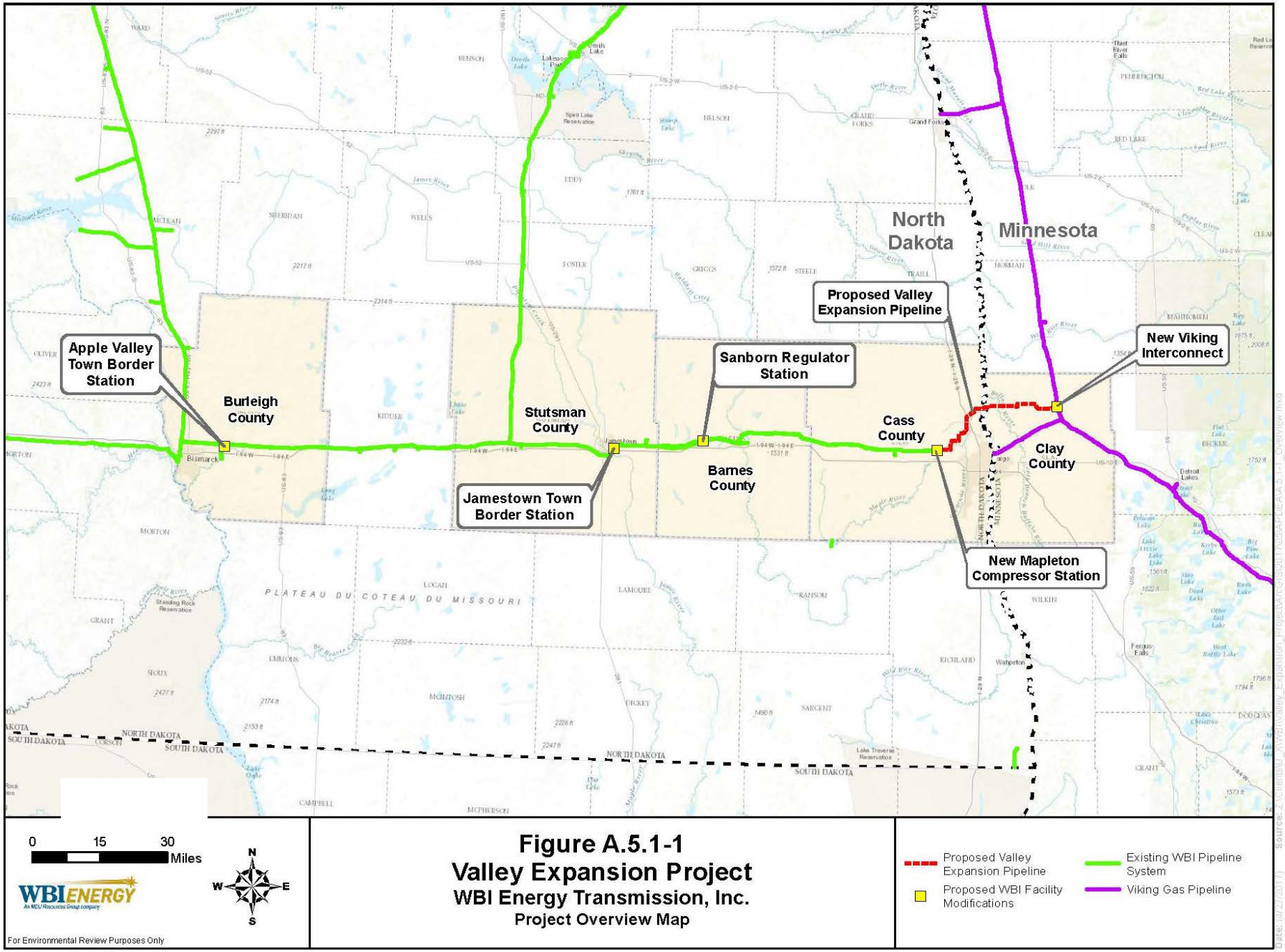
The types of construction activities allowed under 18 CFR section 2.55(a) of the Commission's regulations include auxiliary and appurtenant installations to a previously authorized or proposed system to obtain more efficient or economical operations. The types of facilities allowed under 18 CFR section 2.55(b) of the Commission's regulations are replacement facilities that involve only basic maintenance or repair to relatively minor facilities, where the existing certificated right-of-way or previously approved workspaces used to construct the original facilities are sufficient for the replacement activities. Under both section 2.55 (a) and (b), the work must comply with all environmental restrictions of the original Certificate as well as other applicable federal and state laws.

As part of the Project, WBI Energy would install, replace, or modify other facilities within existing facility footprints in accordance with section 2.55 (a) and (b) of the Commission's regulations. Table A.5.2-1 provides a listing of these facilities; however, because the work at these facilities would be limited to the existing facility area and previously certificated workspaces, and no new environmental impacts are anticipated, we did not consider these facilities further in this EA.

TABLE A.5.2-1

Section 2.55 (a) and (b) Auxiliary and Replacement Facilities for the Valley Expansion Project

Facility	County/State	Description
Buffalo Town Border Station	Cass, ND	Replace existing regulators.
Tharaldson Ethanol – Casselton	Cass, ND	Minor regulator, orifice or spring, and set-point modifications and replacement of the existing relief valve.
Tappen Town Border Station	Kidder, ND	Minor regulator, orifice or spring, and set-point modifications.
Sheyenne Town Border Station	Eddy, ND	Minor regulator, orifice or spring, and set-point modifications.
Bismarck Compressor Station Measurement	Burleigh, ND	Replacement of the North Bismarck delivery station meter.


North Dakota
Minnesota
Proposed Valley Expansion Pipeline
New Viking Interconnect
Apple Valley Town Border Station
Sanborn Regulator Station
Burleigh County
Stutsman County
Cass County
Clay County
Barnes County
Jamestown Town Border Station
New Mapleton Compressor Station
PLATEAU DU COTEAU DU MISSOURI
NORTH DAKOTA
SOUTH DAKOTA
0 15 30 Miles
N
W E
S
WBI ENERGY
An MDU Resources Group company
For Environmental Review Purposes Only
Figure A.5.1-1
Valley Expansion Project
WBI Energy Transmission, Inc.
Project Overview Map
Proposed Valley Expansion Pipeline
Proposed WBI Facility Modifications
Existing WBI Pipeline System
Viking Gas Pipeline

A.2 LAND REQUIREMENTS

Construction of the Project would disturb about 525.5 acres of land, including 507.3 acres for construction of the pipeline and 18.2 acres for construction of the aboveground facilities. The total new acreage required for operation of all Project facilities is about 233.2 acres, including 224.4 acres for the pipeline and 8.8 acres for the aboveground facilities. WBI Energy has requested to use a 100-foot-wide construction right-of-way due to a variety of Project and site-specific considerations in the Red River Valley, and to provide a safe work environment and facilitate restoration, maintain soil productivity, and minimize potential impacts on crop yields. The following subsections provide details about the land requirements for construction and operation of the pipeline and aboveground facilities for the Project.

A.6.1 Pipeline Facilities

WBI Energy's construction of the pipeline would include a typical 100-foot-wide corridor, including a new 50-foot wide permanent right-of-way, and is needed to provide adequate space for personnel, equipment, materials, and spoil storage. Construction right-of-way configurations are provided in appendix B.

WBI Energy would require additional temporary workspace (ATWS) of varying widths adjacent to the construction workspace in certain locations for specialized construction methods, such as wetland and waterbody crossings, pipeline crossovers, and road or railroad crossings. In addition, three contractor laydown yards of various sizes would be used to store pipe and materials and to stage and maintain equipment needed for construction.

WBI Energy would use 27 existing and 10 new temporary access roads to access the construction work areas. The access roads would be primarily existing roads, driveways, and farm access points, but also include new access routes, that range from 20 to 70 feet wide. WBI Energy would also use travel lanes, typically 45 feet wide, for equipment to cross ditches and other features (such as roads) that would be intersected by the pipeline route. No modifications are currently planned for use of the existing access roads. However, improvements (for example, grading, adding gravel) may be conducted where necessary to facilitate ingress and egress of equipment and vehicles, and widening up to 40 feet may be necessary to accommodate the turning radius of some trucks.

Table A.6.1-1 summarizes the approximate land requirements for construction and operation of the pipeline facilities. The specific locations and dimensions of the construction workspace, ATWS, access roads, and contractor laydown yards for the pipeline are shown on the maps and aerial photo-based alignment sheets provided in appendix A.

Although WBI Energy has identified areas where extra workspace would be required, additional or alternative areas could be identified in the future due to changes in site-specific construction requirements. WBI Energy would be required to file information on each of those areas for our review and approval prior to use.

TABLE A.6.1-1

Land Requirements for Pipeline Facilities

Facility	Amount	Construction (acres)	New Operation (acres)
Valley Expansion Pipeline [a]	37.3 miles	420.1	224.4
Additional Temporary Workspace	81	55.8	0.0
Access Roads [b]	37	10.8	0.0
Spring Prairie Laydown Yard	1	7.6	0.0
Minnkota Laydown Yard	1	4.5	0.0
Bishop Laydown Yard	1	8.6	0.0
	Pipeline Total	**507.3**	**224.4**

[a] Construction acreage includes the 100-foot-wide temporary workspace required for construction of the pipeline including the operation area. Operation includes the 50-foot-wide permanent right-of-way.

[b] Acreage does not include access roads associated with mainline block valves or other aboveground facilities.

Note: Total numbers may not equal pipeline total sum because of rounding.

A.6.2 Aboveground Facilities

WBI Energy would use about 10.4 acres as temporary workspace for construction of the Mapleton Compressor Station. Following construction, about 6.0 acres would be fenced and maintained for operation of the compressor station, including a new 30-foot-wide by 65-foot-long (0.1 acre) permanent access off of County Road 11 (also known as 163rd Avenue SE). The property outside of the new fence line would continue to be used for agriculture by the adjacent landowner.

WBI Energy would use about 4.9 acres as workspace for its interconnect facilities with Viking, including a new 25-foot-wide by 80-foot-long (0.1 acre) permanent access road off of County Road 108 (also known as 140th Avenue N). Following construction of these facilities, WBI Energy would fence and maintain about 0.5 acre for operational purposes and about 1.2 acres for operation of its measurement facilities. The remaining 3.2 acres would be restored to preconstruction conditions and allowed to revert to previous uses.

The two mainline block valves that would isolate pipeline segments for safety, operations, and maintenance purposes, and would each be constructed within a 100-foot-wide square area centered along the pipeline route and operated within the 50-foot-wide permanent right-of-way. Each valve site would be raised to the height of the adjoining county road, resulting in a 50-foot-wide square pad centered on the permanent pipeline easement with 4:1 side slopes tapering to a 100-foot-wide square base. This would require less than 0.1 acre of permanent easement outside of the pipeline easement for both valves combined, plus one 25-foot-wide by 185-foot-long (0.1 acre) permanent

access road at milepost (MP) 14.4 and one 25-foot-wide by 30-foot-long (less than 0.1 acre) permanent access road at MP 24.4 to provide access to the valve sites during operation. The area within the permanent pipeline easement would be graveled, fenced, and maintained for each of the mainline block valves, and the slopes would be vegetated or allowed to revert to previous uses.

Construction of the Sanborn Regulator Station, Jamestown TBS, and Apple Valley TBS would require a total of about 2.3 acres during construction and 1.5 acres for operation of new permanent facilities. The Sanborn Regulator Station would be constructed within a 180-foot by 265-foot area (1.1 acres) and the final operational footprint of this facility would be 145-foot by 155-foot area (0.5 acre), including a new 25-foot-wide by 75-foot-long (0.2 acre) permanent access road. The Jamestown TBS would be constructed within a 135-foot by 140-foot area (0.4 acre) and the TBS would be operated within an area measuring 135-feet by 100-feet (0.3 acre). WBI Energy would access the new Jamestown TBS using an existing access road at the TBS site. The Apple Valley TBS would be constructed within a 165-foot by 195-foot area (0.8 acre) and the operational footprint of the TBS would be 100-feet by 165-feet (0.4 acre), including a 30-foot-wide by 215-foot-long (0.1 acre) permanent access road.

Table A.6.2-1 summarizes the land requirements for construction and operation of the compressor station and other aboveground facilities. The limits of the Mapleton Compressor Station and other aboveground facilities, as well as the limits of temporary construction workspace and land required for operation of the facilities, are provided on the maps in appendix A.

TABLE A.6.2-1

Land Requirements for Aboveground Facilities

Facility	Land Required for Construction (acres)	New Land Required for Operation (acres)	Description
Mapleton Compressor Station	10.4	6.0	New 3,000-hp electric-driven compressor unit, and permanent approach
Viking Interconnect	4.9	0.5	Communication, odorization, and auxiliary equipment, and permanent access road
Mainline Block Valves	0.6	0.6	Two new block valves and permanent access roads to each valve site
Sanborn Regulator Station	1.1	0.7	Install new mainline regulators and a new permanent access road
Jamestown Town Border Station	0.4	0.3	Replace entire town border station
Apple Valley Town Border Station	0.8	0.5	Replace entire town border station and construct a new permanent access road
Total	**18.2**	**8.8**	

A.7 CONSTRUCTION SCHEDULE AND WORKFORCE

WBI Energy proposes to begin construction by April 2018 to place the pipeline and aboveground facilities in service by November 1, 2018. WBI Energy would employ revegetation and restoration measures as soon as possible following construction. WBI Energy would conduct inspections to monitor the success of revegetation for a minimum of two growing seasons following construction, or until revegetation is successful.

WBI Energy estimates the duration of construction for the pipeline, the Mapleton Compressor Station, and the mainline block valves would be about 120 days over a period of 5 months. Construction of the Viking Interconnect, Sanborn Regulator Station, Jamestown TBS, and Apple Valley TBS would require up to 20 days per facility. Construction of the Project would generally take place Monday through Saturday, during daylight hours. Activities may extend beyond daylight hours and into Sunday, as necessary, to maintain the project schedule. If horizontal directional drilling (HDD) activities need to occur outside normal daytime working hours, noise mitigation measures would be implemented in accordance with FERC guidelines and as described in section B.8.2.1.

WBI Energy estimates that the total construction workforce required to complete construction of the pipeline and aboveground facilities within the scheduled timeframes would be about 90 workers for the pipeline and the mainline block valves; up to 25 workers for the Mapleton Compressor Station; and up to 15 construction workers for the remaining aboveground facilities.

A.2 CONSTRUCTION, OPERATION, AND MAINTENANCE PROCEDURES

The Project would be designed, constructed, operated, and maintained in accordance with the U.S. Department of Transportation (DOT) *Minimum Federal Safety Standards* in 49 CFR 192. WBI Energy would adopt our *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures)[4] for the Project.

WBI Energy has requested three modifications from section VI.A.6 of the Procedures concerning placement of aboveground facilities in wetlands. WBI Energy also has requested to locate its permanent access roads for the Mapleton Compressor Station and a block valve at MP 14.4 across existing wetlands. These wetlands are associated with roadside ditches that cannot be avoided in accessing each site from nearby public roads, and total less than 0.1 acre of wetland fill. In addition, WBI Energy would place fill in a wetland at the Jamestown TBS that would be needed for

[4] Copies of our Plan and Procedures are available for review on the FERC website (www.ferc.gov) under the environmental guidelines for the natural gas industry at: http://www.ferc.gov/industries/gas/enviro/guidelines.asp.

construction and operation of the facility. Based on our review of the request for these modifications, we have determined that WBI Energy has provided sufficient justification for these changes.

WBI Energy would operate and maintain the proposed facilities in compliance with the Commission's guidance in 18 CFR 380.15, and the maintenance requirements in our Plan and Procedures. Project facilities would be marked and identified in accordance with applicable regulations. In accordance with 49 CFR Part 192, the pipeline would be inspected for leakage as part of scheduled operations and maintenance. WBI Energy also would participate in the local One Call system. These standards are in accordance with the *National Pipeline Safety Act of 1968*, as amended.

In order to minimize potential environmental impacts, WBI Energy has developed the following Project-specific construction and reclamation plans,[5] which we have reviewed and find acceptable:

- HDD Plan and Profile and HDD Site-Specific Plans;
- *Horizontal Directional Drill and Guided Bore Drilling Fluid Monitoring and Operations Plan*;
- *Spill Prevention, Control, and Countermeasures Plan* (SPCC Plan);
- *Noxious Weed Management Plan*;
- *Plan for Unanticipated Discovery of Historic Properties or Human Remains During Construction* (UDP);
- *Plan for Unanticipated Discovery of Paleontological Resources During Construction*; and
- *Fugitive Dust Control Plan*.

WBI Energy would develop a Project-specific *Stormwater Pollution Prevention Plan* (SWPPP) that would incorporate the requirements and best management practices from federal and state permits and our Plan and Procedures.

WBI Energy would use at least one environmental inspector (EI) per spread during construction and restoration, as specified in our Plan. The EI(s) would be on-site during Project construction activities to ensure WBI Energy's compliance with the measures outlined in our Plan and Procedures and the environmental permit requirements from

[5] Copies of WBI Energy's Project-specific construction and reclamation plans have been filed with the Commission and can be viewed on eLibrary at http://www.ferc.gov/docs-filing/elibrary.asp under this docket.

construction through restoration. The EI would have the authority to stop activities that are not in compliance with agency requirements until corrective action has been taken.

WBI Energy would conduct environmental training sessions in advance of construction to ensure that all individuals working on the Project are familiar with the environmental mitigation measures appropriate to their jobs and the EI's authority. WBI Energy also established an Environmental Complaint Resolution Procedure that provides landowners whose properties would be crossed by the Project with directions for identifying and resolving their environmental mitigation problems or concerns. Prior to construction, WBI Energy would provide the resolution procedure to each landowner, including a toll-free telephone number, with instructions on lodging a complaint or questions.

Commission staff would also conduct environmental compliance inspections throughout construction and restoration activities, to confirm compliance with the Commission's orders and confirm that restoration and revegetation are successful.

A.8.1 General Pipeline Construction Sequence

WBI Energy would install the pipeline facilities below ground using conventional construction methods. This typically consists of a sequential process of surveying, clearing, grading, excavating, pipe stringing and bending, welding, lowering-in and backfilling, hydrostatic testing, cleanup, and restoration. Crews working on each stage of construction generally proceed along the pipeline right-of-way in one continuous operation. The entire process would be coordinated to minimize the total time a tract of land would be disturbed and, therefore, exposed to erosion and temporarily precluded from normal use. The activities at any single point would last about 3 to 4 weeks.

A.8.2 Special Pipeline Construction Procedures

In addition to the standard pipeline construction methods discussed above, WBI Energy would implement special construction procedures due to site-specific conditions and to reduce overall Project impacts. Some of these special construction techniques are described below.

A.8.2.1 Horizontal Directional Drill and Guided Bore Methods

The HDD method and guided bore crossing methods are both trenchless methods used to install pipelines across sensitive areas such as wetlands and waterbodies, roads, and other utility crossings to avoid direct impacts on those features. WBI Energy would use the HDD method for crossings that are typically longer and deeper than the guided bore method which is used for relatively short crossings (i.e., less than 500 feet) that are relatively shallow with a small arc bore path. Both methods would consist of drilling a small diameter pilot hole under the sensitive area and enlarging the hole through

successive reaming until it is large enough to accommodate a prefabricated segment of pipe. During the HDD process, drilling and/or reaming the hole, a slurry of drilling mud would be circulated through the drilling tools to lubricate the drill bit, remove drill cuttings, and promote drillhole stability. Drilling mud would primarily consist of water mixed with local soil material or bentonite, a non-toxic, naturally occurring sedimentary clay. The position of the drill head is electronically monitored, and directional corrections are made if needed to maintain the desired alignment. Pipe sections would be staged and welded within the construction workspace on the opposite side of the crossing and then pulled through the drilled hole.

The HDD method would be used at 11 locations to minimize impacts on roads, wetlands, and waterbodies by avoiding ground surface disturbance between the drill entry and exit points. In general, activity between the drill entry and exit points would be limited to foot travel by construction personnel to deploy directional cables that guide the drilling head and to monitor for inadvertent release of drilling mud. However, at five HDD locations (MP 3.1, 25.3, 26.5, 33.0, and 35.9), a travel lane would be used for construction equipment to travel between the drill entry and exit holes. Temporary bridges would be installed at these five locations in accordance with section V.B.5. of our Procedures, which would minimize impacts on these crossings. No clearing is required at these locations. Table A.8.2.1-1 lists the HDD crossing locations, length, and specific features that would be avoided by each crossing.

TABLE A.8.2.1-1

Proposed HDD Locations

Reference MPs for Sections (approximate)			
Begin MP	End MP	Crossing Distance in Feet	Features Avoided by HDD
3.0	3.1	525	Felton Creek
15.2	15.3	1,352	Buffalo River
18.4	18.7	1,528	Red River of the North
21.1	21.3	1,363	Sheyenne River
21.7	22.0	1,549	Sheyenne River
23.5	23.8	892	Interstate 29
25.3	25.4	800	Rush River
26.5	26.6	831	Lower Branch Rush River
30.3	30.7	TBD [a]	Fargo-Moorhead Area Diversion Project
33.0	33.2	1,000	Maple River
35.9	36.0	972	Maple River

[a] The Project crossing of the Fargo-Moorhead Area Diversion Project is currently being negotiated between WBI Energy and the Fargo-Moorhead Diversion Authority. Details regarding the status of the negotiation are provided in section B.5.2.

Site-specific characteristics including soil conditions not conducive to boring, caving of the borehole, loss of the drill string in the borehole, loss of drilling mud

circulation, and failure of the pullback may affect the success of an HDD. In order to assess the potential for successful HDD crossings and the risk of an inadvertent release, WBI Energy conducted a geotechnical assessment for each HDD crossing, which concluded that the HDD crossings would be feasible considering the geotechnical conditions. WBI Energy would manage and adjust the operation of the HDD equipment in the event that problematic situations develop. In the event the adjustments do not correct the problem, the borehole may be moved to an adjacent location within an approved workspace.

In the event that an inadvertent release of drilling mud occurs to the ground surface, WBI Energy would implement the measures prescribed in its *Horizontal Directional Drill and Guided Bore Drilling Fluid Monitoring and Operations Plan*, to monitor for and respond to an inadvertent release of drilling mud. We have reviewed this plan and find it acceptable.

A.8.2.1 Road and Railroad Crossings

The Project would cross 37 public roads and 4 railroads. The crossings would be completed in accordance with DOT requirements (49 CFR 192) and the requirements of road crossing permits obtained for the Project. WBI Energy would use appropriate safety procedures, including traffic warning signs, detour signs, and other traffic control devices, as applicable.

WBI would cross all road and railroads using the HDD, guided bore, or open cut methods thereby avoiding any impact on the roadway or rail surfaces. WBI Energy would use the open cut method for minimum maintenance dirt roads only. Highway and railroad crossings would be uncased, unless required by permits. The pipeline would be installed at least 48 inches and up to 72 inches below the roadside and railroad ditches, in accordance with permit requirements, and would be designed to withstand anticipated external loads.

A.8.2.1 Waterbody and Wetland Crossings

WBI Energy's pipeline facilities would cross waterbodies and wetlands using the HDD, guided bore, or wet open-cut method in accordance with applicable permit conditions and the measures specified in our Procedures, U.S. Army Corps of Engineers (USACE) permit conditions, and all applicable state and local permits. Use of the HDD or guided bore method would avoid clearing of vegetation and trenching in wetlands and waterbodies along the pipeline route.

WBI Energy would locate ATWS in upland areas at least 50 feet from waterbody and wetland boundaries unless the upland is an actively cultivated agricultural area, in which case the ATWS could be closer to the waterbody or wetland. Equipment bridges, if required, would be installed as specified in the Procedures to prevent rutting and

maintain water flow and flow capacity in wetlands and waterbodies. Temporary equipment bridges would be removed following the completion of pipeline construction.

WBI Energy would install and maintain sediment barriers, such as silt fence and staked straw bales adjacent to waterbodies and wetlands and within ATWS, as necessary to minimize the potential for sediment runoff into wetlands and waterbodies. WBI Energy would install these sediment barriers across the full width of the construction workspace at the base of slopes adjacent to waterbody and wetland boundaries. Sediment barriers would also be installed along the edge of the right-of-way, where necessary, to minimize the potential for sediment to run off from the construction workspace into waterbodies or wetlands outside the construction work area. If trench dewatering is necessary near waterbodies or wetlands, WBI Energy would discharge the trench water in a manner that does not cause erosion and does not result in silt-laden water flowing into a waterbody or wetland, as outlined in the Procedures, and in accordance with all applicable state and local permits (see section B.3, Water Resources and Wetlands).

The wet open-cut method would only be used for an ephemeral waterbody that the MDNR identified on its Public Waters Inventory map at MP 0.5. Although this waterbody was identified as a Minnesota public water, field surveys conducted for the Project in fall 2016 did not identify a waterbody in this location. WBI Energy would use the wet open-cut crossing method and would install and maintain construction bridges at this tributary if there was discernible flow at the time of crossing. Mitigation measures to reduce impacts of wet open-cut crossing on the waterbody include: expediting construction and limiting the amount of equipment and activities in waterbodies, reducing the clearing of trees and leaving as many trees in place as possible on stream banks, constructing waterbody crossings perpendicular to the axis of the waterbody channel as engineering and routing conditions allow, maintaining ambient downstream flow rates, removing all construction material and structures from the waterbody after construction, restoring the stream channel and bottom to its original configuration and contour, and permanently stabilizing stream banks and adjacent upland areas after construction.

WBI Energy would adhere to the measures specified in the FERC Procedures, as well as any additional requirements specified in federal or state waterbody crossing permits. In accordance with the FERC Procedures, WBI Energy may also cross waterbodies that are dry or nonflowing at the time of crossing using standard upland construction techniques, provided that the EI verifies that water would be unlikely to flow between initial disturbance and final stabilization of the feature.

A.8.2.4 Residential Areas

The Project is not within 50 feet of any residences; however, WBI Energy would ensure safety, direct traffic, limit the hours of construction, and perform clean-up once construction is complete.

A.8.2.4 Active Cropland

Construction in agricultural areas would be conducted in accordance with our Plan and Procedures. To conserve topsoil, either full right-of-way or trench and spoil-side topsoil removal would be conducted in actively cultivated and rotated cropland and improved pasture and other areas requested by the landowner. A minimum of 12 inches of topsoil would be segregated in areas where the topsoil is 12 inches or greater. Where the existing topsoil is less than 12 inches, WBI Energy would remove and segregate the actual depth of the topsoil to the extent practicable. WBI Energy would not segregate topsoil in ATWS areas outside the construction workspace unless requested by a land management agency or landowner. The topsoil and subsoil would be stored in separate windrows within the construction workspace and would not be allowed to mix.

There is a possibility that subsoil salinity may require three lift, or "triple lift" segregation, i.e., segregating topsoil (0-12 inches or to bottom of A-horizon if required by landowner), non-saline subsoil (Bt or Bw soil horizons), and saline parent material (Bkz, or Bz horizons) into separate piles during trenching. Not doing this in locations where poor quality subsoil exists could result in bringing subsoil salts to the surface, where they could affect crop growth.

Following construction, WBI Energy would replace topsoil over subsoil; remove excess rock in cultivated cropland, pastures, and hayfields; and test topsoil and subsoil for compaction. Further information regarding soils and agricultural land is presented in sections B.2 and B.5.1.1.

WBI Energy has consulted with landowners in agricultural areas to identify existing drain tile locations.[6] Known drain tiles would be noted on the construction alignment sheets and marked with highly visible flagging at each right-of-way edge and the centerline of the pipe, where applicable. WBI Energy would also flag previously undocumented drain tile discovered during grading or trenching at each edge of the construction workspace and survey data would be collected at the location of broken tile. WBI Energy would repair or replace damaged, cracked, or broken drain tile. Repairs would be inspected prior to backfilling the trench area.

If construction requires the removal of private property features, such as gates or fences, WBI Energy would repair or replace them following construction. WBI Energy would implement its Project-specific Noxious Weed Management Plan to prevent, mitigate, and control the spread of noxious weeds during construction and operation of the proposed facilities (for example, Canada thistle, leafy spurge, and common buckthorn).

[6] Agricultural drain tile systems are used to improve drainage in areas where the water table is high and/or the soil characteristics inhibit proper drainage. Drain tile systems in agricultural areas are typically designed to remove water from the top 3 to 4 feet of soil to improve soil productivity and crop yield.

A.8.3 Aboveground Facilities Construction and Operation Procedures

Construction of the new compressor station, interconnect facilities, mainline block valve settings, and other aboveground facilities would occur at the same time as construction of the pipeline facilities. Construction of the aboveground facilities would include general activities such as clearing and grading, foundation installation, erection of aboveground facilities, installation of piping equipment, testing of equipment, and timely cleanup and restoration of the Project area. Construction activity and storage of construction material would be limited to the construction workspace areas and waste materials would be disposed of in a manner consistent with state and local regulations.

WBI Energy would install and maintain erosion and sediment control devices in accordance with its SWPPPs and our Plan. Wetlands and waterbodies within or adjacent to facility sites would be flagged and fenced for avoidance, and to maintain setbacks for equipment storage, workspace, and refueling in accordance with the Procedures. After the aboveground facility site preparation is complete, WBI Energy would excavate, as necessary, to accommodate the new concrete foundations. Forms would be set, rebar installed, and the concrete poured and cured in accordance with minimum strength requirements. WBI Energy would compact backfill material in-place and spread excess soil evenly within the station yard or haul it off for proper disposal.

WBI Energy would install the aboveground facilities after foundations are completed. The buildings would be constructed and equipment and control systems installed in compliance with applicable local, state, and federal code requirements. WBI Energy would weld non-screwed piping using procedures in accordance with American Petroleum Institute standard 1104 (American Petroleum Institute 2005). Aboveground piping would be cleaned and painted according to WBI Energy's specifications and in accordance with regulatory requirements.

Prior to placing the Project facilities in service, WBI Energy would test all controls and safety equipment and systems, such as emergency shutdown systems, relief valves, gas and fire detection, and other protection equipment. Pressure testing would be conducted on piping, in accordance with the requirements of DOT pipeline safety regulations (Title 49 CFR 192), WBI Energy's testing specifications, and applicable permits. Testing would follow all applicable federal, state, and local requirements. A waste minimization plan is not required at the Mapleton Compressor Station because the station is not categorized as a generator of hazardous waste. However, WBI Energy would implement the procedures outlined in its SPCC Plan to minimize the potential for uncontrolled releases of hazardous materials and oil (for example, use of secondary containment structures, routine inspections of staging areas and machinery, and restriction of refueling to designated approved areas).

Upon completion, WBI Energy would clean and restore the Project area in accordance with applicable state and federal permits, landowner agreements, and plans.

Final grading would be completed, gravel surfaces refreshed (as needed), and grass or appropriate vegetation seeded per specifications.

A.2 NON-JURISDICTIONAL FACILITIES

The Mapleton Compressor Station would require new electrical utility service by Otter Tail Power Company (OTP). A 1 - 2 megawatt overhead distribution power line would be constructed from the existing OTP Mapleton Substation to the Mapleton Compressor Station, involving about 3.5 miles of new and existing power lines. Based on information provided, the proposed powerline would follow existing corridors for 38 percent of its length and no federal, state, or local permits are anticipated to be required for the power line facilities. No other non-jurisdictional facilities have been identified that would be constructed for the Project. Impacts are described further in section B.10.

A.10 PERMITS, APPROVALS, AND REGULATORY CONSULTATIONS

Table A.10-1 lists the major federal, state, and local permits, approvals, and consultations for construction and operation of the Project and provides the current status of each. WBI Energy would be responsible for obtaining and abiding by all permits and approvals required for construction and operation of the Project.

TABLE A.10-1

Permits, Approvals, and Consultations for Construction and Operations

Administering Agency	Permit or Approval	Status
Federal		
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity	Pre-filing review initiated October 17, 2016. Certificates application filed April 26, 2017.
USACE: Omaha District	Section 404, Clean Water Act (CWA) – Dredge and Fill Section 10 Rivers and Harbors Act	Pre-construction Notice submitted April 26, 2017 and under review.
St. Paul District	Section 14 River and Harbors Act – 33 U.S. Code 408	Written request submitted in April 27, 2017 and under review.
U.S. Fish and Wildlife Service: Region 3, Twin Cities Ecological Service Field Office (Lead) Region 6, North Dakota Ecological Service Field Office	Section 7 Endangered Species Act, Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act	Consultation ongoing Responses from the Twin Cities Ecological Services Office and North Dakota Field Office were received in March 2017.
U.S. Department of Agriculture: Natural Resource Conservation Service (NRCS) Farm Service Agency (FSA)	Seeding recommendations	North Dakota NRCS office consultation ongoing. Minnesota NRCS/FSA response received in February 2017. Consultation complete.
Native American Tribes	National Historic Preservation Act (NHPA), Section 106 Consultation to determine impacts on Traditional Cultural Properties	Comments were received from Upper Sioux Community and Red Lake Band of Chippewa Indians. Consultation is ongoing.

TABLE A.10-1

Permits, Approvals, and Consultations for Construction and Operations

Administering Agency	Permit or Approval	Status
State of Minnesota		
Minnesota Pollution Control Agency	Section 401 CWA Water Quality Certification	Automatic with 404 approval.
	National Pollutant Discharge Elimination System (NPDES) Stormwater/Trench Water Discharge Permit	Application planned for winter 2018. Anticipated receipt winter/spring 2018.
	NPDES Hydrostatic Test Water Discharge Permit	Application planned for spring 2018, if required. Anticipated receipt spring/summer 2018.
Minnesota Department of Natural Resources	State Licenses to Cross Public Lands and Waters	Application submittal anticipated in spring 2017. Anticipated receipt summer 2017.
	State Protected Species Consultations	Informal review of listed species initiated in fall 2016 and response received in December 2016.
	Water Appropriation Permit General Permit 1997-0005	Application planned for winter 2018, if required. Anticipated receipt spring 2018.
Minnesota State Historic Preservation Office	Section 106 Consultation, NHPA	Concurrence received June 20, 2017. Surveys pending and consultation ongoing.
State of North Dakota		
North Dakota Department of Health	NPDES Temporary Dewatering/ Hydrostatic Test Discharge (NDG07-0000)	Application planned for winter 2018. Anticipated receipt spring/summer 2018.
	NPDES Stormwater Permit (NDR10-0000)	Application planned for January 2018. Anticipated receipt spring 2018.
	Section 401 CWA Water Quality Certification	Application and review to occur concurrent with USACE beginning in April 2017.
North Dakota State Water Commission	Navigable Water Crossing Permit (Sovereign Lands)	Application submittal anticipated in August 2017.
	Water Appropriation Permit	Application planned for January 2018, if required.
North Dakota Parks and Recreation Department	Protected Species and State Species of Conservation Concern Consultation Consultation to identify state owned or administered lands	Informal consultation initiated September 2016; response received February 2017.
North Dakota Game and Fish Department	Protected Species and State Species of Conservation Concern Consultation	Informal consultation initiated September 2016; no issues identified.
North Dakota State Historic Preservation Office	Section 106 Consultation, NHPA	Concurrence received June 2017. Surveys pending and consultation ongoing.
Local		
Clay County (Minnesota) Soil and Water Conservation District	Minnesota Wetland Conservation Act No Loss Determination	Wetland Conservation Act No Loss Application to be filed in winter 2018, if required. Anticipated receipt spring 2018.
Wild Rice Watershed District	Permit for changes to existing drain tile systems	Application planned for October 2017. Anticipated receipt spring 2018.

SECTION B – ENVIRONMENTAL ANALYSIS

In this section, we discuss the affected environment, general construction and direct and indirect operational impacts, and proposed mitigation to minimize or avoid impacts for each resource. When considering the environmental consequences of the proposed Project, the duration and significance of any potential impacts are described below according to the following four levels: temporary, short-term, long-term, and permanent. Temporary impacts generally occur during construction, with the resources returning to pre-construction conditions almost immediately. Short-term impacts could continue for up to three years following construction. Long-term impacts would require more than three years to recover, but eventually would recover to pre-construction conditions. Permanent impacts could occur because of activities that modify resources to the extent that they may not return to pre-construction conditions during the life of the Project, such as with the construction of an aboveground facility. An impact would be considered significant if it would result in a substantial adverse change in the physical environment.

WBI Energy, as part of its proposal, agreed to implement certain measures to reduce impacts on environmental resources. We evaluate the proposed mitigation measures to determine whether additional measures would be necessary to reduce impacts. Where we identify the need for additional mitigation, the measures appear as bulleted, boldfaced paragraphs in the text. We will recommend that these measures be included as specific conditions to any authorization that the Commission may issue to WBI Energy.

B.1 GEOLOGY

The Project facilities with the exception of the Apple Valley TBS are located within the Western Lake Section of the Central Lowland Physiographic Province of the Interior Plains. The Apple Valley TBS is located within the Missouri Pleateau Glaciated Section of the Great Plains Phsiographic Province. The geologic terrain of the Western Lake section is characterized by bedrock overlain by significant deposits of glacial drift with relatively low surficial relief. Bedrock underlying the proposed pipeline route, and the valley interconnect consists of Precambrian (Archean) igneous and metamorphic rocks arranged in west-southest to east-northeast trending belts. Bedrock within the western portion of the pipeline route, the Mapleton Compressor station, the Sanborn Compressor Staton, and the Jamestown TBS Creteacous-Period shales and sandstones. The Missouri Pleateau Glaciated Section is characterized by thick glacial deposits consisting predominantly by terminal and recessional moraines. Landforms include areas formed by stagnant ice disintegration features including kames, kettles, collapsed glacial sediments; lake plains; and floodplains (USGS 2016a; Kume and Hansen 1965).

Mineral resources of the Project area include industrial aggregates (sand, gravel and crushed stone), and metallic minerals in Minnisota consisting of iron ore, copper,

nickel and titamium (MnDOT, 2015; MDNR, 2016; U.S. Geological Survey [USGS], 2013). Project facilities in Minnesota or North Dakota would not be within 0.25 mile of any of these mineral resources.

In general, oil and natural gas exploration activities do not occur near the Project areas in Minnesota and North Dakota. The nearest oil and natural gas exploration wells are 20 miles from the Project but have been found to be dry (North Dakota Industrial Commission , 2017). The nearest underground hydrocarbon storage to the Project area in North Dakota is approximately 162 miles southwest of the Apple Valley TBS. Oil and natural gas exploration and production does not occur in Minnesota as the geologic setting in this state does not support economically viable sources of hydrocarbons.

Although the glacial deposits in Minnesota and North Dakota are capable of containing paleontological resources, they tend to be scarce where glacial ice was present because glacial deposition processes rarely preserve specimens intact. Therefore, the potential for impacting paleontological resources is considered minimal.

The State of North Dakota and its political subdivisions protect and manage paleontological resources under Chapter 54-17.3 of the North Dakota Century Code and Chapter 43-04 of the North Dakota Administrative Code. A permit is required to investigate, excavate, collect, or otherwise record paleontological resources on lands owned by the State or its political subdivisions (North Dakota Geological Survey, 2011); however, the only North Dakota state-owned lands crossed by the Project would be state highway rights-of-way. No federal lands are crossed by the Project. WBI Energy has developed a *Plan for Unanticipated Discovery of Paleontological Resources During Construction* that details the protocols and procedures that would be implemented in the event paleontological resources are discovered during construction. We have reviewed the content of this plan and find it acceptable to limit impacts on paleontological resources.

B.1.1 Geologic Hazards

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. Such hazards typically are seismic-related including earthquakes, surface faulting, and soil liquefaction; landslides, flooding, and karst terrain or ground subsidence hazards.

The shaking during an earthquake can be expressed in terms of the acceleration as a percent of gravity (g). USGS National Seismic Hazard probability Mapping shows that there is a 2 percent probability of an earthquake with an effective peak ground acceleration of 2 to 4 percent g; and a 10 percent probability of an earthquake with an effective peak acceleration of 0 to 1 percent g being exceeded within a 50-year period for the Project areas (USGS, 2014). This level of ground movement is considered to be light and has low potential to cause damage to structures.

Slight damage from earthquakes is not typically experienced until Richter magnitudes of 5.0 and 5.9 (USGS 2013). Between 1975 and 2011, four earthquakes greater than magnitude 2.5 have occurred in west-central Minnesota and northeastern South Dakota, approximately 70 to 100 miles south of the Project area. The recorded earthquake magnitudes ranged from Richter magnitude 2.5 to 4.6 (USGS, 2016b);.

Based on review of the NDIC Oil and Gas ArcIMS website, there are no underground injection wells used for wastewater disposal within 80 miles of the Project area (NDIC, 2017). The USGS has assessed the potential for deep fluid injection to contribute to earthquake activity in the United States. The USGS determined there is less than 1 percent chance for a damaging earthquake with a peak ground acceleration of 12 percent g to occur in the Project area due to combined natural or induced causes within the next year, and concluded that North Dakota is not at risk for earthquakes due to wastewater injection disposal (USGS, 2017). Further, the USGS developed a 1-year seismic hazard forecast for the Central and Eastern U.S. from induced and natural earthquakes. The current forecast for 2017 states that there is a 1 percent chance that an earthquake in the Project area would have a Richter magnitude greater than 3.9 (i.e., shaking weak, felt indoors by several) (USGS, 2017). The USGS intends to continue to monitor induced earthquake activity and revise its risk assessment annually.

Quaternary faults where there has been displacement in the last 2.6 million years are believed to be most likely to demonstrate activity. Review of USGS fault mapping indicates that there are no Quarternary-Epoch faults within the Project areas, and the area has been tectonically stable for more than 500 million years (USGS, 2016c). Soil liquefaction is a phenomenon associated with seismic activity in which saturated, non-cohesive soils temporarily lose their strength and liquefy (i.e. behave like viscous liquid) when subjected to forces such as intense and prolonged ground shaking. Given the low potential for prolonged ground shaking to occur near the Project facilities, the potential for soil liquefaction to occur in the Project area is also low.

USGS landslide incidence and susceptibility mapping within the Project area indicates that the Project facilities would be located in areas of low landslide incidence (Radbruch-Hall et al., 1982). This is reflective of the relatively low topographic relief observed at each of the Project facility sites. As such, the potential for a significant landslide to occur in the Project area, and impacting Project construction and/or operation is considered unlikely. However, the Red River Valley is predominantly underlain by silty-clay and clay soils deposited by Glacial Lake Agassiz. These soils generally have a low strength, high shrink-swell properties, and high plasticity that can cause slope instability and slumping. Valley and channel walls of the Red River of the North and other tributaries that would be crossed by the pipeline route are prone to slope failure. In order to avoid potential hazards posed by soils along the Red River and its tributaries, WBI Energy would cross these waterbodies by the HDD/guided bore method (see section

B.3.2), thereby avoiding potential issues with shrink-swell high plasticity soils and associated slope instability or failure.

Ground subsidence, involving the localized or regional lowering of the ground surface, may be caused by karst formation due to limestone or gypsum bedrock dissolution; sediment compaction due to groundwater pumping and/or oil and gas extraction, and underground mining. No oil and natural gas extraction activities, underground mines, or groundwater pumping activities were identified within 0.25 mile of the Project; no karst terrain is present within the Project area and the lithology that could lead to bedrock dissolution, and karst development do not generally occur within the Project area.

B.1.2 Geotechnical Investigations

WBI Energy conducted geotechnical borings to characterize near-surface geology and to investigate the feasibility of successfully utilizing the HDD method as proposed for the Project (see section A.8.2.1), and conducted a hydrofracture analysis utilizing guidelines developed by the USACE.[7] The geotechnical borings found that subsurface conditions encountered along the HDD pipeline alignment generally consist of 1.0 to 6.5 feet of topsoil and potential fill, underlain by Glacial Lake Agassiz sediments that range from soft to stiff fat clay and silty fat clay. The Glacial Lake Agassiz sediments are underlain by glacial till encountered at depths of 51 to 98 feet below grade that consist of sands and gravels and lean clay with sand and gravel. The geotechnical borings showed the geologic materials to be amenable to HDD, and the results of the hydrofracture analysis showed there is a low potential for hydraulic fracture and inadvertent release to occur at all HDD crossings. However, in the event of an inadvertent release, WBI Energy would follow its *Horizontal Directional Drill and Guided Bore Drilling Fluid Monitoring and Operations Plan* which outlines WBI Energy's responsibilities, as well as clean-up protocols for such a release.

Impacts of construction and operation of the Project facilities on topography and geology would be temporary and minor. Primary impacts would be limited to construction activities and include temporary disturbance of the right-of-way resulting from grading and trenching operations. WBI Energy would minimize impacts by using best management practices during construction that are in accordance with our Plan, including returning surface contours to preconstruction conditions to the extent practicable with the exception of the compressor station and aboveground facilities, where grading and filling would be required to create a safe and stable land surface, and to support facility drainage.

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[7] "Guidelines for Installation of Utilities Beneath Corps of Engineers Levees Using Horizontal Directional Drilling", C.A. Latorre, L.D. Wakeley, and P.J. Conroy. ERDC/GSL TR-02-9, United States Army Corps of Engineers, Geotechnical and Structures Laboratory, 2002

In general, the risk of seismic-related hazards such as earthquakes, surface faulting, and soil liquefaction or landslides, flooding, karst development and/or ground subsidence is low in the Project area. As noted above, the Red River Valley predominantly is underlain by silty-clay and clay soils deposited by Glacial Lake Agassiz that are prone to slope instability and slumping along river valleys and channels. WBI Energy would use the HDD method to install the pipeline beneath waterbodies which would avoid direct impact on these features and minimize the potential for slope failures at waterbody crossings.

Based on the construction methods and mitigation measures, we conclude that geologic hazards on the Project facilities during construction and/or operation is minimal and not significant, and the Project would not have significant impacts on geologic resources.

B.2 SOILS

Soil characteristics in the Project area were identified and assessed using the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS), Soil Survey Geographic Database (U.S. Department of Agriculture, NRCS, n.d.). Generally, soils are characterized by the NRCS as prime farmland, farmland of statewide importance, hydric, wind and water erodible soils, compactible, corrosion prone, and for their susceptibility to rutting and revegetation concerns, and for the presence of known contamination.

Soils that would be crossed by the pipeline route are predominantly silty clays and silty clay loams. The dominant soils that would be impacted at the Mapleton Compressor Station are predominantly silty clay loam, and the dominant soils that would be impacted at the Viking Interconnect are fine sandy loams and loams. At the remaining aboveground facility sites, the dominant soil impacts would be on loams. A description of these soil characteristics within the Project area and the impacts and mitigation measures are discussed below.

The Project would affect two NRCS farmland classes, prime farmland and farmland of statewide importance. Prime farmland soils are classified as those best suited for production of food, feed, fiber, and oilseed crops. These soils generate the highest yields with the least amount of expenditure. Farmland of statewide importance generally include areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. During construction, the project would temporarily affect about 499 acres of prime farmland and 1.2 acres of farmland of statewide importance. Operation of the Mapleton Compressor Station, the Viking Interconnect, and the two valve settings would permanently convert 0.7 acre of prime farmland to industrial uses.

Hydric soils are formed when conditions of saturation, flooding, or ponding occur long enough during the growing season to develop anaerobic conditions in the soil. Soils

that are or have been saturated with water or that have a water table near the surface are often associated with wetlands and are limited for most construction purposes. Construction of the Project would affect about 342.7 acres of hydric soils along the pipeline route and 37.8 acres of hydric soils within the access roads, laydown yards, and aboveground facilities.

Successful restoration and revegetation is important for maintaining agricultural productivity and to protect the underlying soil from potential damage, such as erosion. Droughty soils have a coarse surface texture and are excessively or somewhat excessively drained. Droughty soils do not retain an adequate amount of water necessary for germination and establishment of new vegetation. Coarse-textured soils have a lower water holding capacity following precipitation, which can result in moisture deficiencies in the root zone creating unfavorable conditions for many plants. In addition, highly saline, acidic, or alkaline soils could affect restoration and revegetation. A total of 57.6 acres of the pipeline route and 9.7 acres of the access roads, laydown yards, and aboveground facility construction footprints are classified as having revegetation concerns.

Another factor that can influence restoration and revegetation efforts, is the presence of highly saline subsoils. WBI Energy conducted a survey of the pipeline centerline to identify areas where highly saline subsoils may be encountered during construction. About 30 locations were identified where the potential for encountering highly saline subsoils exists.

Soil erosion is a form of soil degradation when the soil nutrients and organic matter important for plant growth are lost, most commonly due to water (for example, rainfall, runoff) and wind erosion. On-site impacts include decreases in agricultural productivity or density and vigor of vegetative cover because of loss of the nutrient-rich upper soil layers. Off-site effects include sedimentation of waterways and eutrophication of waterbodies, as well as sediment-related damage to roads and houses. The loss of soil from farmland may be reflected in reduced crop production potential, lower surface water quality, and damaged drainage networks. None of the pipeline route and construction footprints for access roads and aboveground facility sites are wind or water erodible. However, about 6.5 acres of the soils within the contractor laydown yards are wind and water erodible. Use of the contractor laydown yards would be discontinued following the completion of construction and operation of the Project would not permanently impact wind and water erodible soil.

Corrosion potential is based on the corrosion of steel rating class. Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, pH, and electrical conductivity of the soil. The risk of corrosion for uncoated steel, expressed as low, moderate, or high, is based on soil drainage class, total acidity, electrical resistivity near

field capacity, and electrical conductivity of the saturation extract. A total of 473.4 acres of the soils that would be crossed by the pipeline route are classified as prone to corrosion. Access roads, laydown yards, and aboveground facilities would be within an additional 42.3 acres of soils that are prone to cause corrosion.

Compaction occurs when moist or wet soil particles are pressed together and the pore spaces between them are reduced. Restricted infiltration results in excessive runoff, erosion, nutrient loss, and potential water-quality problems. Compaction restricts penetration by plant roots and inhibits plant growth. About 427.1 acres of the pipeline route, and 32.8 acres of the construction footprints for the access roads, laydown yards, Mapleton Compressor Station, and other aboveground facilities would be in soils designated as compaction-prone.

Rutting can occur when equipment is operated on soils that are moist or saturated. About 466.3 acres of the pipeline route, and 35.7 acres of the access roads, laydown yards, Mapleton Compressor Station, and other aboveground facility construction footprints would be in soils designated as having rutting potential.

Soil contamination can be present and be encountered during construction if existing sources such as current or former underground storage tanks, buried trash and/or undocumented landfills, or unidentified oil or gas lines are encountered. Based on a review of the MPCA's contaminated sites database, the NDDH Waste Management website, and the U.S. Environmental Protection Agencies (EPA) listing of contaminated sites, no potentially contaminated soils would be encountered during construction.

Typical soil impacts that may occur during construction include mixing of topsoil and subsoil layers, compaction, rutting, erosion, and alteration of drainage characteristics. Construction activities such as clearing, grading, trench excavation, backfilling, heavy equipment traffic, and restoration along the construction right-of-way have the potential to adversely affect natural soil characteristics such as water infiltration, storage and routing, and soil nutrient levels, thus reducing soil productivity. Clearing removes protective vegetative cover and exposes soil to the effects of wind and water which potentially increases the potential for soil erosion, the transport of sediment to sensitive resource areas, and decreased soil productivity.

Construction in agricultural areas and pasture areas would temporarily disrupt ongoing agricultural activities and eliminate use of the land for the duration of construction, and permanently impact areas converted to industrial use. Potential impacts on agricultural soils would be minimized and mitigated in accordance with our Plan and the special construction procedures described in section A.8.2.5. These include measures to conserve and segregate the upper 12 inches of topsoil, alleviate soil compaction, protect and maintain existing drainage tile and irrigation systems, prevent the introduction of weeds, and retain existing soil productivity. Implementation of proper topsoil segregation, soil decompaction, drainage, and weed controls would help ensure

post-construction revegetation success and productivity, thereby minimizing the potential for long-term impacts on agricultural lands. Following construction, agricultural activities would be allowed to resume without restrictions except where WBI Energy would locate aboveground facilities.

In order to minimize potential impacts on soil productivity, WBI Energy would train its EI(s) to evaluate topsoil and subsoil characteristics, provide recommendations for topsoil stripping depths, and determine where soil and water salinity exist at levels sufficient to employ additional soil segregation procedures (such as further segregation of saline subsoils from non-saline subsoils) and/or specialized siting for trench water discharge locations. Soil and trench water salinity levels would be evaluated in areas that have been identified as having a potential for saline conditions. Where the subsoil salinity is excessively greater than the overlying soil, then triple lift soil segregation procedures would be implemented and the EI would ensure that poor-quality subsoils are adequately separated so that they do not become mixed with or become backfilled to the crop root depth. Triple lift soil segregation involves segregating topsoil (0-12 inches or to bottom of A-horizon if required by landowner), non-saline subsoil (Bt or Bw soil horizons), and saline parent material (Bkz, or Bz horizons) into separate piles during trenching. In addition, trench dewatering discharges to adjacent cropland would be avoided when the ditch-water is excessively saline. Further discussion of trench dewatering of is provided in section B.3.2.

During construction, temporary compaction of soils would be caused by grading and heavy equipment traffic over the soil surface. Grading and trenching have the potential to mix topsoil with subsoil, potentially resulting in reduced soil productivity and introduction of subsurface rocks to the soil surface. Our Plan includes decompaction measures, topsoil stripping requirements, and restoration and revegetation measures that would be implemented. WBI Energy would monitor revegetation after the first and second growing seasons unless revegetation was not progressing satisfactorily by the end of the second growing season; in that case, WBI Energy would continue to monitor until the revegetation was progressing satisfactorily.

To minimize any potential for soil erosion from wind and water, WBI Energy would install temporary and permanent erosion control devices as specified in our Plan, the SWPPP, and applicable permits. Temporary erosion control measures, such as sediment filter devices (for example, straw bales, silt fence, or sediment basins), would be installed immediately following initial ground disturbance. As required, temporary trench breakers would be installed immediately following ditch excavation to reduce runoff velocities in the trench during construction. Mulch or other wildlife-suitable erosion control matting may be used on slopes to prevent erosion during construction. The temporary erosion control devices would be inspected on a regular basis by WBI Energy and after rainfall events as required to ensure controls function properly.

With the exception of agricultural lands, following construction, disturbed areas would be seeded, mulched, and permanent erosion controls would be installed. The effectiveness of revegetation and permanent erosion control devices would be monitored by WBI Energy during the long-term operation and maintenance of the pipeline system. Erosion control devices would be maintained until the right-of-way is successfully revegetated. Following successful revegetation of construction areas, temporary erosion control devices would be removed.

If necessary, WBI Energy would stabilize access roads using gravel or timber equipment mats to minimize rutting. If excessive rutting occurs along ungraded portions of the Project areas, WBI Energy would limit construction activities in that area or implement protective measures (for example, install timber equipment mats) to prevent additional rutting. If rutting occurs along access roads, WBI Energy would require its construction contractor(s) to repair the ruts to pre-construction conditions or better as soon as ground conditions permit. With implementation of these mitigation measures, we conclude the Project would have negligible impacts on soils due to construction activities under wet conditions.

Soil contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment would be minimized by WBI Energy's adherence to its SPCC Plan, which specifies preventive measures to reduce the likelihood of a spill, as well as cleanup procedures in the event of soil contamination from spills or leaks of fuels, lubricants, coolants, or other hazardous materials. Should a spill occur, WBI Energy and its contractors would follow its SPCC Plan to contain accidental spills of any material that may contaminate soils and to ensure that inadvertent spills of hazardous materials would be cleaned up and disposed of in an appropriate manner. WBI Energy's contractor would also follow the procedures outlined in its SPCC Plan in the event contaminated soils are encountered during construction. Based on these measures, we conclude that the Project's impacts on soils would be minor and not significant.

B.3 WATER RESOURCES AND WETLANDS

B.1.1 Groundwater Resources

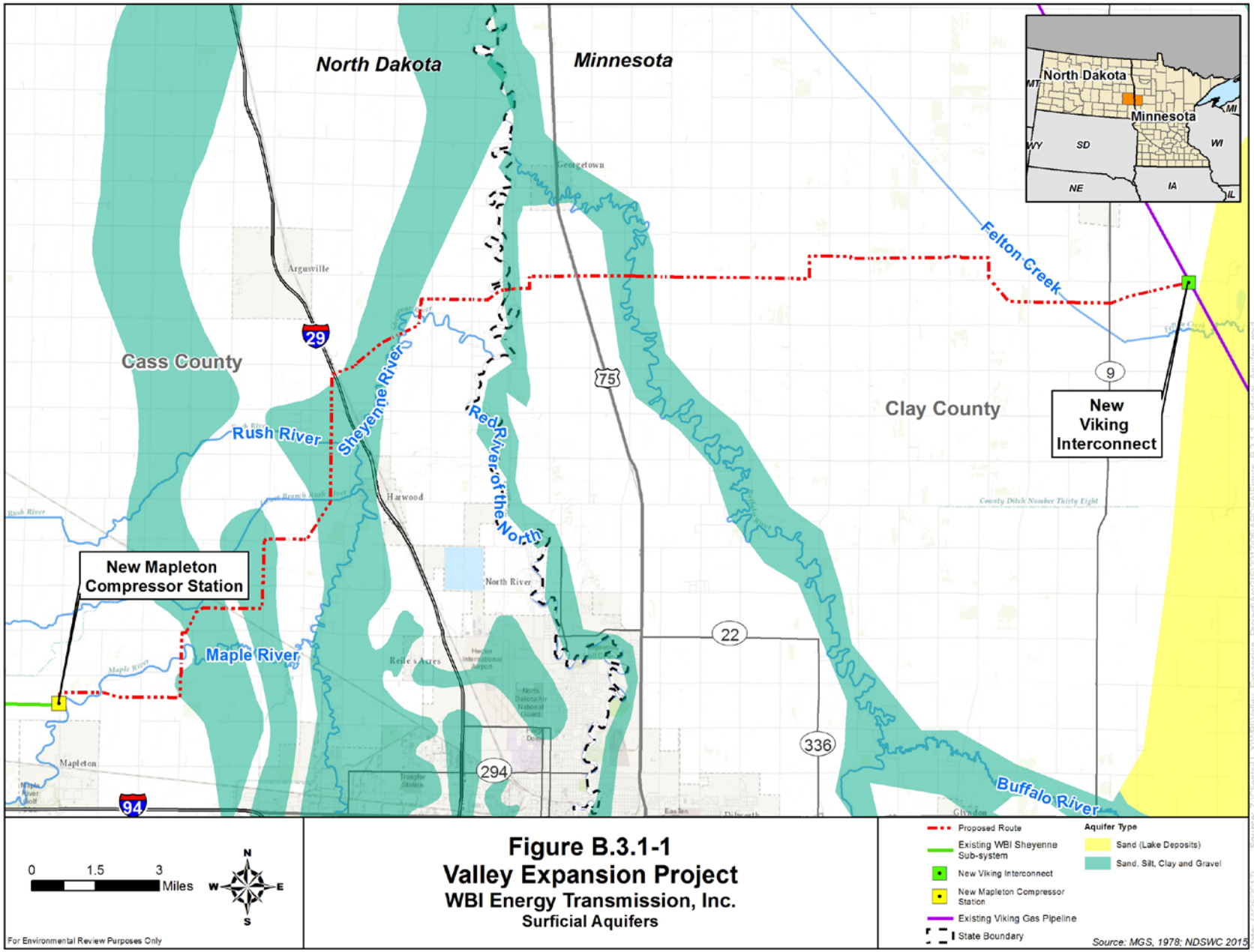
Aquifers underlying the Project facilities consist of glacial drift aquifers overlying Mesozoic sedimentary or Precambrian igneous and metamorphic bedrock strata. Unconsolidated aquifers primarily consist of glacial sand and/or gravel outwash and ice-contact deposits, as well as more recent sand and gravel alluvium deposited by existing streams. Glacial drift aquifers may consist of either surficial water table aquifers, or buried aquifers that are separated from the ground surface by laterally continuous deposits of lower permeability silts and/or clays, such as moraine, till, or lacustrine deposits that function as semi-confining units. Buried glacial drift aquifers typically behave as a hydrologically connected semi-confined aquifer and are recharged primarily by downward leakage through the semi-confining unit and typically discharge via upward

leakage in the vicinity of groundwater discharge zones, such as rivers or towards pumping wells. In general, glacial aquifers do not commonly constitute regional aquifers owing to the variable conditions of glacial deposition. Nonetheless, these aquifers can still be an important source of groundwater throughout glaciated regions, providing adequate water volumes to supply municipalities and irrigation systems, and individual domestic well owners.

The Buffalo River Aquifer is a significant unconsolidated aquifer in Clay and Wilkin Counties, Minnesota, comprised of sand and gravel, and is a primary source of drinking water for the City of Moorhead (USGS, 1981). Figure B.3.1-1 illustrates the unconsolidated, surficial aquifers within the Project area, and shows a continuous unconsolidated aquifer along the Buffalo River. However, the Buffalo River Aquifer terminates south of the pipeline route (USGS, 1981); therefore, it would not be crossed.

The bedrock aquifers underlying the Project facilities are comprised of the Cretaceous sandstone units such as the Dakota Sandstone and are typically greater than 160 feet below ground surface in Clay County, Minnesota and Cass County, North Dakota and are greater than 50 feet below ground surface in Barnes, Stutsman, and Burleigh Counties, North Dakota. No EPA-designated Sole Source Aquifers would be crossed by the Project (EPA, 2016a). Construction of pipeline and aboveground facilities is typically confined to a depth of no more than 10 feet below the ground surface (with the exception of HDD locations), which may intersect some surficial unconsolidated aquifers but is generally above the water table in surficial aquifers, which generally range from 12 to 18 feet below the ground surface based on review of well data in the Project area, and is also above the typical minimum depth of the bedrock aquifers underlying the Project facilities.

Surface drainage and groundwater recharge patterns can be temporarily altered by clearing, grading, trenching, and soil stockpiling activities, potentially causing minor fluctuations in groundwater levels and/or increased turbidity, particularly in shallow surficial aquifers. If excavation occurs below the water table, the resulting changes in water levels and/or turbidity in these aquifers are expected to be localized and temporary because water levels quickly re-establish equilibrium and turbidity levels rapidly subside. WBI Energy would avoid or further minimize potential impacts by using construction techniques described in our Plan, such as using temporary and permanent trench plugs and interceptor dikes for pipelines, and by restoring ground contours and vegetation on the right-of-way to establish surface drainage and recharge conditions as closely as possible to those prior to construction. These measures would minimize impacts on surficial aquifers.


North Dakota
Minnesota
Cass County
Clay County
Rush River
Sheyenne River
Red River of the North
Maple River
Felton Creek
Buffalo River
New Mapleton Compressor Station
New Viking Interconnect
Argusville
Georgetown
Harwood
Mapleton
North River
Reile's Acres
Glyndon
29
75
9
22
336
294
94
0 1.5 3 Miles
N
W
E
S
For Environmental Review Purposes Only
Figure B.3.1-1
Valley Expansion Project
WBI Energy Transmission, Inc.
Surficial Aquifers
Proposed Route
Existing WBI Sheyenne Sub-system
New Viking Interconnect
New Mapleton Compressor Station
Existing Viking Gas Pipeline
State Boundary
Aquifer Type
Sand (Lake Deposits)
Sand, Silt, Clay and Gravel
Source: MGS, 1978; NDSWC 2015
MT
MI
WY
SD
WI
NE
IA
IL

Based on review of the Minnesota County Well Index and well records maintained by the NDSWC, the construction workspace for the Project facilities would not be within 150 feet of any private water wells (Minnesota Geological Survey, 2016; NDSWC, 2016). In addition, no springs were identified by landowners or during WBI Energy's field surveys within 150 feet of the Project workspaces.

Public and non-public community water supply source-water protection in Minnesota is administered by the Minnesota Department of Health and by the NDDH in North Dakota through the Wellhead Protection Program. A wellhead protection area (WPA) is the area encompassed around a drinking water well where contaminants could enter and pollute the well. WPAs for public and community water-supply wells are available through a database maintained by Minnesota Department of Health (2014) and NDDH (2016). Review of these databases indicates that none of the Project facilities overlap with WPAs.

Water supplies for the communities in the Project area rely on a variety of ground and/or surface water resources, and private water supplies are provided by individual wells. The nearest community well to the Project area is associated with Harwood, North Dakota, which is about 0.8 mile, and has a WPA that is about 0.5 mile from the pipeline at its nearest point (east of MP 24.7).

We received one comment regarding spills during construction and groundwater contamination. Spill-related impacts on groundwater from pipeline construction are primarily associated with fuel storage, equipment refueling, and equipment maintenance. WBI Energy's SPCC Plan outlines measures that would be implemented to prevent accidental releases of fuels and other hazardous substances and describes response, containment, and cleanup procedures that could affect public water supplies. Therefore, we do not anticipate impacts on public water supplies due to construction activities.

WBI Energy conducted a search using publicly available state and federal databases to identify the potential for and/or actual sources of groundwater contamination within 500 feet of the Project construction workspaces. No known groundwater contamination issues are known to occur that would be crossed or affected by the Project facilities. In the unlikely event that undocumented sites with contaminated groundwater would be encountered, WBI Energy would implement containment measures to isolate and contain the suspected groundwater contamination and collect and test samples to identify the contaminants. Once the type, magnitude, and extent of the contamination is determined, WBI Energy would develop a response plan for crossing or avoiding the site.

HDD methods planned for the Project would likely penetrate below the water table; however, the drilling fluid would be primarily composed of water and non-toxic bentonite, and potentially other inert materials (such as walnut shells or mica or additives to promote circulation), if needed to control the loss of or to regain drilling fluid

circulation. As such, we conclude the use of the HDD method would have no effect on groundwater quality.

Precipitation and/or the seepage of groundwater can necessitate the dewatering of trenches and other excavated areas. During dewatering, water would be pumped from the trench or excavation, and discharged in a manner that does not cause erosion or result in silt-laden water flowing into a waterbody or wetland, as outlined in our Procedures. In addition, in areas where poor quality groundwater may exist, if dewatering of trench water is necessary, WBI Energy would test the water and avoid discharging saline water that could impact crop land soil productivity and restoration. Due to the distance of water wells from the pipeline facilities, the limited nature of groundwater dewatering that may be needed during construction, and WBI Energy's implementation of our Procedures, we conclude it is not likely that the discharge of saline groundwater would affect any public or private water supply wells.

Operation of the Project pipeline would have no long-term impact on groundwater resources. In order for an operational pipeline to impact or impede groundwater flow, the pipe would have to encompass an area within the aquifer that extends both vertically and laterally to impermeable barriers (i.e., it would have to 'seal off' the aquifer). Otherwise, groundwater flow would flow around the pipe. An aquifer's thickness and lateral extent varies, but is much greater than the space that would be occupied by the planned Project pipeline. The physical pipeline would occupy only a negligible portion of the aquifer and have no influence on groundwater flow.

Similarly, because of the pipeline's size relative to the aquifer and the fact that it would not be attached to an impermeable barrier above the aquifer, water infiltration would not be inhibited by the presence of a pipeline. The proposed rights-of-way, like subsurface pipe, only overlie a very small portion of the aquifers it crosses. Further, rights-of-way would be restored to preconstruction contours and would be either seeded or allowed to revegetate naturally. For these reasons, the projects restored rights-of-way would not cause a permanent reduction to infiltration of recharge waters. Lastly, there is little chance of pipeline operations contaminating groundwater. Because methane is lighter than air, it would generally dissipate rapidly in the event of a pipeline leak, thereby causing little to no impact on groundwater.

We believe that the groundwater mitigation measures proposed by WBI Energy would adequately avoid or minimize potential impacts on groundwater resources, and that long-term operational impacts on groundwater are negligible. Therefore, we do not anticipate long-term or significant impacts on groundwater resources as a result of construction or operation of the Project.

B.1.2 Surface Water Resources

Surface water resources within the proposed Project area are within the Upper Red River of the North, Devils Lake – Sheyenne River, James River, and Grand and Moreau Rivers drainage basins. Traveling from east to west, the pipeline route and the Viking Interconnect would be within the Eastern Wild Rice River watershed; then the pipeline would cross the Buffalo River watershed, the Upper Red River of the North watershed, the Lower Sheyenne River watershed; and terminate within the Maple River watershed. The Mapleton Compressor Station and the Sanborn Regulator Station would also be within the Maple River watershed. The Jamestown TBS would be within the Upper James River watershed and the Apple Valley TBS would be within the Apple River watershed.

The Project would require 14 waterbody crossings, including 9 crossings of intermediate waterbodies and 5 crossings of major waterbodies, including the Red River of the North, the Sheyenne River, and the Maple River (the Sheyenne River and the Maple River would both be crossed twice). No waterbodies would be directly impacted by aboveground facility construction. Table B.3.2-1 lists the waterbodies WBI Energy would cross including county, approximate MP, waterbody name, flow regime, crossing length, and proposed crossing method.

None of the waterbodies affected by the proposed Project are included in the National Wild and Scenic Rivers System (National Wild and Scenic River System, 2016). Navigable waters are designated by the USACE and regulated under Section 10 of the *Rivers and Harbors Act of 1899*, as amended. According to the USACE, the Red River of the North is considered navigable throughout the length of the river, and therefore subject to USACE jurisdiction.

Floodplains

Review of Federal Emergency Management Agency (FEMA) flood maps indicates that about 18.3 miles of the pipeline route between MPs 11.0 and 36.3 and the Mapleton Compressor Station would cross regulatory floodplains, or areas with more than a minimal chance of flood hazard (zones A, AE, and AE floodway) (FEMA, 2016). Zone A are areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no base flood elevations or flood depths are shown on the mapping. Zone AE are areas that have a 1 percent probability of flooding every year, and where predicted flood water elevations abovemean sea level have been established. Zone AE floodway are areas that have a 1 percent probability of flooding every year, and where predicted flood water elevations abovemean sea level have been established and are within the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. These

zones are associated with the Buffalo River, the Red River of the North, the Sheyenne River, the Rush River, and the Maple River (see figure B.3.2-1). The remaining facilities are not proposed in flood hazard areas.

TABLE B.3.2-1

Waterbodies Crossed by the Project Route

Facility, County, Milepost	Waterbody Name	Flow Regime	FERC Classification	Crossing Length (feet)[a]	Crossing Method [b]
Pipeline					
Clay County, MN					
3.1	Felton Creek (channelized ditch)	Perennial	Intermediate	33.0	HDD
14.4	Unnamed tributary	Intermittent	Intermediate	20.0	Open-cut
15.1	Buffalo River	Perennial	Intermediate	99.0	HDD
17.8	Unnamed tributary (channelized road ditch)	Intermittent	Intermediate	19.0	Guided Bore
18.4	Red River of the North	Perennial	Major	175.0	HDD
Cass County, ND					
21.1	Sheyenne River	Perennial	Major	84.0	HDD
21.7	Sheyenne River	Perennial	Major	106.0	HDD
25.2	Rush River	Perennial	Intermediate	19.0	HDD
26.4	Lower Branch Rush River	Intermittent	Intermediate	85.0	HDD
28.0	Unnamed tributary (channelized ditch)	Intermittent	Intermediate	26.0	Guided Bore
32.2	Unnamed tributary (channelized ditch)	Intermittent	Intermediate	N/A	N/A
33.0	Maple River	Perennial	Major	102.0	Guided Bore
35.8	Maple River	Perennial	Major	86.0	Guided Bore
Laydown Yards					
Clay County, MN					
Spring Prairie Yard	Road ditch / drainage canal	Intermittent	Intermediate	N/A	N/A

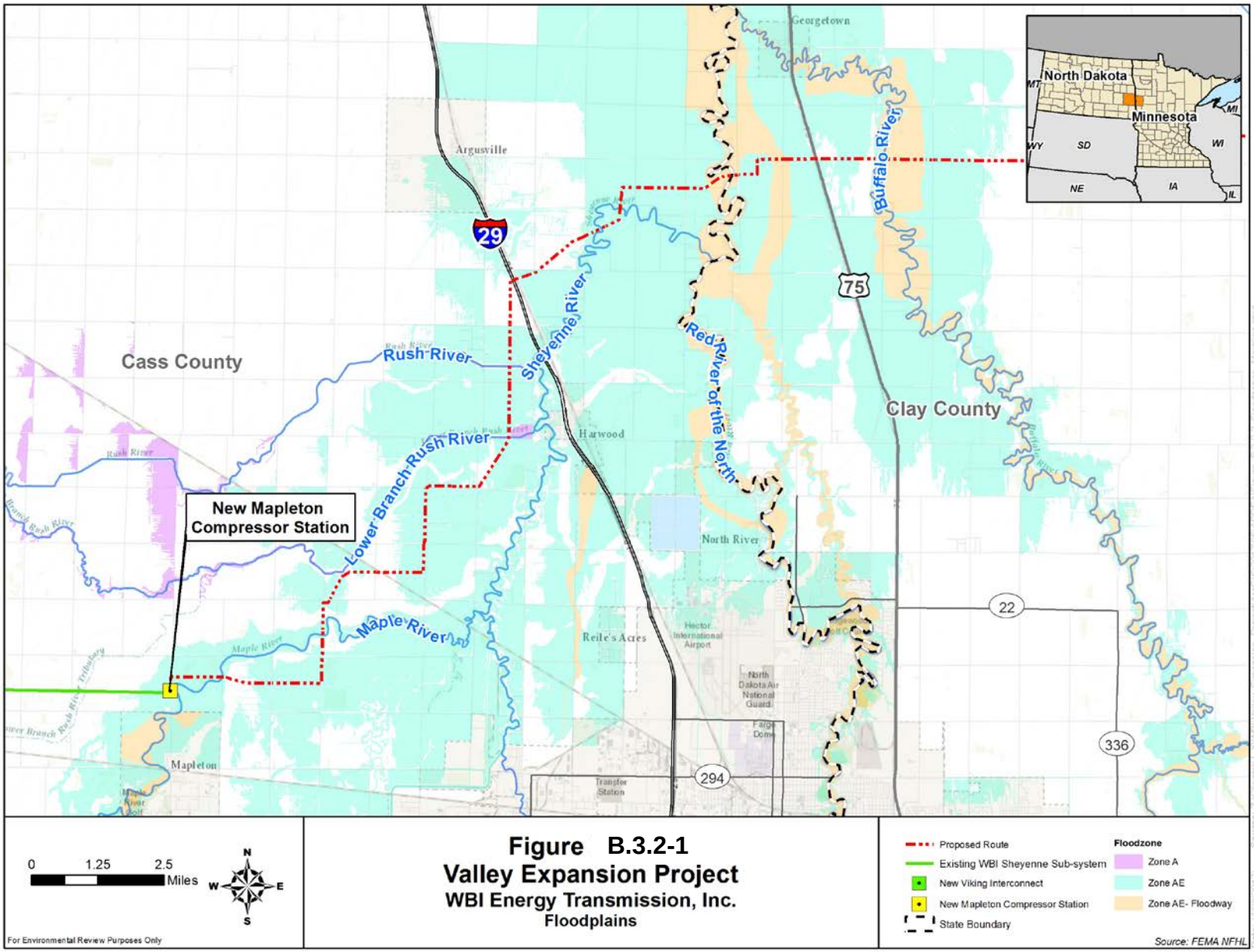
[a] Crossing Length measured during field surveys as ordinary high water mark to ordinary high water mark. Crossing Length listed as N/A indicates that the referenced waterbody is within Project workspace, but not crossed by the centerline.

[b] Crossing Method listed as N/A indicates that the referenced waterbody is within the Project workspace, but is not crossed by the centerline. The nearest milepost is referenced, when applicable. Vehicle and equipment crossings would be completed on bridges as specified in section V.B.5. of our Procedures.

N/A = not applicable

The pipeline would be installed using HDD method across these rivers, which would avoid the potential for impacts on the pipeline due to flooding. In flood zone areas beyond the HDD crossings, WBI Energy would install saddle weights or use concrete coated pipe, as necessary, to ensure negative buoyancy is maintained.

A comment was received regarding permitting requirements for and impacts on floodplains. The Mapleton Compressor Station and the mainline valve at MP 14.4 are proposed within a regulatory floodplain. WBI Energy would construct the compressor station in compliance with local floodplain and building regulations that require floodproofing of structures and no impact on surrounding flood elevations. In order to


Georgetown
Argusville
Cass County
Clay County
Rush River
Sheyenne River
Red River of the North
Buffalo River
Lower Branch Rush River
Maple River
New Mapleton Compressor Station
Harwood
North River
Reile's Acres
Hector International Airport
North Dakota Air National Guard
Mapleton
Transfer Station
29
75
22
294
336
North Dakota
Minnesota
MT
MI
WY
SD
WI
NE
IA
IL
0 1.25 2.5 Miles
N
W
E
S
For Environmental Review Purposes Only
Figure B.3.2-1
Valley Expansion Project
WBI Energy Transmission, Inc.
Floodplains
Proposed Route
Existing WBI Sheyenne Sub-system
New Viking Interconnect
New Mapleton Compressor Station
State Boundary
Floodzone
Zone A
Zone AE
Zone AE- Floodway
Source: FEMA NFHL

comply with these regulations, WBI Energy would add fill to elevate the Mapleton Compressor Station facility site and would floodproof building facilities to at least one foot above the base flood elevation, displacing 7,669 cubic yards within the regulatory floodplain. WBI Energy would install the mainline valve at MP 14.4 at a height similar to the adjacent road surface elevations, which are assumed to be at or above the base flood elevation, displacing about 1,111 cubic yards within the regulatory floodplain. Because of the limited volume of flood displacement, the extent of the 100-year floodplain, and the fact that WBI Energy would construct the facilities in compliance with applicable floodplain and building regulations; we conclude that impacts would not be significant and would be minimized to the extent practible. The remaining Project facilities would be outside the regulatory floodplain, and none of the work proposed by WBI Energy would increase the potential for flooding.

Waterbodies

The Project would cross four Minnesota Public Waters, or waters over which MDNR Waters has regulatory jurisdiction, including Felton Creek, the Buffalo River, the Red River of the North, and one mapped unnamed tributary to Felton Creek. Crossing a Minnesota Public Water with a pipeline requires a Utility Crossing License from the MDNR. None of the waterbodies that would be crossed by the Project in Minnesota are designated as outstanding resource value waters. The state of North Dakota does not maintain a list of public waters, but a Sovereign Lands Permit would be required from the NDSWC for the Project's crossing of the Red River of the North and the Sheyenne River.

Four of the rivers that the project would cross are included on the EPA's list of impaired waters (EPA, 2016). These include the Buffalo River at MP 15.2, the Red River of the North at MP 18.5, the Rush River at MP 25.3, and the Maple River at MPs 33.1 and 36.0. The Buffalo River and the Red River of the North are also listed on the MPCA 2014 Inventory of Impaired Waters for mercury. WBI Energy would cross the Buffalo River, the Red River of the North, and the Rush River using the HDD method and the Maple River would be crossed using the guided bore method; therefore, we conclude these crossings would not result in impacts on the riverbed, riverbanks, or water quality. The potential wet open-cut of the unnamed tributary at MP 0.5 could result in temporary sedimentation and turbidity in the water column; this elevated sedimentation and turbidity would subside after construction.

Clay County includes one special protection district in its zoning ordinance that is waterbody-oriented and which provides unique resource-based standards and permitting requirements (Clay County, 2005). This district is the Shoreland Land Use District, which includes land within 300 feet of the Ordinary High Water Mark of rivers and streams. Based on a review of the Clay County Zoning Map, the Project would cross the Shoreland Land Use District between MPs 17.6 and 17.8 at the Red River of the North and between MPs 14.5 and 14.6 at the Buffalo River. However, WBI Energy would cross these locations using the HDD method and subsequently avoid surface impacts on

the Shoreland Land Use District. The counties crossed by the Project in North Dakota do not have an equivalent shoreland management plan.

The cities of Fargo and Grand Forks in North Dakota and Moorhead in Minnesota use the Red River of the North as their primary source of drinking water. The City of Fargo also uses the Sheyenne River as a backup source of drinking water. The water intakes for Fargo and Moorhead are upstream from the proposed Project crossing and the Grand Forks water intake is over 60 miles downstream of the proposed Project crossing (City of Fargo, 2015; Moorhead Public Service, 2017). Therefore, there are no potable surface water supplies within 3 miles downstream of any Project facilities or workspace. The remainder of the Project area obtains potable water from private wells or rural water systems. We conclude that impacts on drinking water supplies would would not be significant.

Construction of the Project across or near waterbodies has the potential to result in short-term and minor impacts on waterbodies. These impacts could result from initial equipment crossings; temporary bridge installation; construction adjacent to stream channels; clearing and grading of adjacent lands and streambanks; trench dewatering; unanticipated releases of drilling mud or chemical contaminants, which could result in temporary modification of aquatic habitats through direct impacts; increased erosion, sedimentation, and/or turbidity; decreased dissolved oxygen concentrations; and introduction of chemical contaminants such as fuel and lubricants.

Removal of streambank vegetation during construction can temporarily expose streambanks to erosion, cause sedimentation, increase turbidity, reduce riparian habitat, and result in increased water temperatures if there is a loss of significant shade vegetation. Some limited clearing of vegetation (hand cutting) may be required for for placement of guidance cables for the HDD. WBI Energy has commited to moving equipment around most waterbodies crossed by HDDs or guided bores by using existing bridges and roads. As previously described, WBI Energy has identified five HDD locations (MP 3.1, 25.3, 26.5, 33.0, and 35.9) where a travel lane would be used for construction equipment to travel between the drill entry and exit holes. Temporary bridges would be installed at these five locations in accordance with section V.B.5. of our Procedures, which would minimize impacts on these crossings. No clearing is required at these locations. During operations, WBI Energy would not conduct mowing or clearing of vegetation along the drill paths between HDD entry and exit points as stated in our Procedures.

Impacts that could occur on waterbodies caused by erosion of disturbed soils and sedimentation in waterbodies include habitat loss, increased turbidity, decreased productivity, reduced streamflow capacity, and death of aquatic species. Upon installation of equipment bridges, WBI Energy would install erosion and sediment control devices and maintain them to prevent streambank erosion throughout the duration of construction. Once the bridges were no longer needed and removed, WBI Energy

would reclaim and re-contour disturbed areas and maintain the erosion and sediment control devices until streambanks are revegetated and stabilized. As part of WBI Energy's temporary erosion and sediment control measures, WBI Energy would construct or install sediment barriers, stormwater diversions, trench breakers, mulch, and seeding to establish ground cover as necessary to protect waterbodies along the construction workspace, access roads, ATWS, spoil piles, and in other areas where land disturbing activities occur within the Project area. Permanent erosion controls would be accomplished by restoration of slopes and contours to pre-construction conditions and revegetation using approved seed mixes. The temporary and permanent erosion and sediment control measures would be installed as specified in our Procedures and WBI Energy's National Pollutant Discharge Elimination System (NPDES) Stormwater Permit. Based on these measures, the potential for erosion and sedimentation to adversely affect waterbodies would be minimized to the extent practicable.

Waterbody crossings completed using the HDD and guided bore methods (see section A.8.2.1) would generally avoid and significantly minimize the potential for surface water impacts resulting from erosion, sedimentation, and/or excess turbidity by avoiding ground surface disturbance in and immediately adjacent to the waterbody. The execution of these trenchless methods requires the circulation of drilling mud, and the potential exists for an inadvertent release of drilling mud if the drill path encounters fractures or fissures that offer a pathway to the ground surface or the waterbody being crossed. Drilling mud released into a waterbody can result in temporary sedimentation of stream bottom habitats, increased turbidity levels, and cover stream bottom habitats and benthic organisms. WBI Energy would minimize the potential for accidental releases of drilling mud and potential impacts on waterbodies by following their *Horizontal Directional Drill and Guided Bore Drilling Fluid Monitoring and Operations Plan*. This plan includes procedures for monitoring, detecting, isolating, stopping, and clean-up of inadvertent releases of drilling fluids, as well as making necessary agency notifications. We have reviewed this plan and find that impacts on waterbodies due to an inadvertent release of drilling fluids would be minimized to the extent practicable. WBI Energy's geotechnical assessment of its HDD crossings concludes that the HDD crossings would be feasible considering the geotechnical conditions.

A release of fuel or hazardous material into a waterbody can directly cause mortality of aquatic organisms and wildlife that use the waterbody. To prevent the introduction of fuels and/or hazardous materials into waterbodies, WBI Energy has developed an SPCC Plan to prevent, contain, and clean-up spills and address necessary precautions during material storage. As part of the SPCC Plan, fuel storage and refueling of equipment would not be allowed within 100 feet of waterbody boundaries, unless otherwise reviewed and approved by the EI. Based on these measures, we find the potential for a release of fuel or hazardous material into a waterbody would be minimized to the extent practicable.

Following construction, WBI Energy would restore temporary workspaces to preconstruction contours, stabilize the areas with erosion control blankets, and would revegetate the area with the appropriate seed mix. WBI Energy would minimize surface water impacts during project operations by limiting vegetation maintenance adjacent to waterbodies to allow a 25-foot riparian strip to revegetate; in addition, WBI Energy would not a conduct routine vegetation maintenance between the HDD and guided bore entry and exit points. This reduction in vegetation maintenance activities allows for additional plant growth; which in turn reduces the potential for soil erosion and runoff into surface waterbodies.

Based on WBI Energy's implementation of its *Horizontal Directional Drill and Guided Bore Drilling Fluid Monitoring and Operations Plan, SPCC Plan*, and the FERC Procedures, we conclude that impacts on surface water resources would be minor and temporary. In addition, WBI Energy would construct its facilities in accordance with the regulations and requirements of applicable permits such as USACE authorizations under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, the MDNR Utility Crossing License, the NDSWC Sovereign Lands Permit, and NPDES stormwater discharge permit.

B.1.2 Wetland Resources

Only one class of palustrine (freshwater) wetland system is present in the Project area (Cowardin et al., 1979): palustrine emergent (PEM) wetlands, which are characterized by erect, rooted, herbaceous vegetation. Table B.3.3-1 lists the individual wetlands that would be crossed by the Project, including their approximate MP location, unique identification number, wetland type, crossing length, acreage impacted by construction and operations, and the proposed crossing method, as applicable.

WBI Energy would install the pipeline across wetlands using trenchless methods (in other words, HDD or guided bore). Where no reasonable upland access to these features exists, these wetlands would be crossed by equipment mats or bridging, up to 45 feet in width, in accordance with the Procedures and as described in section A.8.2.3. No clearing would be required for placement of these equipment mats and bridging. During operations, WBI Energy would not maintain vegetation along the HDD or guided bore drill paths; therefore, we conclude that no conversion or permanent impacts on PEM wetlands that would be crossed by the HDD method are anticipated.

Two PEM wetlands are present within the proposed Bishop Laydown Yard and one PEM wetland is present within the proposed Minnkota Laydown Yard. However, WBI Energy would avoid impacts by fencing the wetlands and by maintaining equipment operation and refueling setbacks as specified in the Procedures. Therefore, we conclude impacts on the PEM wetlands from use of these areas would be avoided.

TABLE B.3.3-1

Wetlands Crossed by the Project

Facility, County, Wetland ID	Approximate MP	Approximate Crossing Length (feet)	Acreage Affected During Construction[a]	Acreage Affected During Operation[b]	Crossing Method[c]
Pipeline/Travel Lane					
Clay County, Minnesota	1.0	23	<0.1	0	Guided Bore/Travel Lane
	1.0	14	<0.1	0	Guided Bore/Travel Lane
	2.0	13	<0.1	0	Guided Bore/Travel Lane
	2.1	18	<0.1	0	Guided Bore/Travel Lane
	5.2	16	<0.1	0	Guided Bore/Travel Lane
	6.7	12	<0.1	0	Guided Bore/Travel Lane
	7.7	7	<0.1	0	Guided Bore/Travel Lane
	8.7	13	<0.1	0	Guided Bore/Travel Lane
	8.7	18	<0.1	0	Guided Bore/Travel Lane
	9.7	19	<0.1	0	Guided Bore/Travel Lane
	9.8	19	<0.1	0	Guided Bore/Travel Lane
	11.3	8	<0.1	0	Guided Bore/Travel Lane
	12.2	8	<0.1	0	Guided Bore/Travel Lane
	14.2	19	<0.1	0	Guided Bore/Travel Lane
	15.4	13	<0.1	0	Guided Bore/Travel Lane
	16.6	24	0	0	Guided Bore
	17.2	11	<0.1	0	Guided Bore/Travel Lane
	17.2	9	<0.1	0	Guided Bore/Travel Lane
Cass County, North Dakota	23.1	25	<0.1	0	Guided Bore/Travel Lane
	23.2	16	<0.1	0	Guided Bore/Travel Lane
	27.7	6	<0.1	0	Guided Bore/Travel Lane
	28.7	17	<0.1	0	Guided Bore/Travel Lane
	28.7	8	<0.1	0	Guided Bore/Travel Lane
	29.7	14	<0.1	0	Guided Bore/Travel Lane
	31.2	12	<0.1	0	Guided Bore/Travel Lane
	32.4	14	<0.1	0	Guided Bore/Travel Lane
	35.0	28	<0.1	0	Guided Bore/Travel Lane
	36.9	17	<0.1	0	Guided Bore/Travel Lane
	37.0	11	<0.1	0	Guided Bore/Travel Lane
Pipeline Subtotal		**515**	**0.5**	**0**	**N/A**
Aboveground Facilities					
Clay County, Minnesota					
Mainline Block Valve	14.4	4	<0.1	<0.1	N/A
Cass County, North Dakota					
Mapleton Compressor Station Access Road	37.3	16	<0.1	<0.1	N/A
Stutsman County, North Dakota					
Jamestown Town Border Station	N/A	N/A	<0.1	<0.1	N/A
Aboveground Facilities Subtotal		4	**<0.1**	**<0.1**	**N/A**
Project Total [d]		**535**	**0.5**	**<0.1**	**N/A**

[a] Temporary (construction) impact includes the footprint for construction workspace, ATWS, permanent right-of-way, and travel lanes between guided bore entry and exit points, where present). Temporary impacts identified along the pipeline route would be entirely due to travel lanes.

[b] There would be no pipeline operation impact on PEM wetlands that will be crossed by HDD/guided bore method and no palustrine scrub-shrub and palustrine forested wetlands were identified in the Project area; therefore, there would be no change in the pre-construction vegetation cover type and no operational impact.

TABLE B.3.3-1

Wetlands Crossed by the Project

Facility, County, Wetland ID	Approximate MP	Approximate Crossing Length (feet)	Acreage Affected During Construction[a]	Acreage Affected During Operation[b]	Crossing Method[c]

[c] Crossing Method listed as N/A indicates wetland would not be crossed by the pipeline, but is within an ATWS. Where access roads or travel lanes cross wetlands, the length of the crossing is provided.

[d] Totals may vary slightly due to rounding.

N/A = not applicable

A total of less than 0.1 acre of wetlands would be temporarily and permanently impacted by construction of the aboveground facilities. One PEM wetland would be within the footprint for the new permanent access road at the Mapleton Compressor Station site. The wetland is within a roadside ditch. One PEM wetland would also be affected along the edge of the permanent access road for the mainline block valve at MP 14.4; the wetland is also within a roadside ditch. These ditches cannot be avoided in accessing each site from nearby public roads. One PEM wetland is within the southeast corner of the proposed Jamestown TBS site that could not be avoided by construction or operation of the facility modifications because of engineering requirements and space constraints.

To minimize the potential for sedimentation of wetlands from Project construction activities, erosion and sediment control measures would be installed prior to or immediately following initial ground disturbance. WBI energy would install the erosion control devices along wetland boundaries and would maintain them in working condition until the adjacent upland areas are successfully revegetated as specified in our Procedures.

Compaction of wetland soils and rutting within wetlands caused by equipment operation can affect wetland hydrology and revegetation, and would be minimized by limiting equipment operation in wetlands and installing temporary equipment mats, as necessary.

Wetland crossings completed using the guided bore method would avoid and minimize the potential for wetland impacts resulting from erosion, sedimentation, or excess turbidity by avoiding ground surface disturbance in and immediately adjacent to the wetlands. However, as described above, the potential for accidental releases of drilling mud exists, and potential impacts on wetlands could occur, but would be minimized by implementation of WBI Energy's *Horizontal Directional Drill and Guided Bore Drilling Fluid Monitoring and Operations Plan*, which includes procedures for monitoring, detection, isolating, stopping, and clean-up of inadvertent releases, as well as making necessary agency notifications.

In addition, WBI Energy's SPCC Plan provides restrictions and mitigation measures to limit potential impacts associated with the release of fuels, lubricants, or other potentially toxic materials used during routine construction. Refueling and storage of hazardous materials would be prohibited within 100 feet of wetlands during construction, unless otherwise reviewed and approved by the EI. Based on these measures, we find the potential for a release of fuel or hazardous material into a wetland would be minimized to the extent practicable.

After the completion of construction, wetland areas crossed by travel lanes would be allowed to revegetate naturally. PEM wetlands, which are dominated by low-growing sedges, rushes, and other herbaceous vegetation, would revert to pre-existing conditions within one to two growing seasons following construction, resulting in no permanent impacts on these wetland types. In accordance with our Procedures, wetlands would be monitored annually until revegetation is successful. Based on these measures, impacts on wetlands would be avoided and minimized to the extent practical and would not be significant.

B.1.2 Hydrostatic Testing

As required by 49 CFR 192, WBI Energy would conduct pressure testing of the new pipeline and Mapleton Compressor Station facilities before placing them into service. WBI Energy would require about 1.9 million gallons of water to pressure test the new pipeline and about 3,000 gallons to test the compressor station facilities. In addition, WBI Energy would pressure test each of the HDD or guided bore sections of the pipeline before installation. The water for pressure testing may be obtained from a combination of municipal supplies and/or surface water sources, as specified in table B.3.4-1. If water is taken from surface water sources, WBI Energy would obtain a Water Appropriation Permit from the MDNR or NDSWC, as required by these agencies.

Water withdrawals from surface waterbodies would be conducted in a manner that would not reduce water flow to a level that would impair flow, impact fish, or affect recreational uses. Intake would be suspended off the bottom of the waterbody to prevent sediment uptake and intake screen devices would be fitted to prevent the entrainment of aquatic organisms during water withdrawal. Before testing, a small volume of water may be pushed through the pipeline in a single event to rinse out dust, dirt, and debris that may have accumulated in the pipe during construction. WBI Energy would not add chemicals to the rinse water, and would discharge the water into a dewatering structure located in an upland area. Table B.3.4-1 provides hydrostatic test details for the pipeline and compressor station facilities.

An estimated 101,800 gallons of water would be required to mix with bentonite and to remove cuttings from the drill hole during HDD drilling. Table B.3.4-2 summarizes the HDD water use for each HDD crossing.

TABLE B.3.4-1

Anticipated Hydrostatic Test Water Source and Discharge Locations and Volumes

Facility	Water Source	Withdrawal Location (MP)	Withdrawal Watershed (Hydrologic Unit Code 12)	Approximate Volume (gallons)	Discharge Location (MP)	Discharge Rate (gallons per minute)
Pipeline	Sheyenne River or Municipal	21.7	Outlet Sheyenne River (090202040707)	1,936,200	21.5	2,000
Mapleton Compressor Station	Municipal (City of Mapleton)	Mapleton Community Center	Outlet Maple River (090202050704)	3,000	37.3	150
Total				**1,939,200**		

TABLE B.3.4-2

Anticipated HDD Process and Test Water Sources and Volumes for Pipeline Facilities

HDD Crossing (MP and feature crossed)	Water Source	Withdrawal Watershed (Hydrologic Unit Code 12)	Approximate Volume for Drill Process Water (gallons)	Approximate Volume for Drill Test Water (gallons)
MP 3.1 – Felton Creek (Channelized Ditch No. 45)	Municipal or Buffalo River	Upper County Ditch No. 45 (090201081101)	2,655	5,225
MP 15.2 - Buffalo River			3,865	7,600
		Municipal or Buffalo River Subtotal	**6,520**	**7,600** [a]
MP 18.5 - Red River of the North	Municipal or Sheyenne River	Outlet Sheyenne River (090202040707)	8,730	15,200
MP 21.2 – Sheyenne River			7,005	13,775
MP 21.7 – Sheyenne River			7,930	15,600
MP 23.6 – Interstate 29			7,250	14,250
MP 25.4 – Rush River			2,094	4,116
MP 26.6 – Lower Branch Rush River			2,175	4,275
		Municipal or Sheyenne River Subtotal	**35,184**	**15,600** [a]
MP 30.3 – FMADP	Municipal or Maple River	Outlet Maple River (090202050704)	9,900	19,500 [b]
MP 33.1 – Maple River			3,865	7,600
MP 36.0 – Maple River			3,625	7,125
		Municipal or Maple River Subtotal	**17,390**	**19,500** [a]
		Water Source Subtotals	**59,094**	**42,700** [a]
		Project Total	**101,794**	

[a] For each water source used for pre-testing the drill segments, there would only be one uptake that would be enough for the largest volume test and then the water would be reused for each test of bore segments that relies on that water source. For this reason, the subtotals are not additive, and instead match the highest volume of uptake presented. Project total includes the combined maximum total from each source that would be used for pre-testing drill segments.

[b] Estimated volumes assuming the FMADP crossing would be a 2,000-foot-long HDD crossing.

FMADP = Fargo-Moorhead Area Diversion Project

The HDD process water is expected to be consumed by the drilling process or ultimate disposal of drill cuttings. The test water either would be hauled to a municipal wastewater facility or discharged to an upland area in accordance with our Procedures and applicable NPDES permits. If discharged on land, an energy-dissipating device such as a straw bale dewatering structure and a splash pup would be used. Discharge rates

would be controlled to prevent erosion, scouring and sedimentation, flooding, or the introduction of foreign or toxic substances into adjacent waterbodies. WBI Energy would obtain a NPDES permit from the MPCA and NDDH for the discharge of hydrostatic test water and water quality sampling of discharges would be conducted, as required by permit conditions. The new pipeline would consist of new steel pipe that would be free of chemicals or lubricant and no additives would be used. No significant water impacts are anticipated as a result of discharge from hydrostatic testing.

Water also may be withdrawn for the control and mitigation of fugitive dust on access roads. Typically, contractors use trucks that hold about 4,000 gallons of water per load for dust control, and water is obtained from municipal or surface water resources under permits carried by the contractor, as necessary.

WBI Energy estimates up to about 960,000 gallons of water may be used over the course of construction for all Project facilities. Actual amounts required would vary based on climatic conditions at the time of construction. Based on WBI Energy's implementation of the FERC Procedures, we conclude that hydrostatic test water and fugitive dust control impacts on surface water resources would be minor and temporary.

B.1.2 Requested Modifications to our Procedures

As described in section B.3.3, construction and operation of aboveground facilities would permanently impact three wetlands. Construction and operation of the Mapleton Compressor Station, the mainline valve at MP 14.4, and the Jamestown TBS would permanently impact less than 0.1 acre of wetlands. Our Procedures specify in section VI (A)(6) that aboveground facilities should not be within wetlands; however, WBI Energy has provided engineering and space constraint reasons for placement of these facilities in wetlands (a specific alignment to the existing Otter Tail Power Overhead Power Line would need to be maintained for the proposed Mapleton Compressor Station, and the Jamestown TBS would be replacing an existing facility using the same construction footprint). Based on our review of the request for these modifications, we have determined that WBI Energy has provided sufficient justification for placement of these facilities in wetlands.

B.4 FISHERIES, VEGETATION, AND WILDLIFE

B.1.1 Fisheries

Constructing the Project would require 14 crossings of 12 individual waterbodies; 6 of these waterbodies are perennial and 6 are intermittent waterbodies. Minnesota classifies waterbodies as either warmwater or coldwater fisheries under Minnesota Rules 7050.0430. Minnesota has listed three waterbodies (Felton Creek, the Buffalo River, and the Red River of the North) as warmwater fisheries. The other two waterbodies in Minnesota are unlisted waters, which are defined by default in Minnesota Rule

7050.0430 as Class 2B and capable of supporting fish and other aquatic communities. North Dakota classifies waters as Class I, IA, II, or III fisheries per ND Century Code 33-16-02.1. The Project crosses six Class III fishery waterbodies and one 1A fishery waterbody in North Dakota. None of the waterbodies in either Minnesota or North Dakota contain federally listed threatened, endangered, or special concern fisheries or designated critical habitat; and no essential fish habitat occurs within or near the Project area.

Sedimentation and turbidity, alteration or removal of instream and stream bank cover, stream bank erosion, introduction of water pollutants, water depletions, and entrainment of small fishes during water withdrawals resulting from Project activities could increase stress, injury, and mortality of stream biota, including fisheries. However, WBI Energy would follow our Plan and Procedures to control erosion and sedimentation and to minimize impacts on waterbodies. WBI Energy would also implement the HDD and guided bore methods for installing the pipelines across all potentially aquatic life-supporting waterbodies, thereby avoiding direct impacts on the waterbodies and associated fisheries and other aquatic resources other than minimal impacts due to placement of travel lanes and equipment bridges. The potential wet open-cut of the unnamed tributary would contribute to an increase in sedimentation. The resulting turbidity would affect water quality and impede fish movement, potentially increasing the rates of stress, injury, and/or mortality of individual fish.

Fine particulate matter from HDD inadvertent returns or wet open-cut crossings can interfere with oxygen exchange via fish gills at high concentrations in the water column (USEPA, 1986). Flowing water is likely to disperse the material more quickly than if sediment was released into standing water. The effect on mobile fish species would depend primarily on the duration of the in-water construction activities, and the amount of sediment suspended in the water column. Impacts could occur on immobile aquatic species, such as mussels, eggs, and larvae, or less-mobile juvenile fish. While impacts on mobile fish species would be temporary and minimal, direct mortality of immobile mussel species or fish life stages could occur following an increase in turbidity. Given the temporary nature of construction, the ephemeral nature of the unnamed tributary (which reduces the likelihood of existing aquatic species populations), and WBI Energy's implementation of our Procedures, impacts on immobile species from sedimentation would be limited to the unnamed tributary during occasional time periods of ephemeral water flow.

An inadvertent release of drilling fluid or a spill of fuel or equipment related fluids could impact water quality and consequentially impact fisheries. To minimize the potential for an inadvertent release of drilling fluid to impact fisheries, WBI Energy would implement its *Horizontal Directional Drill and Guided Bore Drilling Fluid Monitoring and Operations Plan* that includes procedures for monitoring, detection, isolating, stopping, and clean-up of inadvertent releases, as well as making necessary

agency notifications. WBI Energy's contractors would also adhere to the Project-specific SPCC Plan, which includes preventive measures such as personnel training, equipment inspection, and refueling procedures, as well as measures for containment and cleanup of a spill if it occurs.

Blasting is not anticipated to be required for the Project. In the event in-water blasting was required, WBI Energy would develop a Blasting Plan that would reduce potential impacts on waterbodies and fisheries to submit to FERC and applicable state agencies. Standard operation of the Project would not affect waterbodies or their aquatic communities. If future repairs required disturbance of any of the waterbodies, that action and its potential impacts would be reviewed by FERC, as well as by Minnesota and North Dakota state agencies. Based on the measures discussed in this section, we conclude that fisheries would not be significantly affected by the Project.

Aquatic Nuisance Species

In a letter dated September 12, 2016, the North Dakota Game and Fish (NDGF) specified that aquatic nuisance species were a large problem within the state's waterbodies. Because WBI would cross all waterbodies using the HDD or guided bore method except for the intermittment unnamed tributary at MP 14.4 (and potentially the ephemeral unnamed tributary at MP 0.5, if flowing), no equipment or supplies would come in contact with the water. If the intermittent and ephemeral unnamed tributaries do have perceptible flow at the time of crossing and WBI used the open-cut crossing method, the streams only have occasional waterflow and cannot sustain aquatic species year-round; this prevents any aquatic species' ability to establish large populations for long durations within this waterbody. Therefore, we conclude the project would not influence the number or type of aquatic nuisance species within the waterbodies.

B.1.2 Vegetation

Three dominant vegetation cover types would be affected by the Project facilities, including agriculture (cropland), open (herbaceous pastureland, grassland, and PEM wetlands), and forest/woodlands areas. The Project would cross one Minnesota Biological Survey (MBS)-designated Railroad Right-of-Way Prairie area. The MBS manages Railroad Right-of-Way Prairie areas to protect remnant native prairie vegetation along the edges of active railroads and the species that rely on this habitat. The MBS Railroad Right-of-Way Prairie area at MP 3.0 is located along the edge of the Burlington Northern-Santa Fe Railroad right-of-way. WBI Energy would cross the Burlington Northern-Santa Fe Railroad using the guided bore method, which would avoid impacts on vegetation, wildlife, and habitat within the MBS Railroad Right-of-Way Prairie area. No construction activities would occur within the MBS-designated area. WBI Energy would work with the MDNR during permitting to identify any other measures that may be necessary to minimize impacts. Therefore, no impact on the MBS Railroad Right-of-Way Prairie area is anticipated.

There are no other known unique or sensitive vegetation types affected by the Project. Table B.4.2-1 lists the amount of each cover type that would be temporarily and permanently impacted by construction and operation of the Project.

Pipeline construction would affect mostly agricultural and open vegetation, followed by lesser amounts of forest/woodlands. Construction of the Mapleton Compressor Station, mainline block valves, and other aboveground facilities would primarily affect agricultural vegetation and a small amount of open vegetation. Operation of the aboveground facilities would result in the permanent conversion of about 7.4 acres of agricultural land and 1.0 acre of open land to industrial uses. Project operations would permanently impact about 0.1 acre of forest/woodland by installation of the new valve setting at MP 14.4, the new permanent access road to this valve setting, and regular routine maintenance.

The primary impact of the Project on vegetation would be the cutting, clearing, and/or removal of existing vegetation within the construction work area. Secondary effects associated with disturbances to vegetation could include the increased potential for soil erosion, increased potential for the introduction and establishment of invasive weedy species, potential increases in fugitive dust, potential visual resource impacts, and potential wildlife and agricultural productivity impacts.

Following construction, WBI Energy would seed and stabilize non-cultivated disturbed areas in accordance with our Plan, WBI Energy's stormwater permit requirements, and NRCS seeding recommendations received during scoping. Actively cultivated agricultural land would not be seeded unless requested by the landowner. WBI Energy would reseed open (herbaceous) areas in Minnesota in accordance with Minnesota Board of Water and Soil Resources guidelines (Minnesota Board of Water and Soil Resources, 2012), as specified under the Red River Prairie Ecological Classification System. Open (herbaceous) lands in North Dakota would be reseeded according to the North Dakota Herbaceous Vegetation Establishment Guide (U.S. Department of Agriculture NRCS, 2015). Open wetlands would be seeded with annual rye as specified in our Procedures. Typically regrowth of open meadow and emergent wetland species to original stand density occurs within one to six growing seasons in this region (NRCS 2009).

Forest/woodland impact areas within construction workspace or ATWS along the pipeline route would be seeded and allowed to regenerate naturally. During operation of the Project, about 0.1 acre of forest/woodland area would be maintained in an herbaceous state within WBI Energy's permanent right-of-way and about 0.1 acre of forest/woodland would be permanently converted to developed land for operation of the valve setting at MP 14.4 and use of a permanent access road to the valve setting.

TABLE B.4.2-1

Summary of Impacts on Vegetation Cover Types [a]

Facility, Vegetation Cover Type	Temporary Impacts (acres)	Operation Impacts [b] (acres)
Pipeline [c]		
Agricultural	468.0	0.0
Forest/Woodland	0.3	0.1
Open (herbaceous)	35.3	0.0
Pipeline Subtotal [d]	**503.7**	**0.1**
Aboveground Facilities		
Mapleton Compressor Station		
Agricultural	9.5	5.4
Open (herbaceous)	0.7	0.4
Mapleton Compressor Station Subtotal [d]	**10.2**	**5.8**
Viking Interconnect		
Agricultural	4.0	0.6
Open (herbaceous)	0.9	< 0.1
Viking Interconnect Subtotal [d]	**4.9**	**0.7**
Mainline Block Valves [e]		
Agricultural	0.4	0.4
Open (herbaceous)	0.1	0.1
Mainline Block Valve Subtotal	**0.6**	**0.6**
Sanborn Regulator Station		
Open (herbaceous)	1.1	0.6
Sanborn Regulator Station Subtotal [d]	**1.1**	**0.6**
Jamestown Town Border Station		
Agricultural	0.1	0.1
Open (herbaceous)	0.3	0.2
Jamestown Town Border Station Subtotal [d]	**0.4**	**0.3**
Apple Valley Town Border Station		
Agricultural	0.2	0.1
Open (herbaceous)	0.6	0.4
Apple Valley Town Border Station Subtotal [d]	**0.8**	**0.5**
Aboveground Facilities Subtotal	**18.0**	**8.5**
Project Total [d]	**521.6**	**8.6**

[a] Acreage does not include non-vegetated areas designated as lands used for industrial/commercial/road purposes, open developed, or as open water areas.

[b] No vegetative maintenance would be necessary in agricultural, open, or in forested areas that would be crossed by the horizontal directional drilling method. Forest/woodland areas within temporary or additional temporary workspace would be allowed to return to preconstruction conditions, and therefore, would not be impacted by operation of the pipelines. The exception is forest/woodland areas within 15 feet of the pipeline centerline where trees would not be allowed to reestablish to allow for safe operation of the pipeline.

[c] Includes temporary workspace needed for construction of the pipeline, additional temporary workspace, access roads, staging areas, and permanent operational right-of-way. Acreage does not include mainline block valves or access roads associated with aboveground facilities

[d] Sum of addends may not total due to rounding.

[e] A portion of the workspace that would be used to construct and operate the mainline block valves would overlap with the temporary workspace and permanent right-of-way for the pipeline facilities. The area of overlap is included in the total impact calculations for the mainline block valves and has been deducted from the total impact calculations for the pipeline route to avoid overstating the total acres of impact.

Based on these measures, and because WBI Energy would not maintain vegetation over the pipeline centerline where the pipeline would be installed by the HDD method, no operational impact on vegetation is expected along the pipeline, except in association with the valve settings and minimal forested pipeline right-of-way. The MBS Railroad

Rights-of-Way Prairie area near MP 3.0, as noted above, would be avoided by use of the guided bore method for this crossing; therefore, vegetation impacts in this area would be avoided.

Under Executive Order No. 13112 (64 Federal Register 6,183), "federal agencies shall not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species. " Additionally, the lead federal agency for NEPA review of a project must ensure all feasible and prudent measures to minimize risk of harm be taken in conjunction with the actions.

The U.S. Department of Agriculture's Introduced, Invasive, and Noxious Plants database; the invasive species list maintained by the MDNR; the noxious weed lists maintained Minnesota Department of Agriculture, including the County Noxious Weeds List; and the noxious weeds lists maintained by the North Dakota Department of Agriculture were reviewed to determine potential species that could occur in the Project area. In addition, WBI Energy collected information on noxious weeds in the Project areas during Fall 2016 and Spring 2017 field surveys. Canada thistle (*Cirsium arvense*) and leafy spurge (*Euphorbia esula*) occurred sporadically throughout the Project area.

WBI Energy has developed a Project-specific Noxious Weed Management Plan to prevent, mitigate, and control the spread of noxious weeds during construction and operation of the proposed facilities. All contractor equipment would arrive at the work site clean and weed-free. Before being allowed access to the right-of-way or ancillary facilities, verification that all equipment would be power or high-pressure air washed after use would be provided. An EI or other designated personnel would inspect all equipment leaving an area infested with noxious weeds to ensure it was free of soil and debris capable of transporting weed seeds, roots, or rhizomes. Equipment could need to be cleaned with an air compressor to limit the spread of noxious weed seeds and propagules. The EI would log inspections in the daily log.

The contractor would ensure that any straw bales used on the Project for sediment barrier installation, or mulch, were certified weed-free. Construction equipment would not be sprayed with pre-emergent chemicals as a preventive measure, since these chemicals target a wide range of vegetation, including native plants. Final revegetation would occur within the approved seeding window with an approved certified weed-free seed mix.

We have reviewed these measures and find they would adequately minimize the potential for weeds to be introduced or spread due to the Project area, and that impacts would not be significant.

B.1.2 Wildlife

The Project would cross various wildlife habitats including agricultural, open (herbaceous) land, and forest/woodland. Construction would occur for about 8 months, from April to November 2018. Game species such as white-tailed deer, wild turkey, grouse, mourning doves, and ring-necked pheasant occur within the Project area. Resident and migratory waterfowl species utilize the waterbodies and wetlands and surrounding cropland for breeding and migration. Non-game species such as raccoons, various rodents, grey fox, and skunk utilize the cropland and riverine habitat as den and foraging locations within the Project area. Dense grass, shrubs, and small trees provide nesting habitat and seed production for a variety of songbirds such as meadowlarks and sparrows. Predatory birds such as Swainson's hawks, bald eagles, and northern harriers utilize upland grasslands for hunting songbirds and small mammals (such as rabbits, voles, and shrews). Several species of snakes, frogs, turtles, and toads may also be found in the habitats adjacent to the waterbodies and wetlands. Construction has been proposed for spring, summer, and autumn months. Because the Project would not likely be built over the winter, it's unlikely that wildlife species would be hibernating.

Managed wildlife habitats along the Project include the Felton Prairie Complex Important Bird Area (Felton Prairie IBA) and the MBS-designated Railroad Right-of-Way Prairie area. The Project would cross the Felton Prairie IBA from MPs 0.0 to 1.9 in Clay County, Minnesota. The area of the Felton Prairie IBA that would be crossed by the Project consists of privately owned, actively cultivated land; therefore, there is low potential for the Project to impact significant habitat within the Felton Prairie IBA. No long-term impact on the Felton Prairie IBA is anticipated.

Only temporary and minor impacts on wildlife species in the Project area would be expected, and no impacts on wildlife at a community or regional level would be caused by Project construction and operation. Wildlife habitats that would be affected by construction are relatively abundant in the areas adjacent to the right-of-way, and wildlife displaced during construction can temporarily relocate to suitable habitat located nearby. Disruption of wildlife movement is expected to be minor because no permanent barriers, with the exception of the fenced/graveled aboveground facilities, to wildlife would be constructed.

Until vegetation has become re-established, construction activities (especially clearing) would reduce feeding, nesting, and cover habitat components. Mobile species could be disturbed or displaced temporarily from portions of their habitats, and mortality of individuals of less mobile species, such as some small mammals, reptiles, or amphibians, may occur. Indirect wildlife impacts associated with construction noise and increased human activity would be temporary and could include abandoned reproductive efforts, displacement, and avoidance of work areas. However, both direct and indirect impacts on wildlife within the construction workspace, ATWS, and other work areas,

generally would be temporary and short-term and limited to the period of construction and revegetation.

The EI would inspect the trench for wildlife and livestock daily, before construction begins. In locations where wildlife activity would be anticipated, WBI Energy would install ramps in the trench at regular intervals to provide an exit for wildlife that could fall into the trench, and would provide gaps in spoil piles and pipe stringing to allow wildlife to cross the construction corridor. Additionally, WBI Energy would implement our Plan and Procedures and would minimize the amount and time of open trench to minimize impacts on wildlife and livestock. Therefore, Project impacts on wildlife and livestock would be avoided and minimized to the extent practical.

Following construction, construction workspace and ATWS outside of the permanent right-of-way would be allowed to revert to pre-construction conditions in accordance with our Plan and Procedures. Effects on non-forested upland and wetland habitats disturbed by construction would be short-term, and are expected to return to preconstruction conditions within one or two growing seasons after construction is completed. The temporary effects on these habitats are expected to have little or no significant impact wildlife, and no changes to wildlife populations are anticipated. Forested communities would take longer to return to pre-construction conditions. However, WBI Energy would avoid and minimize forested vegetation impacts and we conclude the Project impacts on forested vegetation would not be significant.

B.4.3.1 Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act (16 United States Code sections 703-711), which prohibits the taking of any migratory bird, or a part, nest, or eggs of any such bird, except under the terms of a valid permit issued pursuant to federal regulations. Bald and Golden Eagles are additionally protected under the Bald and Golden Eagle Protection Act (16 United States Code sections 668-668d). Executive Order No. 13186 (66 Federal Register 3853), directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and to avoid or minimize adverse effects on migratory birds through enhanced collaboration with the FWS. Executive Order No. 13186 states that emphasis should be placed on species of concern, priority habitats, and key risk factors and that particular focus should be given to addressing population-level impacts. On March 30, 2011, the FWS and the Commission entered into a Memorandum of Understanding (MOU) that focuses on avoiding or minimizing adverse effects on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two agencies. In accordance with Executive Order No. 13186 and the MOU, Birds of Conservation Concern and Important Bird Areas were identified in the Project area within Bird Conservation Region Zone 11 (see table B.4.3.1-1) (FWS, 2008).

TABLE B.4.3.1-1

Birds of Conservation Concern that Potentially Occur in the Project Areas (All Facilities)
Bird Conservation Region Zone 11

Listed Birds	
Common Name [a]	Scientific Name
Swainson's Hawk	*Buteo swainsoni*
Horned Grebe (nb)	*Podiceps auritus*
American Bittern	*Botaurus lentiginosus*
Bald Eagle (b)	*Haliaeetus leucocephalus*
Peregrine Falcon (b)	*Falco peregrinus*
Yellow Rail	*Coturnicops noveboracensis*
Solitary Sandpiper (nb)	*Tringa solitaria*
Upland Sandpiper	*Bartramia longicauda*
Mountain Plover	*Charadrius montanus*
Hudsonian Godwit (nb)	*Limosa haemastica*
Marbled Godwit (nb)	*Limosa fedoa*
Long-billed Curlew	*Numenius americanus*
Buff-breasted Sandpiper (nb)	*Tryngites subruficollis*
Short-billed Dowitcher (nb)	*Limnodromus griseus*
Black Tern	*Chlidonias niger*
Black-billed Cuckoo	*Coccyzus erythropthalmus*
Short-eared Owl (nb)	*Asio flammeus*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Sprague's Pipit	*Anthus spragueii*
Baird's Sparrow	*Ammodramus bairdii*
Nelson's Sharp-tailed Sparrow	*Ammodramus nelson*
McCown's Longspur	*Rhynchophanes mccownii*
Smith's Longspur (nb)	*Calcarius pictus*
Chestnut-collard Longspur	*Calcarius ornatus*
Dickcissel	*Spiza Americana*
Least Bittern	*Ixobrychus exilis*
Grasshopper Sparrow	*Ammodramus savannarum ammoleguss*
Smith's Longspur (nb)	*Calcarius pictus*

[a] Federal status indicated by the following identifiers: (a) ESA candidate, (b) ESA delisted, (c) non-listed subspecies or population of Threatened or Endangered species, (d) MBTA protection uncertain or lacking, and (nb) non-breeding in this Bird Conservation Region.

The nesting season for migratory birds in Minnesota is generally from April 15 to August 1 and in North Dakota it is from February 1 to July 15. Pipeline construction during this timeframe could result in short-term disturbance of migratory bird habitat, causing birds present in the Project area to relocate temporarily during periods of active construction and human activity. The Project has the potential to alter or otherwise affect migratory bird foraging habitat temporarily; however, such impacts would be minimal, given the prevalence of similar habitats available outside of the construction right-of-way. Species that are sensitive to forest fragmentation would be most likely to be affected. However, minimal forested areas exist in the Project area and forest fragmentation would be largely avoided or minimized by WBI Energy's plans to use HDD or guided bore methods beneath most forested areas. In addition, WBI Energy would not conduct incremental clearing of the permanent right-of-way in forested areas that would be crossed by the HDD or guided bore methods, which would avoid permanent conversion of forested habitat to herbaceous or shrub habitat.

Some migratory bird species use open habitats for nesting and would be unable to nest within cleared workspaces during construction. The permanent right-of-way could also function as a travel corridor for some species and provide food, cover, and breeding habitat for those species that use open and emergent habitats. In addition, maintained utility rights-of-way can provide important early successional habitats for several important game species and migratory birds.

WBI Energy has proposed construction during spring and summer months, when migratory birds would be present. WBI Energy would initiate construction in early spring and an EI would inspect construction areas immediately prior to construction for the presence of any bird nests to avoid the potential for impacts on migratory birds. If any nests were observed, WBI Energy would suspend ground-disturbing activities (for example, grading and trenching) within 100 feet of the nest while the FWS was contacted to determine any necessary avoidance or mitigation measures (such as workspace buffering), before continuing ground-disturbing activities in the area. WBI Energy also would not conduct routine vegetation maintenance of the right-of-way more than once every 3 years. As required by our Plan, WBI would not conduct routine vegetation maintenance between April 15 and August 1 to minimize the potential for impacts on migratory bird species that may use the permanent right-of-way for nesting. Based on the vegetation clearing window restriction and WBI's commitment to survey for birds immediately before any ground-disturbing activities would take place, we have determined that installing and operating the pipelines would not result in significant measurable negative impacts on populations of birds of conservation concern, or migratory birds.

B.4.3.1 Raptors

To assess the potential for impact on raptors, WBI Energy conducted field surveys of the Project areas in the fall of 2016 and spring of 2017, including a 0.5-mile line-of-site raptor nest survey. No raptor, bald eagle, or golden eagle nests were observed during these surveys. In addition, WBI Energy consulted with the MDNR and NDGF and no raptor nests have been recorded within 0.5 mile of the Project. However, because raptors often establish new nests, WBI Energy would conduct follow-up surveys immediately prior to construction as part of migratory bird nest inspections described above. If active nests were observed, WBI Energy would suspend ground-disturbing activities (such as grading, trenching) within 0.5 mile of the nest while the FWS was contacted to determine any necessary avoidance or mitigation measures, such as workspace buffering, prior to continuing ground-disturbing activities in the vicinity of an active nest. Based on these measures, we conclude the Project would not affect raptors.

B.1.2 Threatened, Endangered, and Special Status Species

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Included in this category

are federally listed species that are protected under the *Endangered Species Act of 1973* (ESA), as amended, and those species that are state-listed as endangered or threatened. Section 7 of the ESA requires that the lead federal agency ensures that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of a federally listed endangered or threatened species, or result in the destruction or adverse modification of the designated critical habitat of a federally listed species. FERC, as the lead federal agency for NEPA review of the Project, is required to consult with the FWS to determine whether any federally listed endangered or threatened species or any of their designated critical habitat are near the Project and to determine the proposed action's potential effects on those species or critical habitats. If FERC determines that the Project would have no effect on a listed species, further consultation with the FWS is not required.

WBI Energy, acting as our non-federal representative for the purpose of complying with Section 7(a)(2) of the ESA, completed informal consultation with the FWS, the MDNR, and the North Dakota Parks and Recreation Department regarding federal and state-listed species with the potential to be affected by the Project. Appendix C lists the federal- and state-listed threatened and endangered species and special concern species that have the potential to occur within the Project area, including their status, county of occurrence, habitat requirements, and the facilities where suitable habitat could exist. During a March 17, 2017 meeting between WBI Energy and FWS, the FWS Minnesota Twin Cities Field Office confirmed that they would be taking the lead on ESA consultation for species found in North Dakota and Minnesota.

Field surveys were conducted to identify potential for suitable habitat in the fall 2016 and spring 2017. The habitat assessments indicated that habitat is generally limited to major waterbody crossings and associated riparian areas, forested/woodland areas, and native prairie adjacent to a railroad crossed by the Project. The Project would have no effect on the least tern, piping plover, red knot, and pallid sturgeon because no suitable habitat exists in the Project area. Therefore, these species will not be discussed further. The riparian areas and upland forested areas may provide habitat for northern long-eared bat (NLEB) and the yellow-billed cuckoo. The Red River of the North, Sheyenne River, and Maple River have the potential to contain state-listed aquatic species including pink heelsplitter and mapleleaf, and the Buffalo River could be potential habitat for black sandshell. Species-specific discussions are provided in the following subsections.

B.4.3.1 Federally-Listed Threatened and Endangered Species

Northern Long-eared Bat

The NLEB (*Myotis septentrionalis*) is a medium-sized bat of the Vespertilionidae family. About 3.0 to 3.7 inches in length with a wingspan of 9 to 10 inches, the species derives its name from oversized ears relative to other members of the genus *Myotis*. The species overwinters in small crevices or cracks in hibernacula, such as caves and mines.

In summer, the species roosts either singly or in colonies under loose bark or in crevices and hollows in both live trees and snags. A habitat generalist, roost tree selection appears also to be opportunistic; the species uses a variety of tree sizes and species. Migration to summer habitat occurs between mid-March and mid-May (FWS, 2014a, 2014b). In Minnesota and North Dakota, the species is most likely to be found in forested wetlands and riparian areas. The primary threats to the NLEB are white-nose syndrome, alteration/loss of habitat, and wind energy.

Potential impacts on individual NLEBs could occur if clearing or construction takes place when the species was breeding, foraging, or raising pups in its summer habitat. Bats could be injured or killed if occupied trees were cleared during this active window, and the species could be disturbed during clearing or construction activities because of additional noise or human presence.

FWS rules restrict activity around NLEB roost trees and hibernacula. In Minnesota, the MDNR and FWS maintain records of townships with known roost trees and hibernacula; in North Dakota, the NDGF and FWS maintain these records. Review of the MDNR and FWS records dated April 1, 2017 indicated that the Project was not within any township with known roost trees or hibernacula (MDNR, 2017a; FWS, 2014b). A letter dated September 12, 2016, from the NDGF indicated that they did not have any concern about the Project affecting wildlife, wildlife habitat, or species of conservation priority.

Because no hibernacula or known roost trees were identified within the Project area, the Project qualifies for a determination of "may affect, but take not prohibited" under the FWS final 4(d) rule and would be allowed to conduct tree clearing anytime of the year after a 30-day review period has lapsed following submittal of the *Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form* (NLEB Form). WBI Energy submitted the NLEB Form to the FWS Twin Cities Field Office and the Bismarck Field Office to allow clearing of trees without a timing restriction. Neither FWS office responded to WBI Energy's submittal of the NLEB Forms within the 30-day review period. Therefore, we conclude that with implementation of the FWS final 4(d) rule, the Project *may affect, but is not likely to adversely affect* the NLEB, and that no further ESA consultation is necessary.

Gray Wolf

The gray wolf (*Canis lupus*) is federally endangered because of habitat destruction, human interference, and overhunting. This species prefers a wide range of habitat, including forests, plains, prairies, agricultural areas, swamps, and barren lands, but has been extirpated from most of its historic range. Dens are located near water and dug into well-drained soil on a south-facing slope, under boulders, among tree roots, or in cut banks, hollow logs, or other natural structures.

Potentially suitable habitat occurs within the workspace for the pipeline and aboveground facilities. Human activity occurs regularly both along the pipeline route and near the aboveground facility sites, therefore, the gray wolf is likely acclimated to human activities in this area. This species is also a roaming animal that is wide-ranging and rare to encounter. In correspondence dated October 18, 2016, the FWS Twin Cities Field Office determined that there would be *no effect* on the gray wolf.

Whooping Crane

The whooping crane (G*rus americana*) is a large migratory bird that migrates through North Dakota in April to May and September to November. Whooping crane are typically entirely white with the exception of black wing-tips, a red crown, and black legs. While migrating, whooping cranes primarily inhabit palustrine wetlands, including farmed wetlands. Seasonal and temporary wetlands are most commonly preferred, with larger wetlands being used for roosting and smaller wetlands for foraging (NDGF, 2016b). Loss of palustrine wetlands for use during migration is one of the primary threats to the whooping crane. Emergent wetland is available as foraging habitat along the pipeline right-of-way, in the Bishop Laydown Yard, and within the Jamestown TBS.

As discussed in section B.4.3.1, WBI Energy has committed to avoid routine vegetation maintenance between April 15 and August 1 of any year to minimize the potential for impacts on migratory bird species. However, because these impacts would be temporary and limited to construction, and WBI Energy has committed to pre-construction bird surveys and avoiding any vegetation clearing within migratory bird season, we conclude that the Project would have *no effect* on the whooping crane.

Dakota Skipper

The Dakota skipper (*Hesperia dacotae*) butterfly is an obligate of high-quality untilled prairie habitat that is dominated by native species; it uses dry-mesic mixed grass and wet-mesic tallgrass prairie remnants characterized by alkaline and composite soils (McCabe, 1981; Royer and Marrone, 1992). Soil conditions (for example, moisture, humidity, pH, surface temperature, near-surface humidity, and compaction) are elements in skipper habitat suitability and influence larval survival (Cochrane and Delphey, 2002).

The species composition of wet-mesic tallgrass and dry-mesic mixed grass habitats for the Dakota skipper differs. Big and little bluestem (*Andropogon gerardii* and *Schizachyrium scoparium*) predominate wet-mesic sites (these habitat patches typically contain three nectar plants that bloom synchronously with the adult skipper flight period), including the wood lily (*Lilium philadelphicum*), bluebell bellflower (*Campanula rotundifolia*), and smooth camus (*Zigadenus elegans*). Dry-mesic upland sites are typically found in rolling terrain and are characterized by the bluestems and needle grasses (*Heterostipa spp.*). *L. philadelphicum* and *C. rotundifolia* are also found in these areas, as well as purple coneflower (*Echinacea angustifolia*) and other nectar-producing

aster family species (for example, *Ratibida columnifera* and *Gaillardia spp*.) (FWS, 2013c).

Based on occurrence data, Dakota skipper may occur within Barnes, Stutsman, and Burleigh Counties, North Dakota, and in Clay County, Minnesota, and there is designated critical habitat within Clay County, Minnesota. Correspondence between WBI Energy and the FWS Twin Cities Field Office indicated that the Project is located outside of designated critical habitat for this species. One area of native prairie habitat (the MBS Railroad Right-of-Way Prairie near MP 3.0) was identified in Minnesota. However, the MBS Railroad Rights-of-Way Prairie would be crossed using a guided bore, thus avoiding impacts on native prairie and any potential Dakota skipper habitat. Therefore, we conclude that the Project would have *no effect* on Dakota skipper.

Powesheik Skipperling

Poweshiek skipperling (*Oarisma Poweshiek*) is a small, dark brown butterfly with orange wing margins and head and prominent white veins along the wings. Poweshiek skipperling prefer tallgrass prairie, selecting high quality areas in both wetland and upland. Nectar from native prairie flowers is their preferred food source, and larvae are known to utilize native grasses, such as sedges and prairie dropseed (FWS, 2016i). Populations were originally known to be widespread across the Midwest, but 2014 surveys identified small populations only at singular sites in Michigan, Wisconsin, and Manitoba, Canada.

Powesheik skipperling may occur within Clay County, Minnesota along the pipeline route, and this species has designated critical habitat in Clay County, Minnesota. Correspondence between WBI Energy and the FWS Twin Cities Field Office indicated that the Project is located outside of designated critical habitat for this species. Powesheik skipperling could use the same prairie habitat at MP 3.0 as Dakota skipper. WBI Energy would cross this area with a guided bore, thereby avoiding impacts on native prairie. We conclude that the Project would have *no effect* on powesheik skipperling.

Western Prairie Fringed Orchid

The western prairie fringed orchid (*Platanthera praeclara*) is a member of the orchid family found in mesic to wet undisturbed tallgrass prairies and sedge meadows. They may also be found in roadside ditches and fallow agricultural fields (FWS, 2015). The western prairie fringed orchid can grow up to four feet tall, and have between two and five thick, hairless leaves. Flowering stalks bear up to 40 showy white flowers which are about 1-inch wide, and deeply lobed and fringed.

Based on occurrence data, western prairie fringed orchid is listed in Clay County, Minnesota. Habitats that may support this species occur within the Project area (for

example, agricultural fields and roadside ditches); however, no western prairie fringed orchids were identified during field surveys in 2016. Therefore, we conclude that the Project would have *no effect* on western prairie fringed orchid.

Should any federally proposed, candidate, or listed species, or its critical habitat be identified at a later point in the project, FERC would need to re-initiate consultation with the FWS for that species or critical habitat to determine potential project impacts to that resource.

B.4.3.1 State-Listed Threatened and Endangered Species and Special Concern Species

Greater Prairie Chicken

The greater prairie chicken is characterized by a barred body and a short, rounded tail and is typically about 17 inches in length and 2 pounds in weight. Greater prairie chicken inhabit native tallgrass prairie with low disturbance, often associated with agricultural land. Nesting tends to occur in dense vegetation near the relatively bare site of assemblage, known as a lek. Winter habitat generally includes shelter belts and similar wooded areas adjacent to agricultural fields. Known populations of greater prairie chicken in North Dakota are located in Grand Forks County and the Sheyenne National Grasslands (NDGF, 2016c).

Based on WBI Energy's consultation with the MDNR and the North Dakota Game and Fish Department (NGDF), suitable habitat for the greater prairie chicken occurs within the Felton Prairie IBA between MP 0.0 to 1.0 in Minnesota. WBI Energy has flagged this area within the Felton Prairie IBA as an environmentally sensitive area on the construction alignment sheets. As recommended by the MDNR, in the event any disturbance to lands would occur between April 1 and May 15 (when breeding birds are most likely to be present), WBI Energy would contact the MDNR Regional Wildlife Manager for current information on prairie chicken activity in the area and would survey for birds immediately before any ground-disturbing activities. If prairie chickens were actively using the area, WBI Energy would minimize disturbance during the early morning hours to minimize disturbance to the greater prairie chicken. Based on these measures, we believe the Project would minimize any impacts on the greater prairie chicken.

Yellow-Billed Cuckoo

The yellow-billed cuckoo is a large, slim bird, with a flat head and a long tail. They are warm brown on top with a whitish underbelly and a dark face mask with yellow around the eyes. The underside of the tail alternates wide white bands and slim black bands. Yellow billed cuckoos prefer dense cover, often inhabiting wooded habitat including woodlands, scrub-shrub areas, dense thickets, and other overgrown areas with

water nearby. They often nest in willows along waterbodies. In the Midwest, yellow-billed cuckoos are most commonly found in mixed willow-dogwood shrubland and dense stands of American elm (FWS, n.d.-b).

The Project would cross potential yellow-billed cuckoo habitat along the Red River of the North, Sheyenne River, and Maple Rivers in Cass County, North Dakota. However, these crossings would be completed by use of the HDD method, thereby avoiding impacts on the trees, and woody vegetation at these locations that provide potential habitat for this species. As previously described, WBI Energy has commited to moving equipment around most waterbodies crossed by HDDs or guided bores by using existing bridges and roads. WBI Energy has identified five HDD locations (MP 3.1, 25.3, 26.5, 33.0, and 35.9) where a travel lane would be used for construction equipment to travel between the drill entry and exit holes. Temporary bridges would be installed at these five locations in accordance with section V.B.5. of our Procedures, which would minimize impacts on these crossings. No clearing is required at these locations. These temporary bridge crossings have been proposed in areas with the least amount of affect on surrounding streambank vegetation. Because use of the HDD method would eliminate the need to clear any trees or vegetation, and WBI Energy has minimized the use of equipment bridges (and associated vegetation) we believe the Project would not affect the yellow-billed cuckoo.

Aquatic Species

Logperch

Logperch are yellow brown with vertical stripes alternating in length, and may be up to 7 inches long. Logperch often inhabit clear waters with slow-to-moderate currents and sandy, rocky bottoms, but may also be found in turbid waters. This species is found most often in medium to large streams in non-prairie areas, and are known specifically to inhabit the Red River of the North. Logperch spawn in riffle areas of streams and rivers and shallow sandy lakebeds. Impacts on this species are primarily related to degradation of water quality and increased turbidity due to agricultural runoff (Lake Superior Streams, n.d.; NDGF, 2016d).

Carmine Shiner

Carmine shiner are characterized by a slender body and pointed head. The body has a bluish sheen, and is dark on top with a silver and black streak and a red spot at the base of the dorsal fin. The carmine shiner can grow up to 3.5 inches in length, and breeding males have bright red heads. Carmine shiner most commonly are found in swift-flowing streams with sandy or rocky substrate. These streams typically run about 5 feet deep and 9 to 78 feet in width. Carmine shiner is often found in pool habitats or adjacent swift-flowing areas. The last collection of Carmine shiner was from the

Sheyenne River in Ransom County in 1994. Impacts on Carmine shiner are primarily related to degradation of water quality and increased turbidity due to agricultural runoff.

Black Sandshell

The shell of the black sandshell mussel is elongated, moderately thick, and up to 20 centimeters (8 inches) long. The outside of the shell is smooth, shiny, greenish or black, and often rayed. The black sandshell is usually found in riffles and runs of medium to large rivers in areas dominated by sand or gravel substrates (MDNR, 2017b). They spend most of their lives buried in the bottom sediments of perennial waterbodies and often live in multi-species communities called mussel beds. Declines in habitat conditions are associated with non-point source water pollution, and sediment pollution. Dams, channelization, and dredging increase siltation, physically alter habitat conditions, and block the movement of fish hosts. These fish hosts may include white crappie, largemouth bass, sauger, and bluegill (Watters 1994, as cited in MNDNR 2017).

Pink Heelsplitter

The shell of the pink heelsplitter mussel is elongated and rectangular with a large posterior wing. Length can range up to 8 inches and the outside of the shell ranges from yellowish green to dark brown. The pink heelsplitter is usually found in large rivers and reservoirs in mud, or mud mixed with sand and gravel. They spend most of their lives buried in the bottom sediments of permanent waterbodies and often live in multi-species communities called mussel beds (Illinois Natural History Survey, 2016).

Mapleleaf

The shell of the mapleleaf mussel is fairly thick and squared, with well-developed teeth. Length can range up to 4 inches and the outside of the shell is dark green to dark brown, with a highly iridescent purple or pink nacre. The mapleleaf is usually found in mud, or mud mixed with sand and gravel. They spend most of their lives buried in the bottom sediments of permanent waterbodies and often live in multi-species communities called mussel beds (Illinois Natural History Survey, 2016).

The Project would cross the Red River of the North, Sheyenne River, and Maple River in Cass County, North Dakota via the HDD method, which would avoid impacts on the stream bed or bank of these waterbodies. The HDD method involves no disturbance to the bed or bank of the waterbody being crossed. However, the HDD method can result in an inadvertent release of drilling mud along the drill path, including within these waterbodies, if a natural fracture or unconsolidated area in the ground is encountered. WBI Energy has developed a *Horizontal Directional Drill and Guided Bore Fluid Monitoring and Operations Plan*, which provides procedures that would minimize the potential for release of drilling fluid into sensitive resource areas. The plan also establishes operational procedures and responsibilities for the containment and cleanup of

inadvertent releases associated with the HDD method. WBI Energy would develop a Project-specific SWPPP, which would incorporate the requirements of our Plan and Procedures as well as any site-specific erosion and sediment control requirements identified during agency consultation. Based on these countermeasures, we believe the Project wouldn't cuase an adverse impact to the Wabash pigtoe, black sandshell, pink heelsplitter, or mapleleaf mussels; or logperch and carmine shiner fishes.

B.5 LAND USE, RECREATION, AND VISUAL RESOURCES

B.1.1 Land Use

Land use categories identified in the Project area consist of agriculture, open lands, forest/woodlands, developed lands, and open water. The Project would avoid residential land. The total acreage to be disturbed for construction of all Project facilities would be about 525.5 acres, including 507.3 acres for construction of the pipeline and 18.2 acres for construction of the aboveground facilities. The total acreage for operation of all Project facilities would be about 233.2 acres, including 224.4 acres for the pipeline and 8.7 acres for the aboveground facilities. A summary of the land use categories that would be affected by construction and operation of the Project facilities is provided in table B.5.1-1.

Impacts and mitigation on forest and open space are described in section B.4.2 (vegetation) of this EA. The sections below focus on land uses not discussed in detail elsewhere in this EA.

B.4.3.1 Agricultural Land

Agricultural land is the predominant land use category that would be impacted by the Project. A total of about 468.0 acres of agricultural land would be temporarily impacted by construction activities, and 7.4 acres would be permanently impacted within the operational footprint for the Mapleton Compressor Station and other aboveground facilities. Agricultural activities would be allowed to continue over the permanent pipeline right-of-way and on land outside the fenceline of WBI Energy's new Mapleton Compressor Station and other aboveground facilities following restoration. Discussion of impacts on prime farmland is provided in section B.2.1.

WBI Energy would maintain landowner access to fields, storage areas, structures, and other agricultural facilities during construction to the extent practicable. If irrigation systems or drain tile are present, WBI Energy would work with landowners to fully restore these systems. WBI Energy would repair or replace damaged, cracked, or broken drain tile. WBI Energy would hire a qualified drain tile specialist, the landowner, or a landowner's representative to make the repairs. The quality, size, and flow of replacement tile would equal or exceed that of the damaged tile. The drain tile would be permanently repaired so that its original gradient and alignment are restored.

Replacement tile would be supported with a secondary method, such as perforated corrugated steel pipe. Repairs would be inspected prior to backfilling the trench area.

TABLE B.5.1-1

Land Affected by Construction and Operation of the Project (acres)

Facility	Agricultural		Forest/ Woodland [b]		Developed Land		Open Land		Total [c]	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.
Pipeline [a]										
Pipeline	445.8	--	0.2	0.1	1.2	--	28.7	--	475.8	0.1
Access Roads	6.3	--	0.1	--	0.2	--	4.2	--	10.8	0.0
Laydown Yards	15.9	--	--	--	2.3	--	2.6	--	20.7	0.0
Pipeline Subtotal [d]	**468.0**	**--**	**0.3**	**0.1**	**3.7**	**--**	**35.3**	**--**	**507.3**	**0.1**
Aboveground Facilities										
Mapleton Compressor Station	9.5	5.4	--	--	0.2	0.2	0.7	0.4	10.4	6.0
Viking Interconnect	4.0	0.6	--	--	--	--	0.9	< 0.1	4.9	0.7
Mainline Block Valves [e]	0.4	0.4	0.1	0.1	--	--	0.1	0.1	0.6	0.6
Sanborn Regulator Station	--	--	--	--	< 0.1	< 0.1	1.1	0.6	1.1	0.7
Jamestown TBS	0.1	0.1	--	--	--	--	< 0.1	0.2	0.4	0.3
Apple Valley TBS	0.2	0.1	--	--	--	--	0.6	0.4	0.8	0.5
Aboveground Facility Subtotal [e]	**15.6**	**7.4**	**0.1**	**0.1**	**0.3**	**0.2**	**2.3**	**1.0**	**18.2**	**8.6**
Total Impacts [d]	**483.6**	**7.4**	**0.4**	**0.2**	**3.9**	**0.2**	**37.6**	**1.0**	**525.5**	**8.7**

[a] Pipeline construction area includes construction workspace and ATWS for installation of the pipeline. Access roads acreage includes temporary travel lanes for equipment to cross features (such as, drains and ditches) that would otherwise be avoided by the HDD or guided bore pipeline construction methods,

[b] Forest/Woodland impacts calculated using natural resource survey data; all other land use categories calculated using the USGS, National Land Cover Database.

[c] The sum of addends may not total due to rounding.

[d] Based on geographic information system (GIS) analysis of Project shapefiles. Sensitive features such as waterbodies, roads, and railroads would be crossed via HDD or guided bores. As such, the shapefiles for construction workspace and permanent right-of-way do not extend across these features and they are not captured in the acreage calculations for each land use type. Use of the HDD or guided bore methods to install the pipeline would avoid impacts on these features.

[e] A portion of the workspace that would be used to construct and operate the mainline block valves would overlap with the construction workspace and permanent right-of-way for the pipeline facilities. The area of overlap is included in the total impact calculations for the mainline block valves and has been deducted from the total impact calculations for the pipeline route to avoid overstating the total acres of impact.

The primary crops in the Project area are corn, sugar beets, wheat, and soybeans. Crop production on some agricultural lands would be temporarily interrupted for one growing season while pipeline facilities are constructed. Project area would return to pre-construction conditions within one to two growing seasons after construction. In

accordance with the provisions of 49 CFR 192.327, the pipeline would be installed with a minimum 36 inches of cover in agricultural lands, which should not inhibit future tilling practices.

WBI Energy would compenstate landowners for any temporary or permanent crop loss resulting from construction and operation of the Project. WBI Energy would employ the erosion and sediment control and restoration measures (for example, soil stabilization, topsoil segregation, compaction avoidance) detailed in our Plan to minimize and mitigate impacts on agricultural lands. Additional description of the construction methods and mitigation measures WBI Energy would implement on agricultural lands is provided in section B.2.2. Based on these measures, we conclude that impacts on agricultural areas would be minimized to the extent practicable and would not be signficant.

B.4.3.1 Developed Land

The primary types of developed lands in the Project area are roadways and light-industrial use areas. Construction of the pipeline would temporarily affect 3.7 acres of developed land. The proposed route is collocated with existing rights-of-way to the extent practicable. Approximately 14.2 miles (38 percent) of the pipeline route is collocated with existing or future developed land. Construction of the Mapleton Compressor Station and the Sanborn Regulator Station would temporarily impact about 0.2 acre of developed lands. The remaining aboveground facilities would not impact developed lands. WBI Energy would minimize impacts on developed lands during construction of the Project by timing construction activities to avoid peak road use periods, maintaining access to residences at all times, and expediting construction on private lands. Potential temporary impacts associated with road crossings would be largely avoided by use of the HDD or guided bore methods as described in section A.8.2.2. Therefore, we find that impacts on developed lands would be temporary and not significant.

B.1.2 Planned Developments

WBI Energy consulted with the planning and zoning departments in Clay County, Minnesota and Cass, Barnes, Stutsman, and Burleigh Counties, North Dakota, as well as the planning and zoning departments of various municipalities in these counties, and verified there are no planned commercial and residential developments within 2 miles of the Project, except in Cass County.

Four planned developments would occur within 2 miles of the Project in Cass County, North Dakota. These include the Fargo-Moorhead Area Diversion Project (FMADP) which would be crossed by the pipeline; a planned residential development in the City of Harwood about 1.5 miles from the pipeline and 0.2 mile from the Minnkota Laydown Yard; and two planned residential developments in the City of Mapleton that would be about 1.5 miles from the proposed Mapleton Compressor Station. The

residential developments in Harwood and Mapleton would be located at a sufficient distance from the Project and would not be significantly impacted.

The FMADP is a collaboration between the USACE; the cities of Fargo and Moorhead; Cass County, North Dakota; Clay County, Minnesota; the JWRD; and the Buffalo-Red River Watershed District. The Fargo-Moorhead Diversion Authority (Diversion Authority) consists of representatives of the various local project proponents and was established to oversee and administer the FMADP. The FMADP would consist of a 36-mile-long and 1,500-foot-wide flood water diversion channel with 32,500 acres of upstream staging (the Fargo-Moorhead Area Diversion Channel [FMADC]) that is designed to mitigate the impacts of flooding events in the Red River Valley on the cities of Fargo, North Dakota and Moorhead, Minnesota (FMADP.com, 2016). The FMADP will include the construction of bridges, flood control structures, and a recreational area including a multi-use trail and an equestrian trail along the eastern embankment of the FMADC for public use.

Construction of the FMADP will be accomplished in multiple phases and construction of the FMADC segments in the Project area is expected to begin in early 2018 and to be completed within about 4 to 6 years. The pipeline route would be collocated within 300 feet, but outside of, the eastern embankment of the FMADC for approximately 1.4 miles beginning at approximately MP 22.4 until the pipeline route crosses under Interstate 29 and County Highway 81 at approximate MP 23.7. After crossing Interstate 29 and County Highway 81, the pipeline route would diverge away from the FMADC. The Project then would cross the FMADC between MP 30.3 and MP 30.7 via the HDD method.

We received a comment regarding Project impacts on the FMADP. WBI Energy is coordinating with the Diversion Authority to develop an MOU concerning the necessary protocols and design specifications for routing along or under the FMADC to minimize impacts to the project. WBI Energy has continued to consult with the Diversion Authority and has clarified the engineering designs and specifications which will be included in the MOU. Additional drawings, plans, and profiles have been exchanged between the parties and pipeline grout and casing specifications have also been discussed. WBI Energy continues to consult with the Diversion Authority regarding an MOU; however, an approximate date for execution of the agreement cannot be defined at this time. Therefore, **we recommend that:**

> **Prior to construction in proximity to the FMADP, WBI Energy should file with the Secretary of the Commission (Secretary) documentation regarding its consultation with the Diversion Authority, including updated mitigation measures and/or MOU.**

WBI Energy would cross the FMADC by use of the HDD crossing method. Because the Project consists of a buried pipeline that would not be visible from the

FMADC, and because construction of the Project would be completed prior to completion of the FMADC, no impacts on the FMADP or future recreational uses of the eastern embankment of the FMADC would occur. For these reasons, we conclude that impacts on the FMADP have been minimized to the extent practicable.

B.1.2 Recreation and Special Use Areas

Based on a review of USGS topographic maps, aerial photographs, agency websites, and agency consultation, the Project would not cross any federal, state, or county owned or administered lands, nor would it cross or be within 0.25 mile of any national or state forests, national trails, or parks. In addition, based on consultation with the FWS, no FWS easements or waterfowl production areas are crossed. Information regarding designated FEMA flood zones that would be crossed by the Project is presented in section B.3.2.

The pipeline route would cross approximately 28.7 acres (between MPs 0.0 to 1.9) of the Felton Prairie IBA, a 37,450-acre area identified as containing essential habitat for many breeding, wintering, and/or migrating bird species and various other state-listed and endangered species or species of concern, including the threatened Dakota skipper (Audubon.org, 2016). The Felton Prairie IBA is comprised of parcels owned by the FWS, MDNR, and private parties. Audubon Minnesota is responsible for management of the public lands within the Felton Prairie IBA, the MDNR manages state listed species of concern, and the FWS oversees implementation of the Migratory Bird Treaty Act. The portion crossed by the pipeline is currently in private ownership and actively cultivated. No public lands within the Felton Prairie IBA would be directly affected by construction and operation of the Project. Section B.4 provides additional details about the Felton Prairie IBA and the proposed mitigation measures that would be implemented by WBI Energy to avoid and/or mitigate impacts on bird species during construction and operation of the Project.

Recreational uses of the Felton Prairie IBA are limited to public lands within the boundaries of the area. The Felton Wildlife Management Area (WMA) is state-owned land within the Felton Prairie IBA that is nearest to the Project, approximately 100 feet northeast of the Viking Interconnect at MP 0.0 in Clay County, Minnesota. The Felton WMA is comprised of about 1,016.6 acres that is administered by the MDNR to protect and preserve habitat for deer, small game, pheasant, waterfowl, and state-listed species of concern (MDNR, 2016b). Public use of the WMA generally consists of hiking, nature viewing, bird watching, and hunting. Peak season for public use of the Felton WMA is from April through October. No direct impacts on public use of or access to public lands within the Felton Prairie IBA or the Felton WMA are anticipated during construction of the Project, but indirect impacts could include temporary increases in noise and dust. Construction of the pipeline and Viking Interconnect in this area would be expected to last for approximately 3 weeks; therefore, indirect impacts would be temporary and minor and would resolve with the completion of construction. During construction in this

area, WBI Energy would implement the procedures in its *Fugitive Dust Control Plan* to minimize the amount of dust generated by construction activities. Because the terrain in this area consists of relatively flat scrub-shrub lands and agricultural fields, the Viking Interconnect may be visible from public lands within the Felton Prairie IBA and the Felton WMA, but would not interfere with public use of these areas (see also section B.5.4 Visual Resources). For these reasons, we conclude that potential impacts on the Felton Prairie IBA and the Felton WMA have been minimized to the extent practicable.

The Project would be within 0.25 mile (west and adjacent) of one Farm Service Agency (FSA) easement in Clay County, Minnesota near MP 0.0 and the Viking Interconnect. The Project would be outside of the FSA easement and no impacts on this feature are anticipated. For these reasons, we conclude that no significant impacts on the FSA easement would occur as a result of the Project.

As noted in section B.3.2, the Project would cross Minnesota Public Waters, including Felton Creek, the Buffalo River, the Red River of the North, and a mapped unnamed tributary. None of the waterbodies that would be crossed by the Project in Minnesota are designated as outstanding resource value waters. The State of North Dakota classifies the Red River of the North and the Sheyenne River as Sovereign Lands. The designation of these waterbodies as Minnesota Public Waters or Sovereign Lands does not preclude construction of pipelines across these features; however, WBI Energy is required to obtain a Utility Crossing License from the MDNR and a Sovereign Lands Permit from the NDSWC and plans to file this application in August 2017.

The Red River of the North also has been designated by the MDNR as a State Water Trail because it provides a significant opportunity for public recreation and activities such as canoeing and kayaking (MDNR, 2016c). Peak season for public use of the river would typically occur during the summer months (June through August). WBI Energy's proposed construction schedule would overlap with the peak season for public use of the river. However, WBI Energy would avoid direct impacts on this feature by use of the HDD method for this crossing. Use of the HDD method also would avoid direct impacts on the riparian areas along the margins of the river and on public use of the river for recreation. Minor, temporary, indirect impacts, such as increases in noise and dust, could occur during construction and may affect recreational use of the river. However, these impacts would resolve with the completion of construction and public use of the Red River of the North would continue as before. Based on the use of this crossing method, we conclude that potential impacts on this special use area have been minimized to the extent practicable and would not be significant.

The Project would cross the King of Trails Scenic Byway (Minnesota State Highway 75) at MP 16.5 in Clay County, Minnesota. The King of Trails Scenic Byway is about 414 miles in length and the State of Minnesota designated Minnesota State Highway 75 as a scenic byway in 2001 (Highway 75.com, 2016). WBI Energy would use the guided bore technique at this crossing, which would avoid direct impacts the

scenic byway. Visual impacts along the byway are not anticipated as the surrounding area is predominantly agricultural land that would be allowed to revert to previous uses following the completion of construction. Based on these measures, we conclude that potential impacts on the King of Trails Scenic Byway have been minimized to the extent practicable and would not be significant.

WBI Energy reviewed geographic information system (GIS) data available from the National Conservation Easement Database, the MDNR Geospatial Commons, and the Minnesota Board of Water & Soil Resources and contacted the United States Department of Agriculture, NRCS, Farm Service Agencies in Minnesota and North Dakota, and confirmed there are no NRCS easements, Wetland Reserve Program, Conservation Reserve Program, or other conservation easement lands within the Project area.

The Harwood Community Park would be within 0.25 mile of the Minnkota Laydown Yard in the town of Harwood, Cass County, North Dakota. The Burlington Northern Santa Fe Railroad separates the park from the Minnkota Yard which is located on the eastern side of the rail line. No direct impacts on recreational uses of the park would occur from use of the Minnkota Laydown Yard during construction. Indirect impacts on recreational use of the park could include increased dust and noise during construction. These impacts would be short-term and minor and would resolve with the completion of construction. Therefore, we conclude construction and operation of the Project would not have a significant effect on recreational use of the Harwood Community Park.

The Hillcrest Municipal Golf Course is within 0.25 mile (0.1 mile west) of the Jamestown TBS in Stutsman County, North Dakota. No direct impacts on public use of the golf course would occur as a result of construction or operation of the Jamestown TBS. Indirect impacts on public use of the golf course could include increased dust and noise during construction. The impacts would be temporary and minor and would resolve with the completion of construction. Potential visual impacts on the golf course during operation of the Jamestown TBS are discussed in section B.5.4. We conclude construction and operation of the Jamestown TBS would not have a significant effect on public use of the Hillcrest Municipal Golf Course.

The Sacred Heart Cemetery is within 0.25 mile (0.1 mile south) of the Sanborn Regulator Station in Barnes County, North Dakota. No direct impacts on the cemetery would occur as a result of construction of the regulator station. Indirect impacts on the cemetery during construction (i.e., increased noise and dust) would be temporary and minor and would resolve with the completion of construction. Potential visual impacts on the cemetery during operation of the regulator station are discussed in section B.5.4. We conclude construction and operation of the Sanborn Regulator Station would not have a significant effect on public use of the Sacred Heart Cemetery.

The Project would cross the Clay Alliance Snowmobile Trail near MP 14.2 in Clay County, Minnesota. At this location, the snowmobile trail runs parallel to 30th Street North; WBI Energy would use the guided bore technique to install the pipeline the crossing of 30th Street North, which would include the Clay Trail and avoid direct impacts on both the road and the snowmobile trail. Recreational use of the Clay Trail is limited to the winter months when frozen ground conditions allow travel within the drainage ditches along local roadways; in general, drainage ditches along the roadways in Clay County remain wet during non-winter months, making then unsuitable for use as recreational trails. Therefore, the construction schedule for the Project would not overlap with the seasonal use of the trail and no impacts on public use of the snowmobile trail are anticipated. For these reasons, we conclude that potential impacts on the Clay Trail have been mitigated to the extent practicable and would not be significant.

B.1.2 Visual Resources

No special or unique features or viewsheds are in or near the proposed Project area other than the King of Trails Scenic Byway. Lands crossed by the proposed Project are relatively flat areas with rural development and numerous roadways, and are predominantly used for agricultural activities, with some forested (shelterbelts) and open areas. The Project would be on private lands. WBI Energy has not identified any state visual standards that may apply to its limited construction activities in these areas.

Construction activities and equipment would cause temporary visual impacts, and the new valve settings would be permanently visible. Some isolated trees and shrubs would be removed from the construction workspace and ATWS. However, trees and woody vegetation would be allowed to regrow following construction, with the exception of the permanent right-of-way to allow for safe operation of the pipeline. The total forest/woodland area that would not be allowed to regenerate is relatively small (about 0.1 acre). The valve settings that would be installed within the permanent right-of-way for the pipeline are minor aboveground facilities that would not significantly alter the landscape. In addition, the majority of the pipeline, including at waterbodies, roads, and the King of Trails Scenic Byway crossings, would be installed by the HDD or guided bore methods, thereby avoiding visual impacts on these features. Therefore, visual impacts are expected to be temporary and minor.

Construction of the Mapleton Compressor Station would not create a substantial change in the long-term visible impact of the site, as the existing Mapleton TBS is already a visible feature on the landscape. In addition, the closest residence is 2,000 feet south of the site. The additional buildings and associated infrastructure would be painted to match the existing TBS and surrounded by a new fence that ties into the existing fence line. Outdoor lighting at the compressor station would be limited to what is required for safety and security reasons and is not expected to significantly affect visual resources. Based on these measures, no significant impact on visual resources would occur due to construction and operation of the Mapleton Compressor Station facilities.

Construction and operation of the Viking Interconnect, Sanborn Regulator Station, Jamestown TBS, and Apple Valley TBS would affect rural agricultural, open, and developed land that is directly adjacent to minimally-traveled rural roadways. No residences are within the immediate vicinity of these facilities, and they are not located within any designated scenic areas. The Viking Interconnect would be visible from roadways, from public recreation areas within the Felton Prairie IBA, such as the Felton WMA; however, the interconnect would consist of relatively minor aboveground piping facilities that are placed low to the ground, without any identified need for visual screening, and any visual impacts would be minor. In a letter dated March 21, 2017, the MDNR provided comments to the FERC on draft Resource Report 8, noting that while the Viking Interconnect would be visible from the Felton WMA, no long-term impacts are anticipated. For these reasons, we conclude that impacts on visual resources from operation of the Viking Interconnect would not be significant.

The Apple Valley TBS would be visible from minimally traveled gravel roadways in the area. The TBS would consist of relatively minor aboveground piping and visual impacts would be minor. The Jamestown TBS would be visible from the Hillcrest Community Golf Course, but would be consistent with the existing TBS facility and other similar commercial/industrial facilities that are nearby, such as the railroad and the Jamestown Peaking Plant. For these reasons, we conclude that visual impacts on the golf course from operation of the Jamestown TBS would not be significant.

The Sanborn Regulator Station would be visible to visitors to the Sacred Heart Cemetery. A vegetative buffer exists along the south side of the facility that would limit the visibility of the facility from the cemetery. Therefore, visual impacts on the cemetery would be minimized to the extent practicable. The proposed new valve settings along the pipeline route may be visible from nearby roadways but would be relatively minor aboveground piping facilities that are placed low to the ground, without any identified need for visual screening, and any visual impacts would be minor. For these reasons, we conclude that no significant impact on visual resources would occur as a result of the Project.

B.6 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires FERC to take into account the effect of its undertakings on properties listed, or eligible for listing, on the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. WBI Energy, as a non-federal party, is assisting the FERC in meeting our obligations under Section 106 and its implementing regulations at 36 CFR 800.

B.1.1 Consultations

We sent copies of our NOI for the Project to a wide range of stakeholders, including the ACHP, U.S. Department of the Interior National Park Service, Minnesota State Historic Preservation Office (SHPO), North Dakota State Historic Preservation Office (North Dakota SHPO), and federally recognized Indian tribes (Tribes) that may have an interest in the Project area. The NOI contained a paragraph about Section 106 of the NHPA, and stated that we use the NOI to initiate consultations with SHPOs and solicit their views and those of other government agencies, interested tribes, and the public on the Project's potential effects on historic properties.

B.4.3.1 State Historic Preservation Officers

Minnesota

WBI Energy met with the Minnesota SHPO on August 25, 2016 and October 19, 2016, to provide Project information, to verify their interest in participating in the pre-filing process, and to invite them to the open house for the Project. On January 27, 2017, the Minnesota SHPO responded to our NOI, stating that it did not recognize FERC's NOI as sufficient initiation of the Section 106 consultation process. FERC staff sent an email to the Minnesota SHPO on March 21, 2017 authorizing WBI Energy and their cultural resources consultant to consult for purposes of complying with Section 106.

WBI Energy submitted cultural resources reports and a preliminary draft UDP to the Minnesota SHPO on March 2, 2017, and they responded on March 29, 2017 concurring with most of the recommendations and requested additional information regarding crossing methods for the recommended NRHP-eligible historic resources. Additionally, the Minnesota SHPO agreed with the use of a monitoring plan for areas having a high potential for containing deeply buried archaeological material. In response to the Minnesota SHPO request for additional details regarding the planned crossing methods for the NRHP-eligible linear architectural features identified during surveys for the Project, WBI Energy submitted a letter report on April 20, 2017. In a letter dated May 17, 2017, the Minnesota SHPO responded that they agreed with the recommendations in the report, and that there would be no adverse effects to these five linear features (two railroads and 3 drainage ditches). In a letter dated May 25, 2017, WBI Energy provided an addendum survey report and a revised draft UDP to the Minnesota SHPO for review and comment. In a letter dated June 20, 2017, the Minnesota SHPO concurred that the Project would have no adverse effects to historic properties and agreed with the UDP.

North Dakota

WBI Energy met with the North Dakota SHPO on August 25, 2016 and October 19, 2016, to provide Project information, to verify their interest in participating in the

pre-filing process, and to invite them to the open house for the Project. On September 6, 2016, WBI Energy met with the North Dakota SHPO to discuss the results of the background literature review, and to verify that the Area of Potential Effect (APE) and survey methodologies for the Project were appropriate. The North Dakota SHPO agreed that the APE and survey methodologies were appropriate, and requested a copy of the proposed methodology for the geomorphological investigation. WBI Energy provided a copy of the results of the geomorphological desktop analysis, including a description of the methodology used for this investigation, to the North Dakota SHPO on December 19, 2016 and on December 21, 2016, and the North Dakota SHPO indicated that the results and methodologies were acceptable.

WBI Energy submitted the results of the archaeological, geomorphological, and historic architecture surveys to the North Dakota SHPO along with a preliminary draft UDP for the Project on March 15, 2017, and the North Dakota SHPO responded on March 23, 2017, concurring with the recommendations in the reports, and agreeing that the Project is unlikely to affect historic properties. The North Dakota SHPO also agreed with an archaeological monitoring plan for areas identified during the geomorphological investigation as having a high potential for containing deeply buried archaeological material. In a letter dated May 26, 2017, WBI Energy provided an addendum survey report to the North Dakota SHPO for comments and a revised UDP. The North Dakota SHPO responded on June 5, 2017, that accepted the recommendations in the addendum report, HDD routing to avoid and monitor archaeological site 32CS201, and UDP. No additional correspondence has been filed by WBI Energy. Consultation is ongoing.

B.4.3.1 Tribal Outreach and Consultations

WBI Energy contacted 13 Tribes with historic ties to the Project area on August 26, September 9, and October 18, 2016, providing Project information, requesting any information or concerns regarding places of traditional or cultural significance, and inviting the Tribes to an open house for the Project. Tribes contacted included the Flandreau Santee Sioux Tribe, Leech Lake Band of Ojibwe, Lower Sioux Indian Community in the State of Minnesota, Minnesota Chippewa Tribe, Prairie Island Indian Community, Santee Sioux Nation, Sisseton-Wahpeton Oyate of the Lake Traverse Reservation of South Dakota (Sisseton-Wahpeton Oyate), Spirit Lake Tribe, Upper Sioux Community (USC), White Earth Band of Minnesota Chippewa Tribe, Standing Rock Sioux Tribe of North and South Dakota, Turtle Mountain Band of Chippewa Indians of North Dakota, and Red Lake Band. We sent consultation letters to these same 13 Tribes on December 14, 2016.

On October 7, 2016, the USC requested more information and an opportunity to review the cultural resources reports. FERC staff and WBI Energy met with the USC Tribal Historic Preservation Officer (THPO) on November 3, 2016 to present the FERC environmental review process (including Section 106 consultation) and to discuss any tribal concerns. The USC THPO indicated an interest to conduct a field review in spring

2017. WBI Energy provided detailed route maps and the cultural resources and geomorphological reports to the USC on March 21, 2017. On May 5, 2017, WBI Energy provided a version of the draft UDP to the USC THPO for comments. The USC THPO provided suggestions on the draft UDP. The USC conducted site surveys on May 10, 2017, and recommended site monitoring at specific locations along the pipeline route. On July 6, 2017, the USC stated that the avoidance and monitoring plan of archaeological site 32CS201 addressed their concerns.

The Red Lake Band contacted WBI Energy and identified four tracts crossed by the proposed route for which the legal title and status is currently under review by the Red Lake Band and the U.S. Department of Interior for a potential land claim associated with the Red Lake and Pembina Treaty of 1863. Due to this concern, the Red Lake Band THPO proposed four route variations to avoid these four tracts. WBI Energy met with the Red Lake Band Tribal Council on January 10, 2017 and the Council passed a resolution opposing the Project which was filed with the Commission on January 27, 2017. On March 16, 2017, WBI Energy met with FERC staff to discuss their communications with the Red Lake Band. FERC staff recommended that WBI continue communications with the Red Lake Band THPO and further consider the alternatives proposed by the Red Lake Band THPO, which are evaluated in section C.3. On April 3, 2017, WBI Energy contacted the Red Lake Band to provide copies of the cultural resources survey reports for their review. No further correspondence or phone logs regarding communications with Red Lake Band have been filed by WBI Energy.

On December 19, 2016, Sisseton-Wahpeton Oyate requested additional information, including which tribes had already commented on the Project. WBI Energy provided the Sisseton-Wahpeton Oyate copies of the preliminary draft Resource Reports 1 and 10 filed with FERC on November 16, 2016.

The Leech Lake Band of Ojibwe responded, in a letter dated May 30, 2017, that there are no known sites of religious or cultural importance to their tribe in the area. They requested to be notified in case of an unanticipated discovery of cultural resources or human remains.

No further comments from Tribes have been filed about the Project.

B.1.2 Survey Results

In both Minnesota and North Dakota, the APE for direct impacts on cultural resources would consist of the proposed footprint of workspace required for construction of the pipeline and aboveground facilities (for example construction workspace and ATWS), including HDD stringing areas and contractor laydown yards. The APE for direct impacts from use of temporary and permanent access roads that extend outside the APE for the proposed route would include a 40-foot-wide corridor centered along the proposed access road that would encompass the entire access route. In total, the APE for

direct impacts on archaeological resources from all Project components would be 245.0 acres in Minnesota and 280.5 acres in North Dakota.

The APE for archaeological resources would include the areas listed above and further consideration in areas that may contain deeply buried archaeological deposits; such as geomorphological investigations. Geomorphological studies are typically conducted in areas adjacent to rivers or waterways where the original ground surface of past human use has been covered by layers of sediments over time which could be caused by a number of factors but some are significant or multiple flooding events.

The APE for historic architectural properties would include areas where direct and indirect Project impacts have the potential to alter character-defining features of an NRHP-eligible property's significance and areas that have a visual link to the Project facilities such that their landscape setting and viewshed could change as a result of construction. Because the Project would consist largely of a buried pipeline, the APE for indirect impacts on historic architectural resources would consist of the direct APE, plus 0.25 mile on each side of the Project centerline to capture any areas where changes to the landscape (through removal of vegetation or modifications of surface topography, for example) lie within view of a historic property. The architectural APE for indirect impacts would also include up to 1 mile surrounding the Mapleton Compressor Station, and 0.25 mile surrounding the remaining aboveground facilities, including the Viking Interconnect, Sanborn Regulator Station, Jamestown TBS, Apple Valley TBS, and the mainline block valves. Viewsheds to and from the Project components were terminated where vegetation and/or topography obstructed lines-of-sight.

Minnesota

WBI Energy surveyed a 300-foot-wide corridor along the pipeline route that fully encompassed the APE for direct impacts. All of the APE for direct impacts was surveyed for cultural resources. Two archaeological sites (consisting of one pre-contact material scatter and one historic material scatter) were identified along the pipeline route, both of which were recommended as not eligible for listing in the NRHP. No archaeological resources were identified as a result of the field investigation of the Viking Interconnect or the Spring Prairie contractor laydown yard. The Minnesota SHPO concurred with the findings and recommendations of the archaeological survey reports and we agree.

A geomorphological study of the Project area also was conducted to assess the potential for deeply buried archaeological resources. The investigation identified two areas that were recommended as having a high potential to contain deeply buried archaeological materials (the Buffalo River and the Red River of the North). WBI Energy proposed archaeological monitoring during construction. The Minnesota SHPO agreed with this approach in a letter dated March 29, 2017. WBI Energy has filed an archaeological monitoring plan and we find the plan acceptable.

Additionally, WBI Energy surveyed the APE for historic architectural resources. As a result, 19 historic architectural resources were identified. No historic architectural resources were identified within 0.25 mile of the Viking Interconnect. Of the 19 identified historic architectural resources, 5 were recommended as eligible for listing in the NRHP. These resources consist of three historic drainage ditches (Minnesota State Ditch No. 11, Unnumbered Clay County Drainage Ditch, and Clay County Drainage Ditch No. 23) and two historic railroad alignments (St. Paul & Pacific Railroad St. Vincent Extension and Great Northern Railroad Moorhead Branch). The Unnumbered Clay County Drainage Ditch identified between MP 11.0 and MP 15.0 would not be crossed by the pipeline route. Three other resources would be avoided by use of the guided bore method to install the pipeline beneath the features (Minnesota State Ditch No. 11, Great Northern Railroad Moorhead Branch, and Clay County Drainage Ditch No. 23). WBI Energy recommended no adverse effect on these properties and no further work was recommended. The Minnesota SHPO concurred and we agree.

Open-cut trench construction techniques would cross the St. Paul & Pacific Railroad St. Vincent Extension, which would result in a direct impact on this property. The existing condition of the earthen berm at this historic property is a result of the relatively recent (2004) dismantling of the track, ties, and ballast of the former railroad. Following completion of construction, the contours and vegetation at this resource would be restored to prior conditions. For these reasons, WBI Energy recommends that the Project would not have an adverse effect on the St. Paul & Pacific Railroad St. Vincent Extension. The Minnesota SHPO concurred and we agree.

North Dakota

WBI Energy surveyed a 300-foot-wide corridor along the pipeline route that fully encompassed the direct APE. Almost 95 percent of the direct APE was surveyed for archaeological resources. Three archaeological sites (consisting of two pre-contact material scatters and one prehistoric lithic isolate) were identified along the pipeline route that were recommended as not eligible for listing in the NRHP. One site 32CS0201, which is eligible for the NRHP, was identified in the earlier proposed workspace, but would be avoided by Project activities and WBI Energy has committed to monitor the location during construction. WBI Energy filed an avoidance plan and we find the plan acceptable. No archaeological resources were identified as a result of the field investigations for the Mapleton Compressor Station, the Bishop contractor yard, or the other aboveground facilities in North Dakota. The North Dakota SHPO concurred with the findings and recommendations of the archaeological survey reports and we agree. Consultation is ongoing due to pending archaeological surveys on about 14.5 acres of the direct APE due to a lack of landowner permission to survey or inclement weather.

The geomorphological investigation resulted in identification of four areas recommended as having high potential to contain deeply buried archaeological materials (the Red River of the North, the Sheyenne River, the Rush River, and the Maple River).

WBI Energy proposed archaeological monitoring during construction. The North Dakota SHPO agreed with this approach. WBI Energy has filed an archaeological monitoring plan and we find the plan acceptable.

WBI Energy surveyed the entire APE for historic architectural resources. As a result, 29 historic architectural resources were identified within the APE for direct and indirect impacts along the pipeline route. Of the 29 resources identified, 21 are farmsteads, six are drainage ditches, an historic highway (Meridian Highway), and a cemetery (the Lower Maple River Cemetery); none of these resources was recommended as eligible for listing in the NRHP. Seven historic architectural resources were identified within 0.25 mile of the Sanborn Regulator Station (three farmsteads, a residence, a pole barn, a former service station, and an electrical substation); an historic architectural resource was identified within 0.25 mile of the Jamestown TBS (the Otter Tail Power Company Station); and an historic farmstead was identified within 1 mile of the Apple Valley TBS. No historic architectural resources were identified within 1 mile of the Mapleton Compressor Station. None of the historic architectural resources identified during survey for the Project were considered as eligible for listing in the NRHP and no further work is recommended. The North Dakota SHPO concurred with the findings and recommendations of the historic structures reports. We agree.

B.1.2 Unanticipated Discoveries Plan

WBI Energy provided a UDP to address the unanticipated discovery of cultural resources and human remains during construction. The plan describes the process of notifying interested parties in the event of any discovery. WBI Energy has incorporated comments by the FERC, North Dakota and Minnesota SHPO, and USC. The North Dakota and Minnesota SHPO agreed with the UDP in responses dated June 5, 2017 and June 20, 2017 respectively. We have also reviewed the plan and find it acceptable.

B.1.2 Compliance with the NHPA

Compliance with Section 106 of the NHPA has not been completed for the Project. To ensure that the FERC's responsibilities under the NHPA and its implementing regulations are met, **we recommend that:**

WBI Energy <u>should not begin construction</u> of facilities <u>and/or use</u> of all staging, storage, or temporary work areas and new or to-be improved access roads in North Dakota, <u>until</u>:

a. WBI Energy files with the Secretary:

i. reports, studies, or plans of additional cultural resources surveys in North Dakota;

ii. site-specific avoidance and/or treatment plan(s), as required; and

iii. comments on reports and plans from the North Dakota SHPO;

b. the ACHP is afforded an opportunity to comment if historic properties would be adversely affected; and

c. the FERC staff reviews and the Director of the Office of Energy Projects (OEP) approves the cultural resources reports and plans, and notifies WBI Energy in writing that avoidance and/or treatment measures, as required, may be implemented and/or construction may proceed.

All materials filed with the Commission containing location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CUI//PRIV - DO NOT RELEASE."

B.7 SOCIOECONOMICS

The socioeconomic impact associated with construction of the Project would be short-term and localized primarily because of the relatively short construction period (up to five months, and only three to four weeks in any location) for installation of the facilities. Population influx as a result of construction would likely occur in larger population centers near the Project area, such as Fargo, Jamestown, and Bismarck, North Dakota and Moorhead, Minnesota, which would limit the local impact on housing, public services, and infrastructure (fire, medical, education, police, transportation). Some beneficial economic impact would be realized through local and non-local construction payroll expenditures, purchases of construction goods and materials, and increased tax revenues in the various counties.

B.1.1 Population, Housing, and Employment

WBI Energy estimated it would need up to 90 personnel for construction of the pipeline and up to 25 personnel for construction of the compressor facility over the estimated 5-month construction period. Construction of the Viking Interconnect, Sanborn Regulator Station, Jamestown TBS, and Apple Valley TBS would require up to 20 personnel each over an estimated 20-day period. WBI Energy does not anticipate hiring any new permanent staff beyond those already employed with the company for operation of the new pipeline and compressor facilities. The impacts on the populations near the Project area are expected to be temporary and relatively minor. The number of seasonal/recreational housing units that may be available for rent in larger metropolitan areas, such as Fargo, exceeds the total number of construction personnel that would be required for the Project. In addition, other seasonal accommodations (for example, hotels/motels, campgrounds, and RV parks) are available throughout the Project area. In 2016, the vacancy rate for both North Dakota and Minnesota was about 50 percent (North Dakota Tourism, 2016; Explore Minnesota, 2017). Non-local workers may bring family

members with them to the Project area; however, due to the short duration of construction, the abundant supply of housing, and the relatively small increase in population that would be experienced due to the influx of non-local construction personnel, we do not anticipate any significant impacts on population, housing, and employment.

B.1.2 Property Values

We received one comment about potential adverse effects on property values resulting from the Project's construction and operation. The impact that a natural gas project could have on the value of any land parcel depends on many factors. These include the size of the parcel, the parcel's current value and land use, and the value of other nearby properties. However, subjective valuation is generally not considered in appraisals. This is not to say that the Project would not affect resale values. Potential purchasers may make a decision based on intended future use and, if the presence of the Project facilities in the general area would make that use undesirable, it is possible that the potential purchaser would not acquire that parcel. However, each potential purchaser has differing criteria and means.

Several studies have looked at the effect of pipelines on sales and property values. A report by Integra Realty Resources, which was prepared in 2016 for the Interstate Natural Gas Association of America Foundation, Inc., evaluated the impact of natural gas pipelines on real estate in five separate and geographically diverse areas, including two suburban areas; one master-planned residential community; and two rural areas. Each of these areas is either crossed by one or more natural gas pipeline, or in close proximity to three natural gas pipelines. The study concluded that there was no significant impact on property sales along natural gas pipelines or based on the pipeline size or the product carried (Interstate Natural Gas Association of America Foundation, 2016)

According to a January 2016 study, "A Study of Natural Gas Compressor Stations and Residential Property Values", no data was uncovered that suggests that proximity to a compressor station measurably impacts value or land use. The study shows that compressor stations appear to have no widespread, systematic impact on value or land use.

B.1.2 Economy

In a comment letter dated March 7, 2017, the MPCA requested information regarding the potential economic impacts of an accidental release or other incident during operation of the Project. WBI Energy has a recorded total of 12 incidents on its pipeline system during the ten-year period from 2006 and 2016. To address the MPCA's question, WBI Energy reviewed the total costs for each of these incidents, and noted that the costs vary widely from $3,000 to $500,000 and are dependent on the magnitude of the incident. Most of the recorded incidents during this 10-year period were the result of excavation

damage caused by an independent third-party contractor, followed by damage by natural forces such as temperature. Section B.9, Reliability and Safety, outlines the procedures and best management practices that WBI Energy would employ to avoid and/or mitigate incidents during operation of the Project. In general, if a pipeline incident occurs, costs related to emergency response are paid for through the local tax base and are not the responsibility of the pipeline company. If an incident were to occur on WBI Energy's system, no lasting economic impact is anticipated because of the remote location of the facilities.

B.1.2 Public Services, Infrastructure, and Traffic

Existing local government public services within the project area include multiple local fire departments, police departments, medical facilities. Potential impacts on these services could include traffic-related incidents, medical emergencies, increases in traffic violations, and issuances for permits for vehicles subject to load and width restructions.

Although the need for police fire and medical services may increase slightly during construction activities, adequate public services exist in the Project area to handle a civil, criminal, and emergency event. In addition, a relatively small number of workers is required for the Project and there would be no large influx of workers residing in any one community. Therefore, impacts on public services during construction is not expected to be significant.

Construction vehicles would generally use county and township roads to access the Project right-of-way, which may temporarily affect local traffic, but would not likely result in significant impacts. WBI Energy estimated that about 168 construction vehicles and 50 delivery vehicles would be required during construction of the Project. Vehicles would include stringing trucks, welding rigs, water trucks, fuel trucks, mechanic trucks, front end loaders, hydrostatic equipment trucks, backhoes, construction personnel, and environmental inspector vehicles. We anticipate that some construction personnel would carpool to the construction area and that construction vehicles and delivery vehicles would be distributed across the Project area during the period of construction, thus reducing passenger vehicle load on local roads. The total duration of construction would last about 120 days over a period of 5 months and construction in any distinct location would last for about 3 weeks with aboveground facilities taking longer. In addition, construction activities would be scheduled to take advantage of daylight hours. As such, construction traffic would typically avoid peak commuting periods. Construction-related activities that generally require more time to complete, such as hydrostatic testing, HDD, and tie-ins, may occur at unspecified times and outside of normal working hours (presumed to be 8 am to 5 pm). We anticipate that WBI Energy would attempt to schedule these activities in such a way (for example, outside of peak traffic hours) to minimize impacts on commuter traffic.

The Project may create a minor temporary increase in traffic on county and township roads during active construction but traffic delays are not anticipated. Construction of the pipeline across public roads would be completed via HDD or guided bore which would avoid impacts on local traffic. Should a road closure be necessary, WBI Energy would work with local law enforcement and county agencies to ensure that impacts on local traffic would be minimized. Construction vehicles and equipment would comply with all federal, state, and county regulations as well as local load weight restrictions. Therefore, we do not anticipate a significant impact on traffic.

B.1.2 Environmental Justice and Sensitive Receptors

The EPA asked that we consider the Project impacts on environmental justice communities (i.e., low-income and minority communities) and sensitive receptors such as children and people with asthma. However, no environmental justice issues are expected to result from the Project because no low-income or minority communities would be impacted by the Project. Therefore, we conclude that no disproportionately high and adverse impacts on environmental justice communities would occur.

B.8 AIR QUALITY AND NOISE

B.1.1 Air Quality

Construction and operation of the Project would impact local and regional air quality. Although air emissions would be generated by operation of the Project, the majority of air emissions would result from construction of the Project.

The term air quality refers to relative concentrations of pollutants in the ambient air. The subsections below describe air quality concepts that are applied to characterize air quality and to determine the significance of increases in air pollution.

Ambient air quality is protected by the Clean Air Act (CAA) of 1970, as amended in 1977 and 1990. The EPA oversees the implementation of the CAA and establishes National Ambient Air Quality Standards (NAAQS) to protect human health and welfare. NAAQS have been developed for seven “criteria air pollutants”, including nitrogen dioxide, carbon monoxide (CO), ozone, sulfur dioxide, particulate matter less than or equal to 2.5 microns in aerodynamic diameter, particulate matter less than or equal to 10 microns in aerodynamic diameter , and lead, and include levels for short-term (acute) and long-term (chronic) exposures. The NAAQS include two standards, primary and secondary. Primary standards establish limits that are considered to be protective of human health and welfare, including sensitive populations such as children, the elderly, and asthmatics. Secondary standards set limits to protect public welfare, including protection against reduced visibility and damage to crops, vegetation, animals, and buildings (EPA 2016a). Additional pollutants, such as volatile organic compounds (VOC) and hazardous air pollutants (HAP), are emitted during fossil fuel combustion.

These pollutants are regulated through various components of the CAA that are discussed further in section B.8.1.2.

At the state level, the MPCA and the NDDH have both adopted the NAAQs, as promulgated by the EPA. In addition to the NAAQS, both the MPCA and NDDH have established state ambient air quality standards. The applicability of the various state ambient air quality standards to the Project are reviewed below in section B.8.1.2.

Greenhouse gases (GHG), the most common of which are carbon dioxide (CO_2), methane, nitrous oxide, ozone, hydrofluorocarbons, and perfluorocarbons, are naturally occurring pollutants in the atmosphere and products of human activities, including burning fossil fuels. Fossil fuel combustion emits CO_2, methane, and nitrous oxide. GHG emissions are generally calculated and regulated in terms of carbon dioxide equivalents (CO_2e). The CO_2e takes into account the global warming potential (GWP) of each GHG. The GWP is the measure of a particular GHG's ability to absorb solar radiation as well as its residence time within the atmosphere. The GWP allows comparison of global warming impacts between different gases; the higher the GWP, the more that gas contributes to climate change in comparison to CO_2. Thus, CO_2 has a GWP of 1, methane has a GWP of 25, and nitrous oxide has a GWP of 298.[8]

B.4.3.1 Existing Air Quality

The EPA, and state and local agencies have established a network of ambient air quality monitoring stations to measure concentrations of criteria pollutants across the U.S. The data are then averaged over a specific time period and used by regulatory agencies to determine compliance with the NAAQS and to determine if a particular area meets the NAAQS. Areas that meet the NAAQS are termed "attainment areas." Areas that do not meet the NAAQS are termed "nonattainment areas." Areas for which insufficient data are available to determine attainment status are termed "unclassifiable areas." Areas formerly designated as nonattainment areas that have subsequently reached attainment are termed "maintenance areas."

The attainment status of a region, in conjunction with projected emission rates or emission increases, determines the regulatory review process for a new project. Air quality control regions (AQCR) are areas established by the EPA and local agencies for air quality planning purposes. Cass County, North Dakota and Clay County, Minnesota are within the Metropolitan Fargo-Moorhead Interstate AQCR 130. Barnes, Stutsman, and Burleigh counties, North Dakota are within the North Dakota Intrastate AQCR 172. All counties within both AQCRs are designated as attainment or unclassifiable and are in

[8] These GWPs are based on a 100-year time period. We have selected their use over other published GWPs for other timeframes because these are the GWPs the EPA has established for reporting of GHG emissions and air permitting requirements. This allows for a consistent comparison with these regulatory requirements.

attainment with the NAAQS (EPA, 2016b) for all criteria pollutants. Therefore, all Project facilities would be located in attainment areas or unclassifiable areas.

B.4.3.1 Permitting/Regulatory Requirements

The provisions of the CAA that are applicable to the Project are discussed below. In addition to the NAAQS, air emissions and equipment would be subject to various other federal and state air quality regulations. The federal air quality requirements are contained in 40 CFR 50 through 99 including:

- New Source Review;
- State and Title V Operating Permit Programs;
- New Source Performance Standards;
- National Emission Standards for Hazardous Air Pollutants; and
- General Conformity.

Preconstruction air permitting programs that regulate the construction of new stationary sources of air pollution and the modification of existing stationary sources are commonly referred to as New Source Review (NSR). Major NSR requirements are established on a federal level but may be implemented by state or local permitting authorities under either a delegation agreement with the EPA or as a State Implementation Plan program approved by the EPA. Major NSR has two components: the Prevention of Significant Deterioration (PSD) permitting program and the nonattainment area NSR (NNSR) permitting program. PSD requirements include the use of Best Available Control Technology, air quality impact analyses, and additional impact analyses. NNSR requirements for nonattainment pollutants include Lowest Achievable Emission Rate, emission offsets, and an alternatives analysis.

Each county in the Project area is currently designated as attainment/unclassifiable for all criteria pollutants. Therefore, the less restrictive air quality thresholds apply to the Project and NNSR does not apply. Emissions of all criteria pollutants from the Mapleton Compressor Station, Viking Interconnect, and other aboveground facilities, would not exceed the major source permitting thresholds; therefore, PSD permitting requirements would not apply to the Project.

The Title V permit program in 40 CFR 70 requires major sources of air pollutants to obtain operating permits. The major source thresholds under the Title V program are 100 tons per year (tpy) of any air pollutant, 10 tpy of any single HAP, or 25 tpy of any combination of HAPs. Stationary sources are not required to obtain a Title V permit on the sole basis of GHG emissions levels (in other words, exceeding the Title V major source threshold for GHG only).

The authority to issue Title V operating permits has been delegated to the MPCA and the NDDH. The MPCA and NDDH administer the Title V operating permit program through Minnesota Admin Rule Section 7007.0200 and North Dakota Admin Code section 33-15-14-06, respectively. The Title V thresholds in Minnesota and North Dakota are the same as the federal standards. Emissions from Project facilities would be below the Title V permitting thresholds; therefore, no Title V permits would be required. Both Minnesota and North Dakota have state air operating permit programs for which sources below the Title V major source thresholds may be required to obtain an operating permit. NDDH exempts electric driven compressor stations from state operating permit requirements, as long as a complete application is submitted and the department issues a determination of minor significance. A completed air permit application was submitted to NDDH on March 15, 2017 by WBI Energy. A determination of minor significance was issued by NDDH on March 17, 2017. Project emissions in Minnesota would be classified as not significant and no state permit would be required.

New Source Performance Standards (NSPS) in 40 CFR 60 regulate certain emissions from new, modified, or reconstructed sources to control emissions to the level achievable by the best demonstrated technology for specific source categories. NSPS also establishes fuel, monitoring, notification, reporting, and recordkeeping requirements. Subpart OOOOa of the NSPS (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution) would apply to the 3,000 hp electric-driven compressor unit and the fugitive emissions components at the Mapleton Compressor Station. WBI Energy would comply with this subpart.

National Emission Standards for Hazardous Air Pollutants in 40 CFR Parts 61 and 63 would not apply to the Project because the Mapleton Compressor Station would be a minor source of HAP and would not be included in any source categories regulated as area sources under these standards.

General conformity regulations codified in 40 CFR Part 93, Subpart B, are designed to ensure that federal actions that occur in nonattainment and maintenance areas do not interfere with a state's ability to attain or maintain compliance with NAAQS. The Project would be constructed and operated in areas that are in attainment with the NAAQS. Therefore, a general conformity determination is not required.

In addition to federal regulations, WBI Energy would be subject to state air pollution control regulations. WBI Energy would comply with the particulate matter emissions limits set forth in NDAC 33-15-05, the VOC emission requirements identified in NDAC 33-15-07, the odor restrictions specified in NDAC 33-15-16, and the fugitive emission restrictions in NDAC 33-15-17. There are no additional regulatory or permitting requirements set forth by the MPCA.

B.4.3.1 Construction Emissions Impacts and Mitigation

Project construction would result in temporary increases in emissions of some pollutants due to the use of equipment powered by diesel fuel or gasoline engines and construction workers commuting to and from work sites. Large earthmoving and other mobile equipment are sources of combustion-related emissions, including criteria pollutants and small amounts of HAPs. In addition, fugitive dust would be generated by construction activities due to disturbance of the ground surface and exposed soils. The amount of dust generated would be a function of construction activity, soil type, soil moisture content, wind speed, precipitation, vehicle traffic and types, and roadway characteristics. Dust would be greater during dry periods and in areas of fine-textured soils subject to surface activity.

Construction emissions were estimated based on the fuel type and anticipated frequency, duration, capacity, and levels of use of various types of construction equipment. Construction emissions were estimated using emission factors provided in EPA's AP-42 guidance and EPA Mobile Source Emissions Models (EPA, 2016a). Table B.8.1.3-1 summarizes the estimated emissions of criteria pollutants, total HAPs, fugitive dust, and GHGs from all construction-related activities, including HDD.

Table B.8.1.3-1

Emissions from Construction Equipment (tpy)

Description	Criteria Pollutants								
	NO_x	CO	VOC	SO_2	PM_{10}	$PM_{2.5}$	CO_2e [a]	Formaldehyde	Total HAPs
Construction Engine emissions [b]	32.22	18.19	4.70	0.04	2.50	2.42	6,745.81	1.02	2.91
On-Road Vehicle Travel	0.17	0.26	0.02	0.10	0.01	0.01	140.59	0.00	0.03
Off-Road Vehicle Travel	N/A	N/A	N/A	N/A	1.47	0.15	N/A	N/A	N/A
Storage Piles	N/A	N/A	N/A	N/A	1.68	0.25	N/A	N/A	N/A
Earthmoving Fugitives[c]	N/A	N/A	N/A	N/A	113.66	29.33	N/A	N/A	N/A
Total	**32.39**	**18.45**	**4.72**	**0.15**	**119.3**	**32.16**	**6,886.40**	**1.02**	**2.95**

[b] Emissions of CO_2e given in metric tonnes per year.

[c] Includes emissions from horizontal directional drilling.

[d] Includes the following activities: topsoil removal/replacement, trench excavation/backfilling, and wind erosion.

$PM_{2.5}$= particulate matter less than or equal to 2.5 microns in aerodynamic diameter; PM_{10}= particulate matter less than or equal to 10 microns in aerodynamic diameter; SO_2= sulfur dioxide; NO_x=nitrogen oxides

Construction emissions shown in table B.8.1.3-1 are not expected to result in a violation or degradation of ambient air quality standards. We received a comment regarding concerns about dust emissions. In order to minimize emissions, WBI Energy has developed a Fugitive Dust Control Plan that outlines procedures that would be employed during construction to control fugitive dust such as application of water or

other commercially-available dust control agents on unpaved areas subject to frequent vehicle traffic, reducing the speed of vehicular traffic on unpaved roads, and covering open-bodied haul trucks in accordance with the Project Fugitive Dust Control Plan. We have reviewed this plan and find it adequate. Further, WBI Energy would operate construction equipment only on an as-needed basis.

Construction activities would be temporary and localized and are not expected to significantly impact local or regional air quality or result in emissions that would contribute to a violation of the NAAQS. Based on conservative estimates in the number and type of equipment that would be used for the Project, we conclude that engine emissions, combined with fugitive dust and other construction related emissions would not result in a violation of NAAQS.

B.8.1.4 Operational Emissions

The Mapleton Compressor Station would consist of one 3,000 hp electric motor-driven compressor unit; gas cleaning, cooling, measurement, and regulation equipment; appurtenant facilities; and one 2,000-gallon capacity underground slop oil storage tank. Because the compressor unit would be electric motor-driven and would derive power directly from the electric grid rather than through combustion of natural gas, operation of the Mapleton Compressor Station would result in minor fugitive emissions. Fugitive emissions are minor leaks that would occur along the pipeline, and at valves, seals, and other piping components, and from operation and maintenance activities at the Mapleton Compressor Station. Minor amounts of emissions would also be generated by operation of other Project facilities, such as the interconnect and aboveground facilities. The Mapleton Compressor Station would not be subject to major source permitting requirements; therefore, a PSD ambient air quality analysis would not be required. The estimated potential operating emissions (including fugitive emissions) from the Mapleton Compressor Station would be 63.7 tpy CO_2e and 0.32 tpy VOC. The 2,000-gallon underground storage tank at the Mapleton Compressor Station would store slop oil and emissions from this tank would be negligible. The potential operating emissions from the rest of the Project components (pipeline leaks and blowdowns, metering facility leaks and blowdowns, etc.) are estimated at 6,358 tpy CO_2e and 34.4 tpy VOC.

WBI Energy would not participate in the EPA's Methane Challenge Program and would not install specific EPA Natural Gas STAR recommended technologies. However, air quality impacts from operation of the Mapleton Compressor Station would be minimized by the use of an electric-driven compressor, which eliminates the need for a fuel gas system, thus reducing the amount of potential leaking components at the compressor station. Additionally, best management practices, including implementation of a leak detection and repair program and compressor rod packing replacement schedule, in compliance with EPA's 40 CFR 98, Subpart W and with 40 CFR 60, Subpart OOOOa, would be employed to reduce fugitive emissions. Compliance with federal and state air regulations and state permit requirements would ensure that air quality impacts would be

minimized during installation and operation of the Mapleton Compressor Station. Therefore, we conclude that emissions generated during operation would not be significant and would not significantly impact local or regional air quality.

The Project would result in GHG emissions. GHG emissions from construction were estimated in table B.8.1.3-1 and estimates from operation were summarized in section B.8.1.4. The Project's requested certificated capacity of 40,000 Dth/d is designated for industrial, commercial, and residential use. The downstream emissions of the proposed Project is 800,000 tpy CO_2e, assuming all maximum load operation of project facilities for the entire year (i.e., 8,760 hours) and that all of the gas to be transported is eventually combusted. We note this is a conservative estimate, as projects are designed for peak use and rarely transport at maximum capacity 365 days per year.

B.1.2 Noise

Noise is generally defined as sound with intensity greater than the ambient or background sound pressure level. Construction and operation of the Project would affect overall noise levels in the Project area. The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions and the effects of seasonal vegetative cover. Two measures that relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level (L_{eq}) and day-night sound level (L_{dn}). The L_{eq} is an A-weighted sound level containing the same energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The L_{dn} takes into account the duration and time the noise is encountered. Specifically, the L_{dn} is the L_{eq} plus a 10 decibel on the A-weighted scale (dBA) penalty added to account for people's greater sensitivity to nighttime sound levels (typically considered between the hours of 10:00 p.m. and 7:00 a.m.). The A-weighted scale is used to assess noise impacts because human hearing is less sensitive to low and high frequencies than mid-range frequencies. The human ear's threshold of perception for noise change is considered to be 3 dBA; 5 dBA is clearly noticeable to the human ear; and 10 dBA is perceived as a doubling of noise (Bies and Hansen 1988).

In 1974, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential noise impacts from the Project at noise sensitive areas (NSAs). NSAs are defined as homes, schools, churches, or any location where people reside or gather. FERC requires that the noise attributable to any new compressor engine or modifications during full load operation not exceed an L_{dn} of 55 dBA at any NSAs. Due to the 10 dBA penalty added for nighttime noise, for a facility to

meet the 55 dBA L_{dn} limit, it must be designed such that actual constant noise levels on a 24-hour basis do not exceed 48.6 dBA L_{eq} at any NSA.

In addition to federal standards, the State of Minnesota established noise rules at Minnesota Admin Rule Section 7030.0040. This standard limits noise based on the receiving property's land classification. The most stringent noise limit is 50 dBA L_{50} for nighttime noise at a noise area classification of 1 (for example, a residence, school, campground, or hospital). Complying with the FERC's 55 dBA L_{dn} would limit operational noise to less than 48.6 dBA L_{eq} at NSAs (noise area classification 1) which is believed to be adequately protective to also meet the requirements of Minnesota Admin Rule Section 7030.0040. There are no other state or local noise ordinances that apply to the Project.

MPCA submitted comments during the pre-filing of WBI's application regarding noise impacts due to construction and operation of the proposed Project. MPCA inquired about the source of construction-related noise levels (80 dBA, 48 dBA, and 85 dBA) provided by WBI to estimate construction noise levels and quantification methods used to determine these values. The noise level estimates were provided by WBI's noise consultant based on noise levels measured during construction of typical compressor station sites and are consistent with noise levels for typical construction equipment provided by the Occupational Safety and Health Administration (Occupational Safety and Health Administration, 2003). Additionally, WBI assumed that noise would attenuate at approximately 6 dBA with a doubling in distance, which is consistent with standard engineering practice using the inverse square law. This estimate does not take into account ground or vegetation sound absorption, thus we consider this estimate conservative.

The MPCA also requested clarification on Minnesota noise standards for HDD and the equivalency between Minnesota and FERC's noise standards. All applicable local noise standards and the equivalency between local and federal standards were identified in the above text. MPCA also requested additional information on the lack of noise analyses for aboveground facilities that are not compressor stations. If NSAs are located in close proximity to a noise generating unit, such as a meter station, FERC may request a sound survey be completed. However, the only Project-related facilities in Minnesota are the pipeline and interconnect and these facilities are not expected to generate noise; therefore, noise impacts to local residents is not anticipated as a result of Project operation in Minnesota. Lastly, MPCA recommended that local residents be alerted to upcoming construction, including nighttime construction. WBI has committed to notifying residents within 48 hours of all planned nighttime HDD construction (see Section B.8.2.1).

B.4.3.1 Construction Noise

Noise would be generated during construction of the Project. Construction activities in any one area could last from several weeks to several months on an intermittent basis. While individuals in the immediate vicinity of the construction activities would experience an increase in noise, this effect would be temporary and local. Noise mitigation measures to be employed during construction include ensuring that sound muffling devices that are provided as standard equipment by the construction equipment manufacturer are kept in good working order. In addition, construction would generally be limited to daytime hours unless nighttime construction for HDD crossings is required. If nighttime construction is necessary, WBI Energy would notify landowners within a half mile of the planned nighttime construction a minimum of 48 hours before the start of construction activities in the area. If necessary, WBI would work with homeowners to develop suitable mitigation for noise impacts related to nighttime construction.

Noise from Horizontal Directional Drilling

WBI Energy would use the HDD method to drill and install the pipeline at ten locations along the pipeline route (see figure B.8.2.1-1). There are residences within 0.5 mile of eight of the ten HDD sites. The sound level at any specific NSA would be a function of the NSA's distance from the HDD site and any intervening topography. HDD operations, including drilling and pullback, would typically occur during daytime hours, but may extend into nighttime hours if necessary to ensure the success of the drill (for example, during critical times such as pipe pullback). WBI Energy evaluated the potential noise from the HDD operations and estimated the predicted noise level at the nearest NSAs for each of the drill entry/exit points. Estimates of the existing noise levels were based on land use classification. The results of the HDD noise impact analysis are provided in table B.8.2.1-1.

Table B.8.2.1-1 indicates that the predicted HDD noise levels are estimated to be below 55 dBA L_{dn} at all NSAs without additional noise mitigation measures and would therefore comply with both FERC and Minnesota state noise standards. Although noise level impacts from HDD activities would be clearly noticeable to 10 NSAs, noise impacts from HDD activities would be temporary and short-term. Based on the estimated noise levels during HDD construction that would be below 55 dBA L_{dn} at the nearest NSAs, we conclude that construction activities would not result in significant noise impacts on nearby NSAs.

TABLE B.8.2.1-1

Estimated Noise Levels for the Project HDDs with NSAs Nearby

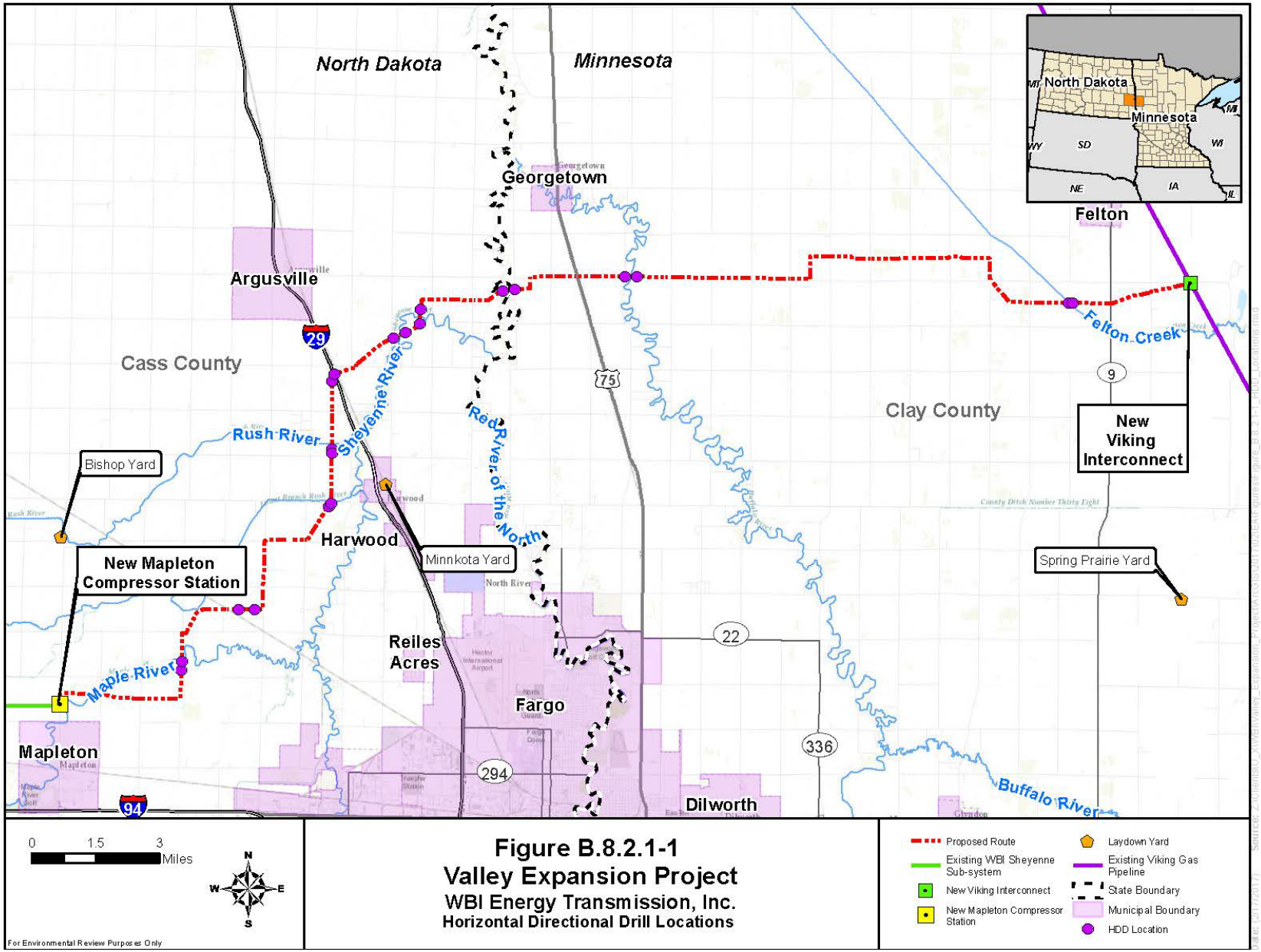
HDD Crossing	Entry/Exit Site	Distance & Direction of NSA	Ambient (L_{dn}, dBA)	Noise Attributable to HDD (dBA)	HDD Ambient (L_{dn}, dBA)	Increase Above Ambient (dBA)
Felton Creek	Entry	2,339 feet NW	40	44.3	45.7	5.7
	Exit	2,094 feet NNW	40	41.0	43.5	3.5
Buffalo River	Entry	1,261 feet SW	45	49.8	51.1	6.1
	Exit	1,219 feet SSE	40	46.8	47.6	7.6
Red River of the North	Entry	1,010 feet. NW	45	52.1	52.9	7.9
	Exit	970 feet S	40	46.0	47.0	7.0
Sheyenne River #1	Entry	1,485 feet SE	40	48.1	48.7	8.7
	Exit	1,243 feet ENE	40	45.4	46.5	6.5
Sheyenne River #2	Entry	927 feet. S	45	51.9	52.7	7.7
	Exit	1,048 feet E	40	45.3	46.4	6.4
Interstate 29	Entry	2,402 feet. N	50	42.9	50.8	0.8
	Exit	> 0.5 mile	N/A			
Rush River	Entry	2,607 feet NW	45	41.9	46.7	1.7
	Exit	> 0.5 mile	N/A			
Lower Branch Rush River	Entry	> 0.5 mile	N/A			
	Exit	> 0.5 mile	N/A			
Maple River #1	Entry	1,832 feet NE	40	45.9	46.9	6.9
	Exit	> 0.5 mile	N/A			
Maple River #2	Entry	> 0.5 mile	N/A			
	Exit	> 0.5 mile	N/A			

N/A = not analyzed (NSAs are greater than 0.5 mile from the HDD location)

B.4.3.1 Operational Noise

The proposed compressor station would generate noise on a continuous basis (i.e., up to 24 hours per day) when operating. The noise impact associated with the compressor station would attenuate with distance from the compressor station. In order to determine the noise impacts of operation of the Project, a noise analysis was conducted for the Mapleton Compressor Station. The noise analysis used measurements of the existing noise levels based on a March 29, 2017 noise survey for determining the projected noise increases at the NSAs. The noise analysis evaluated the following noise sources and associated noise mitigation:

- electric motor and compressor – inside an acoustically insulated metal building;
- aboveground gas piping and components – no acoustical insulation;
- variable frequency drive – design rated at 65 dBA or less at 50 feet;


North Dakota
Minnesota
Georgetown
Argusville
Cass County
Clay County
Felton
Felton Creek
Sheyenne River
Red River of the North
Rush River
Bishop Yard
New Mapleton Compressor Station
Harwood
Minnkota Yard
New Viking Interconnect
Spring Prairie Yard
Reiles Acres
Fargo
Maple River
Mapleton
Dilworth
Buffalo River
29
75
9
22
336
294
94
0 1.5 3 Miles
N
W
E
S
For Environmental Review Purposes Only
Figure B.8.2.1-1
Valley Expansion Project
WBI Energy Transmission, Inc.
Horizontal Directional Drill Locations
Proposed Route
Existing WBI Sheyenne Sub-system
New Viking Interconnect
New Mapleton Compressor Station
Laydown Yard
Existing Viking Gas Pipeline
State Boundary
Municipal Boundary
HDD Location

- motor air supply blower - inside the compressor building and rated for 65 dBA or less at 50 feet;
- motor air exhaust – located on one building wall and designed for 65 dBA or less at 50 feet; and
- compressor unit cooler – designed not to exceed 65 dBA at 50 feet.

Table B.8.2.2-1 summarizes the estimated noise impacts at the nearest NSAs during operations.

TABLE B.8.2.2-1

Estimated Noise Impacts for the Mapleton Compressor Station

Nearest NSA and Type of NSA	Distance & Direction of NSA from Station	Existing Sound Level at NSA (dBA)	Estimated Sound Level (L_{dn}) Attributable to Station (dBA)	Total Sound Level (L_{dn}) – Station plus Existing (dBA)	Increase or Decrease from the Existing Sound Level (dBA)
NSA #1 (Residence)	2,000 feet S	49.3	43.4	50.3	1.0
NSA #2 (Residence)	3,250 feet NNW	48.5	37.9	48.9	0.4

The results of the noise analysis above indicate that the noise attributable to operation of the Mapleton Compressor Station would be below 55 dBA (L_{dn}) at both NSAs, and increases in noise levels at the nearest NSA would be no more than 1 dBA. Because the predicted change in sound levels at the NSAs are less than 3 dBA, the compressor station would not result in a perceptible sound level increase during normal operation (Bies and Hansen 1988).

WBI Energy would employ the noise mitigation measures (as described above and in the noise analysis report) or equal noise mitigation measures, as necessary, to remain below the FERC 55 dBA (L_{dn}) noise standard. Blowdowns would occur at the Mapleton Compressor Station; however, they are not part of normal daily operations. Most blowdowns occur at commissioning or decommissioning of a station, during maintenance, or for emergencies. After commissioning, it is anticipated that blowdowns would occur infrequently (about 2 to 3 times per month), lasting one to five minutes. Noise generated during a unit blowdown event can vary; however, these events are infrequent and of short duration.

While the analysis above shows that noise impacts at the NSAs from the compressor stations would be below our 55 dBA requirement, to verify compliance with the FERC's noise standards, **we recommend that**:

> **WBI Energy should file with the Secretary noise surveys for the Mapleton Compressor Station no later than 60 days after placing the station into service. If a full power load condition noise survey is not possible, WBI Energy should file an interim survey at the maximum possible power load within 60 days of**

placing the station into service and file the full power load survey within 6 months. If the noise attributable to operation of all equipment at the station under interim or full power load conditions exceeds an L_{dn} of 55 dBA at any nearby NSA, WBI Energy should:

a. file a report with the Secretary, for review and written approval by the Director of OEP, on what changes are needed;

b. install additional noise controls to meet that level within 1 year of the in-service date; and

c. confirm compliance with this requirement by filing a second full power load noise survey with the Secretary for review and written approval by the Director of OEP no later than 60 days after it installs the additional noise controls.

B.9 RELIABILITY AND SAFETY

The transportation of natural gas by pipeline involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. Methane has an ignition temperature of 1,000 degrees Fahrenheit and is flammable at concentrations between 5 percent and 15 percent in air. Unconfined mixtures of methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode. Methane is buoyant at atmospheric temperatures and disperses rapidly in air.

B.1.1 Safety Standards for Pipelines

The DOT is mandated to provide pipeline safety; its regulations are codified in Title 49 of the U.S. Code, Chapter 601. The Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Pipeline Safety administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. PHMSA develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level.

Section 5(a) of the Natural Gas Pipeline Safety Act provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards, while Section 5(b) permits a state agency that does not qualify under Section 5(a) to perform certain inspection and monitoring functions. A state may also act as DOTs agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement actions. The majority of the states have either 5(a) certifications or 5(b) agreements, while nine states act as interstate agents. The DOT pipeline standards are published at 49 CFR 190-199. Part 192 specifically addresses natural gas pipeline safety issues. Under a 1993 Memorandum of Understanding on Natural Gas Transportation Facilities (Memorandum) between the DOT and the FERC, the DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) requires that an applicant certify that it will design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection. Alternatively, the applicant must certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with Section 3(e) of the Natural Gas Pipeline Safety Act. The FERC accepts this certification and does not impose additional safety standards other than the DOT standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert the DOT. The Memorandum also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipeline under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee which determines if proposed safety regulations are reasonable, feasible, and practicable. The facilities associated with the Project would be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Part 192 specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion. Part 192 also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined as follows:

- Class 1 Location: 10 or fewer buildings intended for human occupancy;
- Class 2 Location: more than 10 but less than 46 buildings intended for human occupancy;
- Class 3 Location: 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or a small well-

defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period; and

- Class 4 Location: buildings with four or more stories aboveground are prevalent

Class locations representing more populated areas require higher safety standards in pipeline design, testing, and operation. The entire Project would be within a Class 1 location and the pipeline would have a design depth of a minimum of 36 inches from the top of the pipe to the natural ground surface in normal soil conditions, which is deeper than the requirements prescribed in 49 CFR 192.327 for that class location. Additional depth of cover to address landowner concerns (for example, in agricultural areas) would be determined during the right-of-way negotiation process.

Title 49 CFR 192.105 specifies the formula for steel pipe design pressure and sections 192.107 through 192.115 describe the components of the design formula, including yield strength, wall thickness, design factor, longitudinal joint factor, and temperature derating factor. The Project would be designed to meet or exceed these provisions.

In 2002, Congress passed an act to strengthen the Nation's pipeline safety laws. The Pipeline Safety Improvement Act of 2002 was signed into law in December 2002. The Act required that, no later than December 17, 2004, gas transmission operators develop and follow a written integrity management program that contained all the elements described in section 192.911, and address the risks on each covered transmission pipeline segment. Specifically, the law established an integrity management program which applies to all high consequence areas (HCA). The DOT defines HCAs as they relate to different class zones, potential impact circles, or areas containing an identified site as defined in section 192.903 of the DOT regulations. PHMSA published a series of rules from August 6, 2002, to May 26, 2004, that defines HCAs where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate for PHMSA to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

Once a pipeline operator has determined the HCAs on its pipeline, the operator must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The DOT regulations specify the requirements for the integrity management plan in section 192.911. WBI Energy has calculated the potential impact radius for all points along the Project to determine the presence of HCAs. WBI Energy has determined the Project, as designed, would not affect any HCAs, alleviating the need for further consideration relative to 49 CFR 192.761(f).

The pipeline integrity management rule for HCAs requires inspection of the entire pipeline in HCAs every seven years. Part 192 prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under section 192.615, each pipeline operator must also establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency shutdown of system and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

The DOT requires that each operator must establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. WBI Energy would provide the appropriate training to local emergency service personnel before the pipeline is placed in service. No additional specialized local fire protection equipment would be required to handle pipeline emergencies.

B.1.2 Safety Standards for Compressor Stations

Subparts within 49 CFR 192 address other pipeline component designs, including but not limited to compressor stations, service lines, customer meters, and valves. The Project's aboveground facilities would be designed, constructed, and operated to meet or exceed these specifications.

Proper fire protection, first aid, and safety equipment would be maintained in accordance with Occupational Safety and Health Administration regulations in 29 CFR 1910. Training in first aid and proper use of safety equipment is required. The Mapleton Compressor Station would have hand-held dry chemical fire extinguishers as well as a fire and gas detection system, among other firefighting tools. The emergency shut-down system at the compressor station would comply with DOT regulations found in 49 CFR 192.167 and with additional safety systems addressed in sections 192.169 and 192.171.

Applicable Occupational Safety and Health Administration requirements would be adhered to during construction, with strong emphasis placed on 49 CFR 192, 29 CFR 1910, and 29 CFR 1926 as part of general practice. WBI Energy's workforce and contractors would adhere to these regulations and receive training prior to and during construction as needed.

B.1.2 Pipeline Accident Data

Since 1970, PHMSA has collected pipeline incident reports and has now combined them to provide 20-year trend data to the public. Natural gas pipeline operators, among others, are required to report incidents involving fatalities, property damage of more than $50,000, any injury requiring hospitalization, gas releases, and events the operator considers significant. A total of 1,695 onshore natural gas transmission pipeline incidents meeting these criteria were reported from 1996 to 2015 (DOT PHMSA, 2015).

PHMSA breaks down this trend data by the primary causes of common incidents, which include corrosion; excavation damage; incorrect facility operation; material, weld, and/or equipment failures; natural forces and disasters; other outside forces, and all other causes. Table B.9.3-1 presents these data as well as the percentage distribution compared to the total number of incidents (DOT PHMSA, 2016). Note that data prior to the early 2000s categorized incorrect operation and outside force damages incidents as "other causes." Natural force damage and other outside force damage can be caused by earth movements due to subsurface soil settlement, washouts, or other geological hazards; weather effects such as winds, heavy rains/flooding, and lightning; accidental vehicular traffic; and willful damage.

TABLE B.9.3-1

Natural Gas Transmission Onshore All-Reported Incident Summary 1996-2015

Cause	Number of Incidents	Percentage of Total [a]
Material, weld, and/or equipment failure	337	26.6
Corrosion	291	23.0
Excavation damage	207	16.4
Natural force damage	147	11.6
Other outside force damage	79	6.2
Incorrect operation	40	3.2
All other causes	164	13.0
Total	**1,265**	**100.0**

[a] Percentages may not total 100 due to rounding.

Pipeline incidents are typically caused by material/weld/equipment failure, excavation damage, corrosion, and other causes. Excavation damage has historically been the most common incident; however, operators and contractors are now required to

participate in the One Call public utility locate program, which has helped reduce unauthorized excavation activities and subsequent incidents in pipeline rights-of-way.

Corrosion remains a major concern for gas transmission pipelines, but related incidents have become less prevalent due to increased regulation and pipeline technology improvements, particularly using external protective coating and a cathodic protection system (required on all pipelines installed after July 1971). WBI Energy would utilize the best available materials and technologies to construct and operate the Project.

WBI Energy has a recorded total of 12 incidents on its pipeline systems between 2006 and 2016, two of which resulted in injuries or fatality (DOT PHMSA, 2016). The majority of incidents were caused by third-party excavation damages and natural force damage.

Table B.9.3-2 presents the annual injuries and fatalities that occurred on natural gas transmission lines from incidents for the 5 year period between 2010 and 2014. The majority of fatalities from pipelines are due to local distribution pipelines not regulated by FERC. These are natural gas pipelines that distribute natural gas to homes and businesses after transportation through interstate natural gas transmission pipelines. In general, these distribution lines are smaller diameter pipes and/or plastic pipes which are more susceptible to damage. Local distribution systems do not have large right-of-ways and pipeline markers common to the FERC regulated natural gas transmission pipelines. Therefore, incident statistics inclusive of distribution pipelines are inappropriate to use when considering natural gas transmission projects.

TABLE B.9.3-2

Injuries and Fatalities – Natural Gas Tramission Systems

Year	Injuries	Fatalities
2010[a]	61	10
2011	1	0
2012	7	0
2013	2	0
2014	1	1

[a] All of the fatalities in 2010 were due to the Pacific Gas and Electric pipeline rupture and fire in San Bruno, California on September 9, 2010.

The nationwide totals of accidental fatalities from various anthropogenic and natural hazards are listed in table B.9.3-3 in order to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between accident categories should be made cautiously, however, because individual exposures to hazards are not uniform among all categories. The data nonetheless indicate a low risk of death due to incidents involving natural gas transmission pipelines compared to the other

categories. Furthermore, the fatality rate is much lower than the fatalities from natural hazards such as lightning, tornados, or floods.

TABLE B.9.3-3

Nationwide Accidental Deaths[a]

Type of Accident	Annual No. of Deaths
All accidents	117,809
Motor Vehicle	45,343
Poisoning	23,618
Falls	19,656
Injury at work	5,113
Drowning	3,582
Fire, smoke inhalation, burns	3,197
Floods[b]	81
Tornado[b]	72
Tractor Turnover[c]	62
Lightning[b]	49
Natural gas distribution lines[d]	14
Natural gas transmission pipelines[d]	2

[a] All data, unless otherwise noted, reflects 2005 statistics from U.S. Census Bureau, Statistical Abstract of the United States: 2010 (129th Edition) Washington, DC, 2009; http://www.census.gov/statab.

[b] NOAA National Weather Service, Office of Climate, Water and Weather Services, 30 year average (1985-2014) http://www.weather.gov/om/hazstats.shtml

[c] Bureau of Labor Statistics, 2007 Census of Occupational Injuries

[d] PHMSA significant incident files, January 14, 2016. http://www.phmsa.dot.gov/pipeline/library/data-stats/pipelineincidenttrends, 20 year average..

The available data show that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation. From 1995 to 2014, there were an average of 63 significant incidents, 9 injuries, and 2 fatalities per year. The number of significant incidents over the more than 303,000 miles of natural gas transmission lines indicates the risk is low for an incident at any given location. Project operation would represent a slight increase in risk to the nearby public.

B.10 CUMULATIVE IMPACTS

Cumulative impacts may result when the environmental effects associated with a project are superimposed on, or added to, either temporary (construction-related) or permanent (operation-related) impacts associated with past, present, or reasonably foreseeable projects or activities. Although the individual impacts of each project might not be significant, the cumulative impacts of multiple projects could be significant. In accordance with NEPA, the cumulative impacts of the Project along with other projects were considered. The Project's direct and indirect impacts are described in the preceding sections of this EA.

Inclusion of other actions is based on identifying commonalities of impacts from other actions along with those of the Project. An action must meet the following criteria:

- impact a resource potentially affected by the proposed action;
- cause the impact within all, or part of, the Project vicinity; and
- cause the impact within all, or part of, the time span of the Project.

Existing or reasonably foreseeable actions that would affect similar resources during similar periods as the Project were considered. We reviewed publicly available data and consulted with each county planning agency to identify other projects that are near the Project and would occur during the 2018 to 2020 timeframe, because the Project would be constructed in 2018 and most vegetative resources would return to preconstruction conditions within one to two growing seasons after construction. Actions located outside the Project's geographic scope, as defined below, and timeframe were generally not evaluated because their potential to contribute to a cumulative impact would diminish with increasing distance and time from the Project.

- Geology and soils: Impacts on these resources would occur as a result of temporary vegetation clearing and ground disturbance activities. Project construction and restoration measures, including erosion control devices, are designed to confine impacts on geologic and soil resources to the Project workspaces. Therefore, the cumulative impacts analysis for these resources is focused on those areas directly disturbed by the Project (e.g. the Project footprint).
- Cultural resources: Impacts on cultural resources are highly localized and generally confined to the historic property or resource that is affected. Therefore, the geographic scope for cultural resources impacts is limited to the Project APE, and encompassing any overlapping effects to cultural resources and historic properties.
- Groundwater and surface water resources, wetlands, vegetation, wildlife, and fishery resources (primarily increased turbidity or contamination by spills): Impacts on water/wetland, vegetation, wildlife, and fishery resources would occur as a result of temporary ground disturbance and vegetation clearing, dewatering, and hydrostatic testing activities during construction. Impacts on water resources are traditionally assessed on a watershed level. Impacts on biological resources may also use the watershed scale as it provides a natural boundary and geographic proxy to accommodate wildlife habitat and ecosystem characterisitics in the Project area. Therefore, the cumulative impacts analysis for these resources is focused on those projects that occur within the same Hydrologic Unit Code (HUC) 12 sub-watersheds crossed by the Project.
- Land use and recreational resources: Impacts on land use and recreational resources would occur as a result of temporary vegetation clearing, ground

disturbance, and increases in noise and dust during construction activities. The cumulative impacts analysis for land use and recreational resources is focused on those projects that occur within 1 mile of the Project.

- Visual Resources: Impacts on visual resources may extend outside of the Project footprint to include projects in the same viewshed that would be affected by the Project facilities. Impacts on visual resources near the Mapleton Compressor Station, Viking Interconnect, mainline block valves, Sanborn Regulator Station, and Jamestown and Apple Valley TBSs were assumed to extend up to 5 miles.
- Air Quality: Temporary impacts on air quality, including fugitive dust, would be largely limited to areas within 0.25 mile of active construction. Long-term impacts on air quality would be largely contained within an approximate 50-km (31 miles) radius of the Mapleton Compressor Station; 50-km is the distance used by the EPA for cumulative modeling of large PSD sources during permitting. We consider this a conservative geographic scope and have adopted it here to evaluate current and proposed sources that may be additive with the effects of the Mapleton Compressor Station's emissions.
- Noise: Impacts from construction and operation noise could potentially contribute to cumulative impact on NSAs within 1 mile of the Mapleton Compressor Station. Therefore, we evaluated current and proposed sources within 1 mile of the compressor station. Where none are identified, we do not consider long-term cumulative noise impacts further.
- Socioeconomics: Communities that could be affected by the increased workforce are considered in our analysis.

The projects considered in the cumulative impacts analysis are listed in table B.10-1, depicted on figure B.10-1, and the potential cumulative impacts associated with each resource are discussed in the following subsections.

The Project, in addition to the projects listed in table B.10-1, are expected to have a negligible impact on geology, cultural resources, temporary construction noise, and operational noise. Therefore, we conclude that the impacts from this Project, when considered cumulatively with past, present, and reasonably forseeable projects, would not contribute to significant cumulative impacts on these resources, and these resources will not be discussed further in this section.

Soils

The Project could contribute to cumulative impacts on soils with the FMADP (6,800 acre footprint), the Viking Meter Station (4.9 acre footprint), and the Otter Tail Power Line (43 acre footprint) projects, and bridge and industrial/residential developments (unquantified acreage). With the exception of the FMADP, these projects

TABLE B.10-1

Past, Present, and Reasonably Foreseeable Projects Considered for Cumulative Impacts within Geographic Scopes

Project Name and Sponsor / Proponent	Location	Distance / Direction from Project	Project Type / Description	Geographic Scope, Resources and Impacts Evaluated	Project Status and Schedule
Fargo-Moorhead (F-M) Diversion, F-M Diversion Authority	Cass County, ND; skirts the western side of the Fargo metropolitan area	Runs generally parallel to and west of the pipeline route between MP 20.5 until intersecting the pipeline route at approximate MP 31.5; then east and south of the pipeline route	Flood diversion channel for the Red River of the North	Soils; land use and recreational resources; and visual resources	Federal authorizations have been issued; land acquisition is underway. Construction schedule specifics are uncertain, but generally planned between 2018 and 2024
Viking Meter Station, Viking Gas Transmission Company (Viking)	SW of Felton in Clay County, MN at the eastern end of the Project	Connects to the eastern end of the Project (Viking Interconnect)	Meter Station	Soils; land use and recreational resources; visual resources; and air quality	Construction scheduled to occur concurrently with the Project
Overhead Power Line, OTP	From Mapleton in Cass County, ND north to the Mapleton Compressor Station	Connects to the Mapleton Compressor Station	A 1 to 2 megawatt overhead distribution power line from the existing OTP Mapleton Substation to the Mapleton Compressor Station involving approximately 3.5 miles of new and existing power lines	Soils; land use and recreational resources; visual resources; air quality; and socioeconomics	Construction scheduled to occur concurrent with the Project
Industrial, Commercial, and Residential Development	City of Mapleton, ND	Approximately 0.35 to 2.31 miles south of the Mapleton Compressor Station	Various industrial, commercial and residential development	Land use and recreational resources; visual resources; air quality; and socioeconomics	Ongoing
Residential Development, Ed Polyhare	City of Harwood, ND	Approximately 1 mile east of the pipeline route	New residential development	Land use and recreational resources; visual resources; air quality; and socioeconomics	Unknown
Harmony Solar Project, Geronimo Energy	Approximately 4 miles north of Mapleton, ND and 2.5 miles west of Prosper, ND	2.8 miles NW of the Mapleton Compressor Station	Solar Farm	Visual resources	Construction is planned for 2019-2020
Reconstruction of 43rd Avenue, Burleigh County Highway Department	Northeast Bismarck, ND at 43rd Avenue and 80th Street NE	Approximately 3 miles west of the Apple Valley TBS	Reconstruction of 43rd Avenue NE from 80th Street to a point 0.25 miles east	Visual resources; air quality; and socioeconomics	Unknown construction dates between 2016-2018
Meridian Grove residential development, Verity Homes	City of Mapleton, ND	Approximately 1.5 miles south of the Mapleton Compressor Station	New residential development	Visual resources; air quality; and socioeconomics	Anticipated to occur over the next 2 years (2017-2018)

TABLE B.10-1

Past, Present, and Reasonably Foreseeable Projects Considered for Cumulative Impacts within Geographic Scopes

Project Name and Sponsor / Proponent	Location	Distance / Direction from Project	Project Type / Description	Geographic Scope, Resources and Impacts Evaluated	Project Status and Schedule
Ashmore Third residential development, Norpac Development	City of Mapleton, ND	Approximately 1.5 miles south of the Mapleton Compressor Station	New residential development	Visual resources; air quality; and socioeconomics	Anticipated to occur over the next 2 years (2017-2018)
Highway 10 Chip Seal Project, Cass County Highway Department	From Casselton, ND west to Highway 5	Approximately 9 miles west of the Mapleton Compressor Station	Chip seal highway project	Air quality	Construction planned to occur in 2018
Highways 15 and 16 Chip Seal Projects, Cass County Highway Department	Between Kindred and Davenport, ND	Approximately 12 miles south of the Mapleton Compressor Station	Chip seal highway project	Air quality	Construction planned to occur in 2018
Highway 38 Paving Project, Cass County Highway Department	Highway 38 between the intersection with Interstate 94 and Highway 6	Approximately 23 miles west of the Mapleton Compressor Station	Paving highway project	Air quality	Construction planned to occur in 2018
Reconstruction of County Highway 10, Burleigh County Highway Department	East of Bismarck, ND at County Highway 10 and 66th Street NE	Approximately 5.5 miles from the Apple Valley TBS	Reconstruction of County Highway 10 and 66th Street intersection	Air quality; socioeconomics	Unknown construction dates between 2016-2018

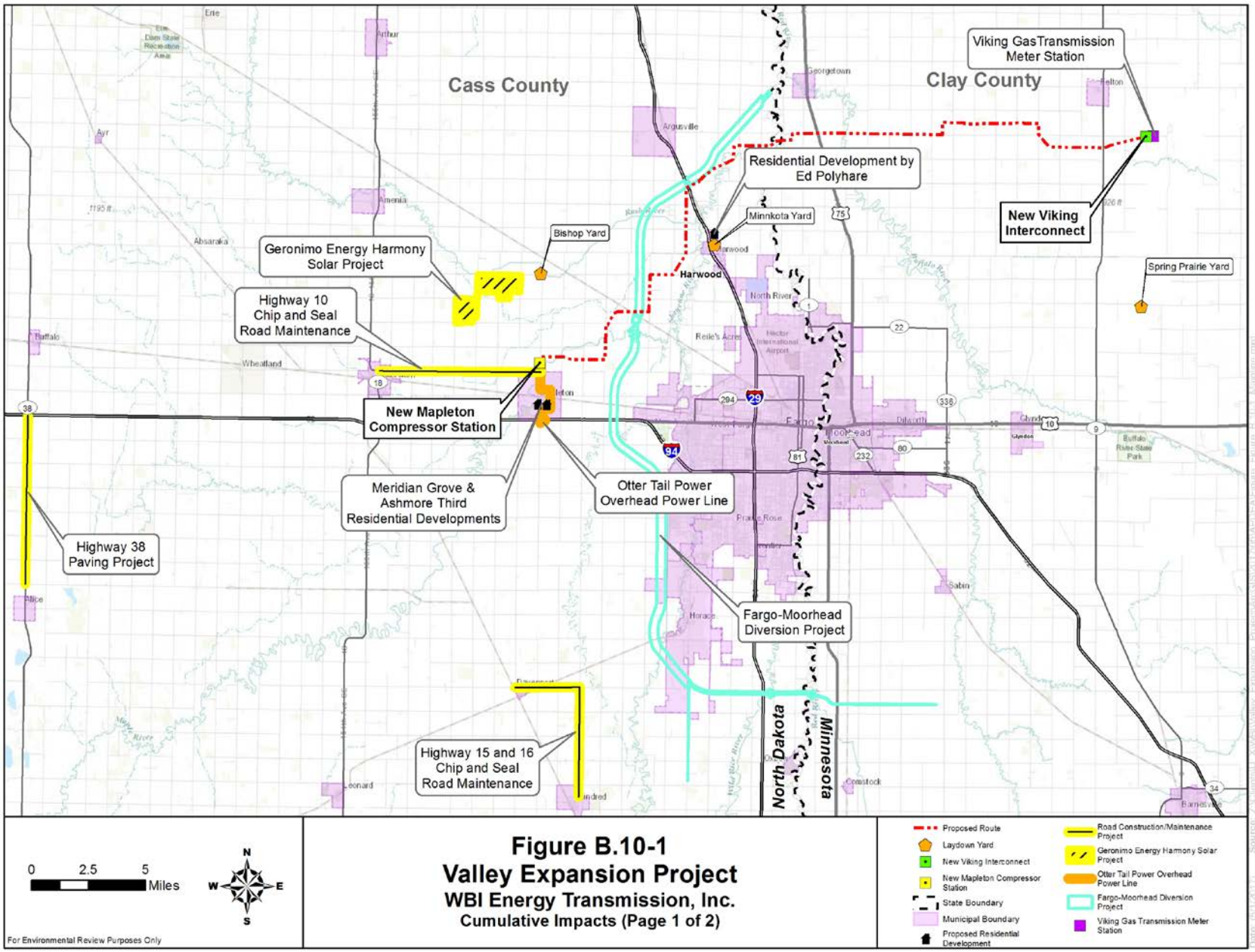


Figure B.10-1
Valley Expansion Project
WBI Energy Transmission, Inc.
Cumulative Impacts (Page 1 of 2)

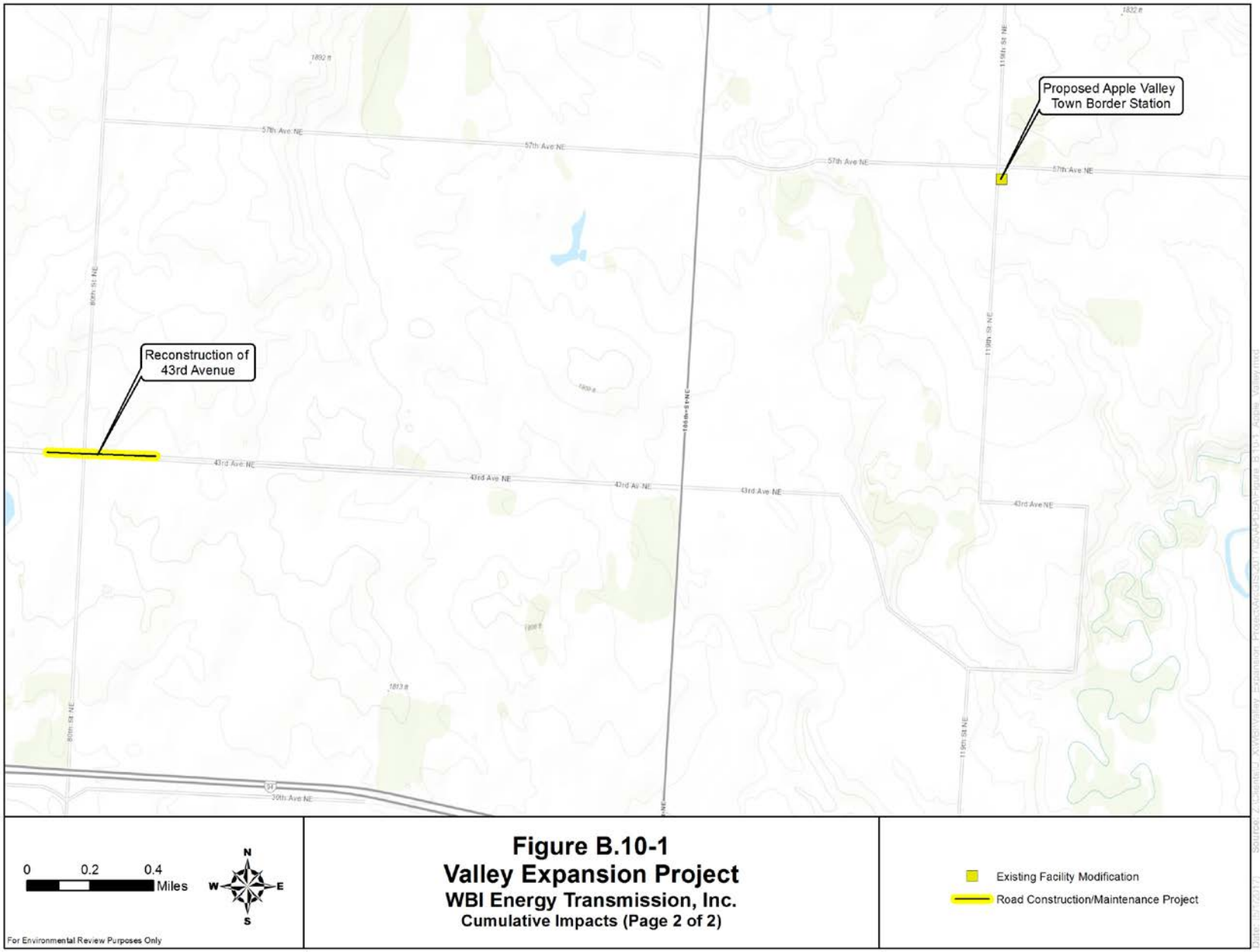

Proposed Apple Valley Town Border Station
Reconstruction of 43rd Avenue
57th Ave NE
43rd Ave NE
119th St NE
86th St NE
94
30th Ave NE
0 0.2 0.4 Miles
N
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Figure B.10-1
Valley Expansion Project
WBI Energy Transmission, Inc.
Cumulative Impacts (Page 2 of 2)
Existing Facility Modification
Road Construction/Maintenance Project

are expected to have a negligible impact on soils. The FMADP would impact a significant amount of soils within the geographic scope for the Project. As described in sections B.2, the Project would have minor impacts on soils. HDD would be utilized to construct the Project pipeline where it crosses the FMADP. The use of HDD would thereby minimizing any cumulative impacts on soils. Therefore, the Project when considered cumulatively with past, present, and reasonably foreseeable projects, would not contribute to significant cumulative impacts on soils within the geographic scope of the Project.

Water Resources and Wetlands

Cumulative impacts on groundwater, surface water, and wetlands, (primarily due to increased turbidity or contamination due to spills), could extend outside of the Project workspaces, but would be contained to a relatively small area (in other words, within the same HUC 12-digit sub-watersheds). The Project could contribute to cumulative impacts on these resources with the FMADP (6,800 acre footprint), the Viking Meter Station (4.9 acre footprint), and the Otter Tail Power Line (43 acre footprint) projects, and bridge and industrial/residential developments (unquantified acreage). Of these, the FMADP would have the greatest potential to affect groundwater, surface water, and wetlands. This planned project would include a 36-mile-long diversion channel, 12 miles of tie-back levees, river inlets, aqueducts, embankments, control structures, and spillways; the channel and levees.

The FMADP would affect several of the same watersheds within the WBI Energy Project area, including the Upper Red River of the North (HUC 090201040506; drains 24,733 acres), the Outlet Sheyenne River (HUC 090202040707, drains 52, 927 acres; the Hobart Lake-Sheyenne River (HUC 0902040105, drains 50,785 acres); the Outlet Maple River (HUC 090202050704, drains 12,605 acres); Lower Branch Rush River-Sheyenne River (HUC 090202040706m drains 39,411 acres); and the Outlet Rush River (HUC 090202040705, drains 16,865 acres). (USACE 2013). In total, the WBI Energy and the FMADP would affect the same HUC 12-digit watersheds totaling 197,326 acres. The new Viking Interconnect would be constructed within the Upper County Ditch No. 45 Eastern Wild Rice River (12-digit HUC 090201081101, drains 8,293 acres) watershed that a portion of the proposed WBI Energy pipeline crosses. The Otter Tail Power Line would occur within the same 12-digit HUC as the Mapleton Compressor Station (Outlet Maple River).

The planned FMADP includes 1,540 acres of mitigation wetland credits to compensate for wetland loss over the entire project area Although the proportion of these acres were not specifically assigned to the HUC 12-digit codes discussed in the above paragraph, the USACE has demonstrated that they plan to mitigate all of the wetland impacts associated with the FMADP. There would be no long-term significant impacts on palustrine emergent wetland because they would be replaced within a wetlands

mitigation bank. Therefore, we conclude that cumulative impacts on wetlands would be insignificant.

All projects would be required to implement stormwater runoff controls, SPCC Plans, and other mitigation measures required by the state and federal permits. As described in sections B.3 and B.4, the Project would have minimal potential for adverse impacts on groundwater and surface water resources, and wetlands because of the proposed construction techniques and mitigation measures. Therefore, the Project when considered cumulatively with past, present, and reasonably foreseeable projects, would not contribute to significant cumulative impacts on water resources and wetlands within the geographic scope of the Project.

Fisheries, Vegetation, and Wildlife

Within each watershed affected by the Project, there are several projects that have affected or are anticipated to impact vegetation through clearing of agricultural and open field areas to create development sites, including drainage canals. The specific acreage of clearing associated with each project is not available; however, agricultural areas are abundant in the surrounding counties, and the cleared acreage is a small fraction of the overall area. The surrounding agricultural areas and crossed by existing roads, utility rights-of-way.

Disturbance during construction is expected to cause short-term displacement of wildlife from in and near the construction workspace and mortality of wildlife that cannot avoid construction disturbance. Following construction and restoration, displaced wildlife are expected to return to the areas. The change in habitat (open field to maintained right-of-way) is expected to cause minor, permanent changes in the distribution of wildlife as species adapted to open areas recolonize the previously meadow areas. After restoration, agricultural and non-forested wetland would not experience a change in vegetation or wildlife habitat value, so they would not contribute to cumulative impacts on these resources.

The anticipated WBI Energy Project impacts on waterbodies and fisheries would be limited to the duration of construction and localized to the waterbody crossings. These crossings would be completed using the HDD method, thereby avoiding in-stream impacts, except for one intermittent stream that does not support aquatic life. Although the proposed Project overlaps in time or space with the planned FMADP, Otter Tail Power Line, and Viking Interconnect projects, the WBI Energy Project's impacts on aquatic life would be negligible; therefore, significant cumulative impacts are not expected.

Based on the small proportion of agricultural crop cover and open field wildlife habitat affected by this Project and the other planned projects and the short-term, negligible, localized impacts on waterbodies and fisheries, we conclude that this Project

would not cumulatively contribute to significant impacts on vegetation, wildlife, or fisheries.

All projects would be required to implement stormwater runoff controls, SPCC Plans, and other mitigation measures required by the state and federal permits. As described in sections B.3 and B.4, the Project would have minimal potential for adverse impacts on vegetation, wildlife resources, and fishery resources because of the proposed construction techniques and mitigation measures. Therefore, the Project when considered cumulatively with past, present, and reasonably foreseeable projects, would not contribute to significant cumulative impacts on vegetation, wildlife resources, and fishery resources within the geographic scope of the Project.

Socioeconomics

Together, the projects listed in table B.10-1 (specifically, the FMADP, the Viking Meter Station, and the Otter Tail Power Line projects, and road and industrial/residential developments) would have a cumulative impact on population, housing, and employment in the area with the addition of temporary and permanent employees. The FMADP is expected to have the most noticeable impacts as it will require a large workforce (number unavailable) and extend over 7 years. The Project would contribute negligibly to these overall cumulative impacts on population, housing, and employment.

Impacts on public services are largely a function of population. As previously mentioned, the Project would add 130 temporary workers and no permanent employees. Project-related impacts on local government public services are expected to be negligible. Collectively, the FMADP, the Viking Meter Station, and the Otter Tail Power Line projects, and road and industrial/residential developments would have cumulative impacts on public services in the Project area through the addition of temporary and permanent employees. It is anticipated that these communities have the local public services to accommodate these projects.

Project-related impacts on traffic would be temporary and short-term, lasting only for the duration of construction activities (5 months). Cumulative traffic impacts are likely as the FMADP, the Viking Meter Station, and the Otter Tail Power Line projects would constructed concurrently. However, only FMADP and the pipeline would use the same local roadway network. The other projects are further from the FMADP and workers could use alternate routes to access the sites. The Project would contribute negligibly to overall impacts on traffic.

Based on the above, we find that the Project would contribute negligibly to any overall cumulative socioeconomic impacts.

Land Use

Cumulative impacts on land use could occur due to the FMADP; the Viking Meter Station; the Otter Tail Power Line; industrial, commercial, and residential development; and residential development-Ed Polyhare projects adjacent to Project workspaces. Of the 6,800 acres potentially impacted by the FMADP, approximately 95 percent is in use as agricultural land with the balance being open land (4 percent) and developed land (1 percent, e.g., roads, railroads, farms). The acreage to be impacted by construction of the Viking Meter Station is estimated to be approximately 2 acres of agricultural land within the 4.9-acre site that WBI Energy has requested for construction of its Viking Interconnect facilities. The Otter Tail Powerline would impact approximately 43 acres for both construction and operation of the powerline. Of the 43 acres, approximately 28 acres are currently in use as agricultural land and the remaining 15 acres is comprised of developed land (e.g., industrial/commercial, roads/interstate right-of-way), based on review of recent aerial imagery. The other developments would impact agricultural land, open land, and developed land.

Approximately 7.4 acres of agricultural land, 0.2 acre of forest/woodland, 0.2 acre of developed land, and 1.0 acre of open land would be permanently converted to another use due to construction and operation of the Project's aboveground facilities. Loss of agricultural land would add to the cumulative loss of tillable agricultural lands near the adjacent projects. However, due to the extensive amount of agricultural land that exists within the Project area, the cumulative impacts would not be significant. Impacts to forest/woodland, developed land, open land would be negligible. Furthermore, no cumulative impacts on public use of the recreation areas, public lands, and other sensitive receptors identified in section B.5.3 would occur as no impacts on these features would occur as a result of construction and operation of the Project. Therefore, we find that the Project would have a minor contribution to any overall cumulative land use impacts.

Visual Resources

Cumulative impacts on visual resources could occur due to the FMADP, the Viking Meter Station, the Otter Tail Power Line, and/or Harmony Solar projects, and bridge and industrial/residential developments within the same viewshed or within 5 miles of the Mapleton Compressor Station, the regulator station, and TBS modifications. Of these, all are located in areas that are actively cultivated with road, residential, and other human developments commonly visible, such that their cumulative impacts are not expected to be noticeable with the exception of the FMADP (as a large channel), the Viking Meter Station, and Harmony Solar Project, which would create new visible features to the existing landscape. As discussed in section B.5, construction of the Mapleton Compressor Station, which is within 5 miles of the Harmony Solar Project, would not create a substantial change in the long-term visual impacts of the site, as the Mapleton TBS is already a visible feature on the landscape. Most of the areas that would be affected by construction occur on actively cultivated and previously disturbed lands,

and these lands would revert to their previous uses and contours following construction thereby limiting permanent visual impacts. Therefore, we find that the Project when considered cumulatively with past, present, and reasonably foreseeable projects, would not contribute to significant cumulative visual impacts.

Air Quality

As noted in table B.10-1, cumulative impacts on air quality within 0.25 mile of Project construction could occur due to the FMADP, the Viking Meter Station, and the Otter Tail Power Line projects. Construction of these projects would involve the use of heavy equipment that would generate emissions of air pollutants and fugitive dust. Construction equipment emissions would result in short-term emissions that would be highly localized, temporary, and intermittent. The majority of construction-related emissions that would occur as a result of the Project would be fugitive dust. WBI Energy would implement dust control measures such as watering access roads and construction areas in order to minimize fugitive dust. Based on the mitigation measures proposed by WBI Energy and included in the Plan, and the temporary and localized impacts of construction, the Project would contribute negligibly to overall cumulative impacts on air quality during construction.

As noted in table B.10-1, six projects, including the FMADP, the Viking Meter Station, and the Otter Tail Power Line projects, road sealing and industrial/residential developments are within a 50-kilometer (31-mile) radius of the Project and could cause a cumulative impact on air quality. All of these projects and activities are expected to have a negligible impact on air quality. Industry standards and requirements (for example, dust abatement, equipment emission standards) also would apply to the highway projects and the Viking Meter Station, similar to the Project, which would help to minimize construction emissions generated from active construction of these projects. The electric-driven compressor units at the Mapleton Compressor Station would have minimal operational emissions and would not significantly contribute to cumulative air quality impacts or result in a violation of the NAAQS. Therefore, the Project would contribute negligibly to cumulative impacts on air quality.

SECTION C – ALTERNATIVES

In preparing this EA, we considered several alternatives to the proposed action to determine whether they would be environmentally preferable over the Project. These alternatives include the no-action alternative, system alternatives, pipeline route alternatives, and aboveground facility location alternatives. In evaluating alternatives, the following criteria were used to determine whether an alternative would be environmentally preferable:

- ability to meet the Project's stated objective (in other words, providing 40,000 Dth/d of natural gas to fuel growth in eastern North Dakota and western Minnesota as well as enhance system reliability for existing and new customers);
- technical and economic feasibility and practicality; and
- whether the alternative provides a significant environmental advantage over the proposed action.

A.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, WBI Energy would not construct the Project and the environmental impacts analyzed in this EA would not occur. In addition, WBI Energy's objective of providing natural gas to meet near-term demand of 40,000 Dth/d to be used for industrial, commercial, and residential use in eastern North Dakota and western Minnesota would not be met. Customers would still require additional natural gas transportation capacity to meet residential, commercial, and industrial growth demands; including delivery of natural gas to heat homes and businesses, supplying natural gas for appliance and machinery operation, and supplying gas to industrial plant operations. Therefore, the no-action alternative would not meet the purpose and need for the Project.

Energy conservation could potentially reduce the demand for the energy that would be provided by the Project; however, we presume that WBI Energy's customers are already conserving energy to the extent practicable, and still have identified a need for the volume of natural gas that has been subscribed for the Project. Therefore, energy conservation is not considered a viable alternative to meet the Project need.

A Commission decision to deny the proposed action would avoid the environmental impacts addressed in this EA; however, other natural gas transmission companies would most likely be required to increase their capacity and to construct new facilities to meet the demand for additional capacity. This action would likely result in similar or greater environmental impacts that the Project; therefore, we have dismissed this alternative as a reasonable alternative to meet the Project objectives.

A.3 SYSTEM ALTERNATIVES

System alternatives may include new pipeline along existing right-of-way, alternative pipe diameters or compression scenarios, or construction of pipeline loop to meet the Project need. Use of a system alternative could make it unnecessary to construct all or part of the Project, though some modifications or additions to the existing or proposed systems may be required.

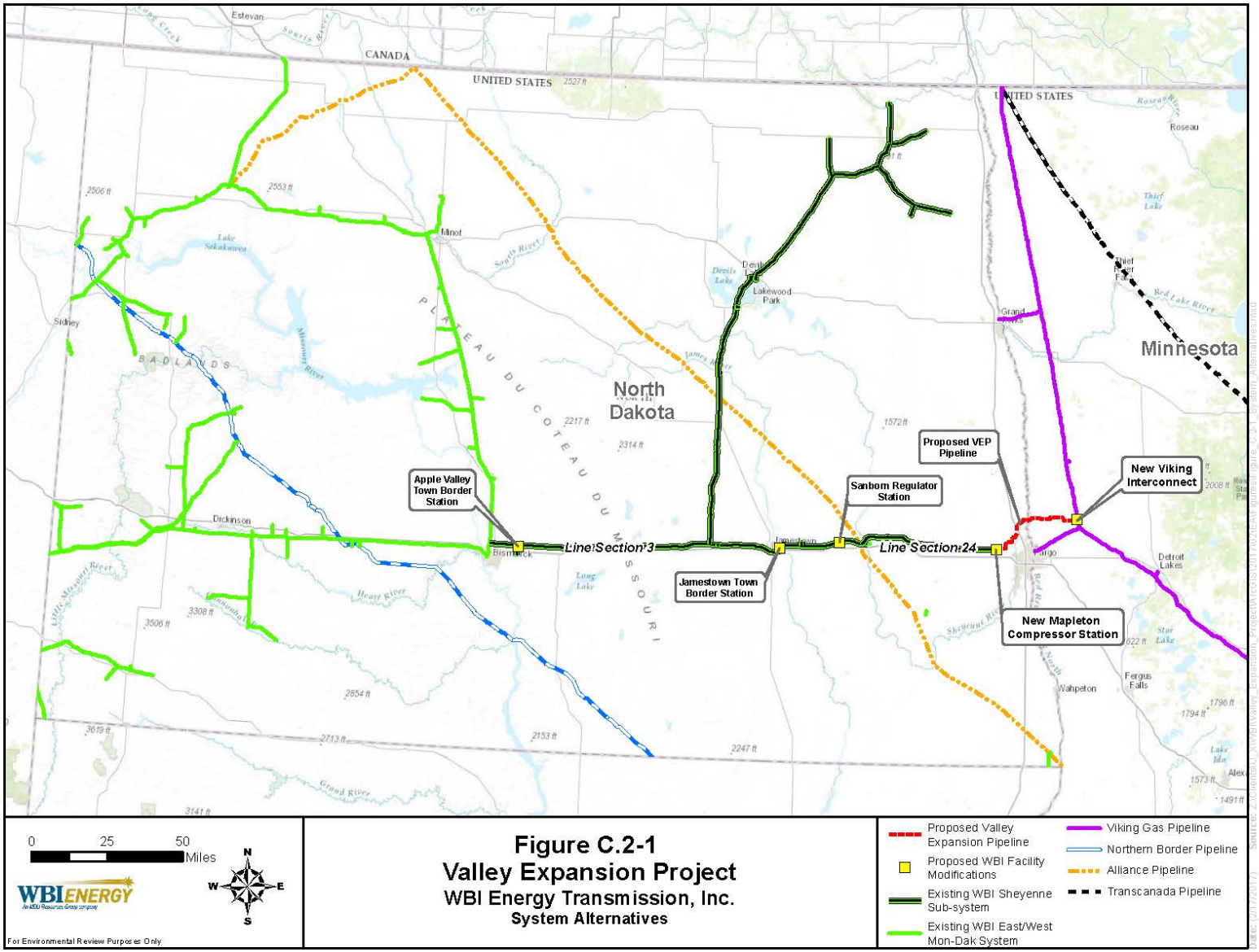
There are other natural gas pipelines operating within a reasonable distance of the Project area, including the Alliance Pipeline, Viking, and Northern Border Pipeline, which were analyzed as possible alternatives to the Project (see figure C.2-1). While their ability to independently meet the Project need is not known, we are not aware that any of these operators are planning to serve the markets served by WBI Energy, and if they are, all would require the installation of new pipeline(s) to provide gas to WBI Energy's existing customers. This may result in similar or greater environmental impacts than the Project, impact additional landowners, and environmental resources not affected by the Project, and would not present a clear and significant environmental advantage over the Project. For these reasons, these alternatives do not seem reasonable compared to the Project nor do they provide a significant environmental advantage; therefore, they were dropped from further consideration.

A.3 ROUTE ALTERNATIVES AND VARIATIONS

Route alternatives are routes that deviate from the proposed route for a substantial distance (for example, several miles) to either avoid major features (for example, communities) or minimize environmental impacts (for example, by increasing co-location with other, existing infrastructure). Route variations are relatively short deviations from the proposed route that remain in close proximity to the proposed route, but avoid or further reduce impacts on specific localized resources.

C.3.1 Route Alternatives

A route alternative was evaluated that would avoid any crossings of the Maple and Sheyenne Rivers. In a comment we received during the Project scoping period, the Cass County JWRD suggested the Maple and Sheyenne River crossings be avoided by routing the pipeline due west along a line north of the Sheyenne River to a point straight north of the Mapleton Compressor Station and then south to the compressor station (JWRD Alternative, see figure C.3.1-1). The JWRD Alternative, as suggested by the Cass County JWRD, deviates from the proposed route at approximately MP 20.8, just north of the Sheyenne River, and extends due west approximately 8.7 miles, and then travels south about 8.9 miles before rejoining the proposed route just north of the Mapleton Compressor Station at MP 36.9. Table C.3.1-1 summarizes key comparative factors between the proposed route and the JWRD Alternative.


CANADA
UNITED STATES
Estevan
Minot
Sidney
Dickinson
Bismarck
Lake Sakakawea
Missouri River
Heart River
Long Lake
Devils Lake
Lakewood Park
Jamestown
Fargo
Roseau
Thief Lake
Red Lake River
Grand Forks
Minnesota
North Dakota
Detroit Lakes
Wahpeton
Fergus Falls
Star Lake
Lake Ida
Alexandria
PLATEAU DU COTEAU DU MISSOURI
BADLANDS
Apple Valley Town Border Station
Jamestown Town Border Station
Sanborn Regulator Station
Proposed VEP Pipeline
New Viking Interconnect
New Mapleton Compressor Station
Line Section 3
Line Section 24
0 25 50 Miles
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E
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WBI ENERGY
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Figure C.2-1
Valley Expansion Project
WBI Energy Transmission, Inc.
System Alternatives
Proposed Valley Expansion Pipeline
Proposed WBI Facility Modifications
Existing WBI Sheyenne Sub-system
Existing WBI East/West Mon-Dak System
Viking Gas Pipeline
Northern Border Pipeline
Alliance Pipeline
Transcanada Pipeline

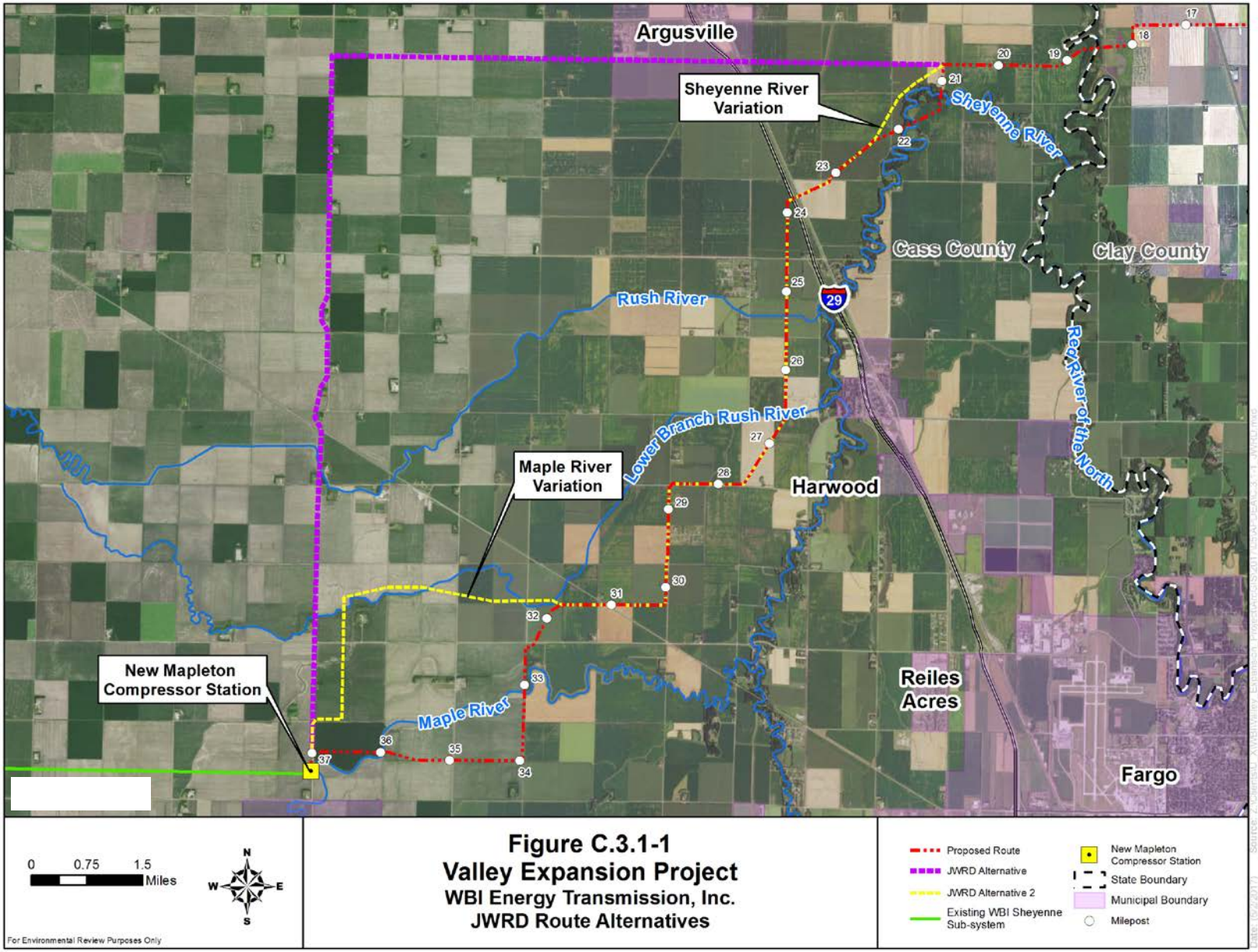
Argusville
Sheyenne River Variation
Sheyenne River
Cass County
Clay County
Rush River
Red River of the North
Lower Branch Rush River
Maple River Variation
Harwood
New Mapleton Compressor Station
Maple River
Reiles Acres
Fargo
29
0 0.75 1.5 Miles
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Figure C.3.1-1
Valley Expansion Project
WBI Energy Transmission, Inc.
JWRD Route Alternatives
Proposed Route
JWRD Alternative
JWRD Alternative 2
Existing WBI Sheyenne Sub-system
New Mapleton Compressor Station
State Boundary
Municipal Boundary
Milepost

TABLE C.3.1-1

Environmental Comparison of the Proposed Route to the Joint Water Resource District Alternative

Comparative Factor	Unit	Corresponding Segment of Proposed Route (MP 20.8 to 36.9)	JWRD Alternative
Length	miles	16.3	17.7
Construction Workspace [a]	acres	197.0	214.5
Collocation			
Parallel to Existing Rights-of-Way [b]	miles / percent	4.1 / 25	7.9 / 44
Greenfield	miles / percent	12.2 / 75	9.8/ 56
Field Survey Coverage – Cultural Resources	percent	92	0
Field Survey Coverage – Natural Resources	percent	95	0
Land Use Crossings			
Agricultural	miles	13.6	16.6
Open Land	miles	2.0	0.9
Forest/Woodland	miles	0.4	0.1
Developed	miles	0.2	0.1
Open Water	miles	0.1	0
Fargo-Moorhead Area Diversion Channel Crossings	number	1	1
Cities/Towns Crossed	number / miles	0 / 0	1 / 2
Farm Homesteads Crossed [c]	number	0	4
Waterbody Crossings	number	8	5
Sheyenne River Crossings	number	2	0
Maple River Crossings	number	2	0
Wetland Crossings	miles	0.1	0.1
Prime Farmland	miles	14.6	17.6

[a] Assumes a 100-foot-wide temporary construction right-of-way along the entire length; does not account for additional temporary workspace.

[b] Includes roads, pipelines, and powerlines parallel and within 300 feet of the proposed route.

[c] Locations where the route crosses directly within, or needs to be routed around, established farm homesteads (i.e., locations where homes, farm buildings, and windrows are established).

MP = milepost

JWRD = Cass County Joint Water Resource District

The JWRD Alternative would avoid crossing the Maple and Sheyenne Rivers, has greater collocation with existing rights-of-way, crosses three fewer waterbodies, and impacts about 1.1 fewer acres of open land and 0.3 acre less forest land compared to the proposed route. However, the JWRD Alternative is about 1.4 miles longer and would affect 17.5 more acres of land during construction. It also would cross 3.0 more miles of agricultural land, and 3.0 more miles of prime farmland; cross within the municipality of

Argusville, North Dakota; and cross or go around 4 farm homesteads that are not affected by the Project. While the proposed route crosses the Maple and Sheyenne Rivers and three more waterbodies, WBI Energy would cross all waterbodies using the HDD method, thereby avoiding direct impacts on waterbodies. Based on the greater length and impacts on agricultural lands, farmsteads, and municipalities, and due to WBI Energy's avoidance of waterbody impacts by use of the HDD method, we conclude that the JWRD Alternative does not provide a significant environmental advantage over the proposed route. Therefore, we conclude that WBI Energy's Project is the preferred alternative that can meet the Project objectives.

In addition, we evaluated two smaller route variations to avoid or minimize individual crossings of the Maple and Sheyenne Rivers (JWRD Alternative 2, see figure C.3.1-1). Comparative analyses of both route variations and the corresponding segments of the proposed route are provided in the following subsection.

C.3.2 Route Variations

Route variations are relatively short deviations from the proposed route that remain in proximity to the proposed route but avoid or further reduce impacts on specific localized resources, such as individual river crossings or tracts of land. This includes two route variations associated with discussions with the Diversion Authority, the Maple River and Sheyenne River variations, and four route variations identified by the Red Lake Band of Chippewa Indians (Red Lake Band) that are evaluated in the following subsections.

B.8.1.4 Fargo Moorehead Area Diversion Channel Variations

WBI Energy has been coordinating with the Diversion Authority to develop an MOU regarding the Project and its proposed routing across and near the planned FMADC in Cass County, North Dakota. During negotiations for the MOU, the Diversion Authority asked WBI Energy to consider changing its proposed pipeline route in two locations where it would cross or be near the planned FMADC. In response, WBI Energy identified two route variations that are identified as the FMADC Crossing Variation and I-29 Variation. A summary of our analysis of these two variations are evaluated in the following subsections.

FMADC Crossing Variation

The Diversion Authority requested that WBI Energy move its current crossing of the FMADC further north between MP 30.0 and 31.1 to avoid potential construction conflicts with a planned Burlington Northern Santa Fe Railroad bridge over the FMADC at or very near WBI Energy's proposed pipeline crossing of the FMADC. In response, WBI Energy developed the FMADC Crossing Variation, which moves the pipeline about

1,000 feet further north of, and parallel to, the proposed route on the west side of the FMADC through this area.

The FMADC Crossing Variation diverges from the proposed route near MP 30.0 and 93rd Street North and extends due west for about 4,000 feet across the proposed FMADC and then turns southwesterly for about 1,130 feet, crossing the Burlington Northern-Santa Fe Railroad and rejoining the proposed route about 400 feet east of 105th Street North, near MP 31.1. Figure C.3.2-1 depicts the FMADC Crossing Alternative and table C.3.2-1 summarizes key comparative factors between the proposed route and the alternative.

The FMADC Crossing Variation is about 0.1 mile shorter and impacts 0.1 mile less agricultural land and prime farmland, reducing the total land impacted by about 1 acre compared to the proposed route. This route alternative eliminates impacts on one landowner who is crossed by the proposed route, adds another crossing of land owned by the JWRD, and increases the length and location of pipeline on another landowner. In addition, one new landowner would be impacted by the ATWS needed for the HDD crossing of the FMADC. The principal difference between the two routes is that the proposed route would be collocated for about 18 percent of its length while the FMADC Crossing Variation would be a greenfield route.

WBI Energy has surveyed this route and reports that no sensitive environmental resources were identified; however, WBI Energy has not provided us a copy of its survey reports or documentation of concurrence from the North Dakota SHPO that they agree with WBI Energy's determinations. WBI Energy has committed to filing an addendum report with the FERC and SHPO once other remaining field surveys are completed in the fall of 2017, and to file any SHPO comments provided in response. WBI Energy has developed a site-specific plan for crossing the FMADC, which we have reviewed and find acceptable. Based on our review of the available information to date, the FMADC Crossing Variation would have impacts that are consistent with the proposed route, and we conclude that both the proposed and alternative routes are environmentally acceptable. We will not recommend adoption of the alternative at this time, however, as we cannot conclude it provides a significant environmental advantage given the pending nature of the MOU with the Diversion Authority, survey reports, and SHPO consultation. However, in compliance with the recommendation above regarding an MOU with the Diversion Authority, WBI Energy may request to change the proposed route through this area once the MOU is complete.

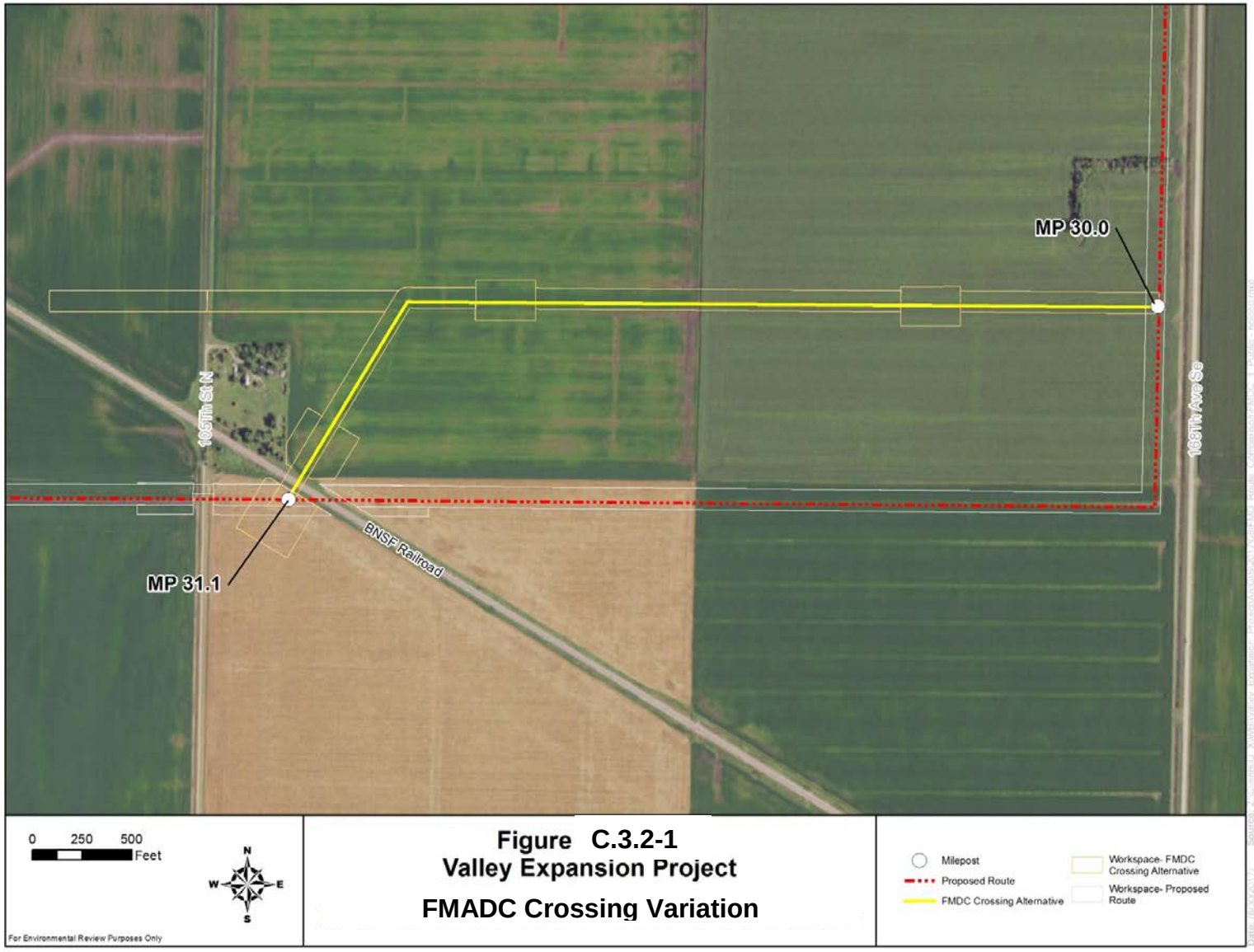
MP 30.0
MP 31.1
106Th St N
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Figure C.3.2-1
Valley Expansion Project
FMADC Crossing Variation
Milepost
Proposed Route
FMDC Crossing Alternative
Workspace- FMDC Crossing Alternative
Workspace- Proposed Route

Table C.3.2-1

Environmental Comparison of the Proposed Route to the FMADC Crossing Variation

Comparative Factor	Unit	Corresponding Segment of Proposed Route (MP 30.0 to 31.1)	FMADC Crossing Variation
Length	miles	1.1	1.0
Construction Workspace [a]	acres	12.8	11.8
Collocation			
Parallel to Existing Rights-of-Way [b]	miles / percent	0.2 / 18	0.0 / 0
Greenfield	miles / percent	0.9 / 82	1.0 / 100
Field Survey Coverage – Cultural Resources	percent	100	100
Field Survey Coverage – Natural Resources	percent	100	99
Agricultural	miles	1.1	1.0
Fargo Moorhead Diversion Channel Crossings	number	1	1
Waterbody Crossings	number	0	0
Wetland Crossings	miles	0	0
Prime Farmland	miles	1.1	1.0
Residences within 0.5 mile [c]	number	1	1
Bore/HDD Crossings	number	2	2

[a] Assumes a 100-foot-wide temporary construction right-of-way along the entire length; does not account for additional temporary workspace.

[b] Includes roads, pipelines, and powerlines parallel to and within 300 feet of the proposed route.

[c] Number of residences within 0.5 mile of the FMADC alternative and the corresponding segment of the proposed route is based on review of available aerial imagery.

Note: Sum of parts may not equal total due to rounding

I-29 Alternative

The Diversion Authority requested that WBI Energy revise its proposed route to move further away from the FMADC where both projects are collocated near Interstate 29 (I-29). This is because the temporary construction workspace for the Project overlaps with temporary construction workspace needed for the FMADC in that area and the Diversion Authority expressed concern the overlap could constrain construction of the FMADC. In response to the Diversion Authority's request, WBI Energy developed the I-29 Variation to provide more distance between the two projects.

The I-29 Variation diverges from the proposed route near MP 20.8, about 1,400 feet west of 172nd Avenue Southeast, and travels southwesterly for about 4,200 feet before turning to the south. This segment of the I-29 Variation is identical to the northernmost segment of the Sheyenne River Variation evaluated in section C.3.2.2. As the variation turns to the south, it diverges from the Sheyenne River Variation and continues for about 1,200 feet, then turns to the southwest, crossing the proposed route near MP 22.3 and continues for about 5,500 feet. The I-29 Variation then turns due south

for about 4,570 feet to avoid crossing an identified drain tile system located immediately east of I-29, until finally turning to the west for about 4,500 feet, crossing County Highway 81, the Burlington Northern-Santa Fe Railroad, and I-29 before rejoining the proposed route near MP 24.4. Figure C.3.2-2 depicts the I-29 Variation and table C.3.2-2 summarizes key comparative factors between the proposed route and the variation.

Table C.3.2-2
Environmental Comparison of the Proposed Route to the I-29 Variation

Comparative Factor	Unit	Corresponding Segment of Proposed Route (MP 20.8 to 24.4)	I-29 Variation
Length	miles	3.6	3.8
Construction Workspace [a]	acres	43.9	45.8
Collocation			
Parallel to Existing Rights-of-Way [b]	miles / percent	1.1 / 31	0.4 / 11
Greenfield	miles / percent	2.5 / 69	3.4 / 89
Field Survey Coverage – Cultural Resources	percent	100	53
Field Survey Coverage – Natural Resources	percent	100	76
Land Use Crossings			
Agricultural	miles	3.0	3.3
Open Land	miles	0.1	0.1
Forest/Woodland	miles	0.4	0.2
Developed	miles	0.1	0.1
Open Water	miles	0.1	0.0
Fargo Moorhead Diversion Channel Crossings	number	0	0
Waterbody Crossings	number	3	2
Wetland Crossings	miles	0.1	<0.1
Prime Farmland	miles	2.9	3.3
Residences within 0.5 mile [c]	number	4	26
Bore/HDD Crossings [d]	number	4	2

[a] Assumes a 100-foot-wide temporary construction right-of-way along the entire length; does not account for additional temporary workspace.

[b] Includes roads, pipelines, the FMADC corridor, and powerlines parallel to and within 300 feet of the proposed route.

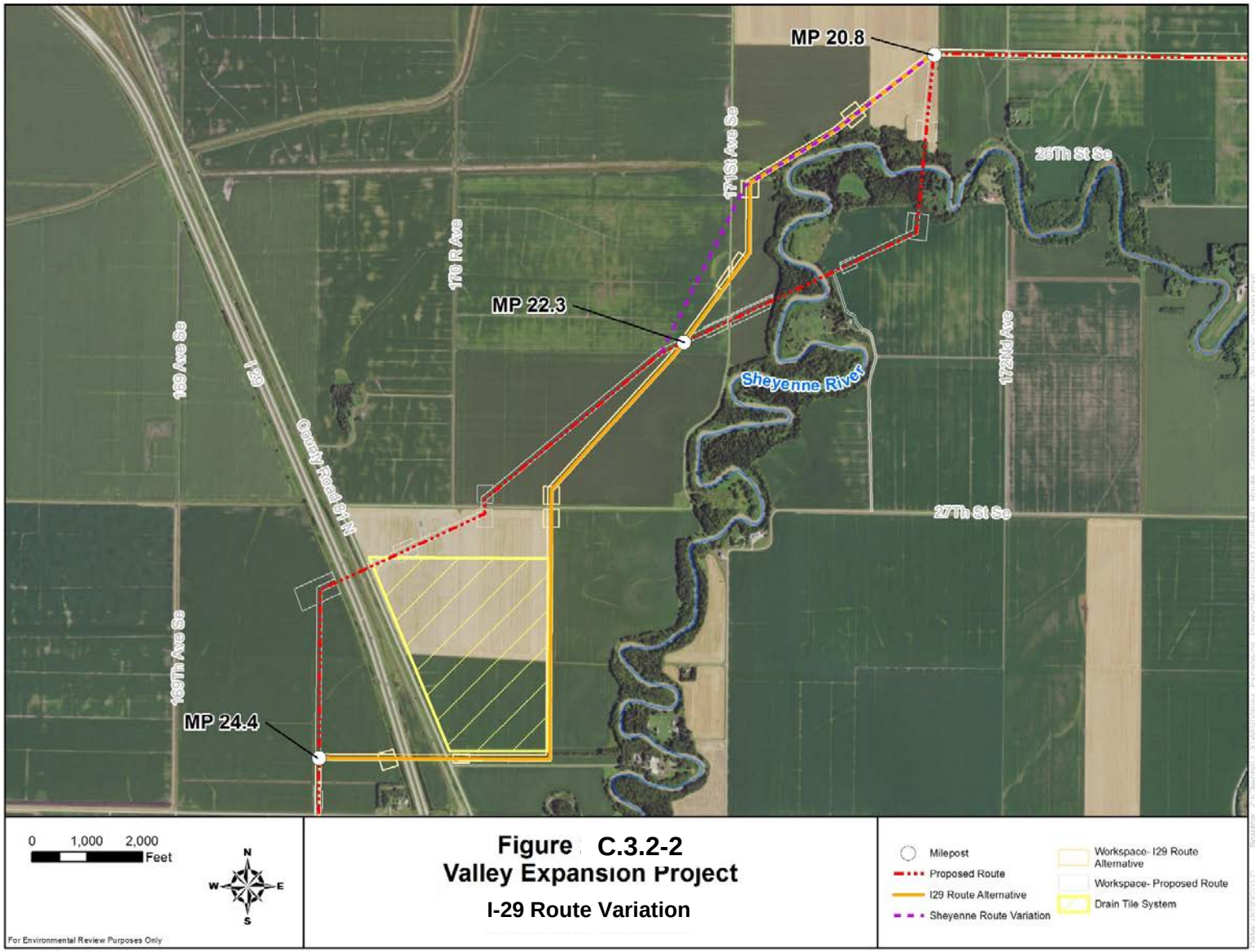
[c] Number of residences within 0.5 mile of the I-29 alternative and the corresponding segment of the proposed route is based on review of available aerial imagery.

[d] If the Sheyenne River Alternative is adopted by WBI Energy, the HDD crossings of the Sheyenne River that are currently planned for the proposed route would be dropped; this would reduce the total number of HDD crossings along the corresponding segment of the proposed route to two.

MP = Milepost

HDD = Horizontal directional drill

Note: Sum of parts may not equal total due to rounding


MP 20.8
MP 22.3
MP 24.4
171St Ave Se
176 R Ave
169 Ave Se
I-29
County Road 81 N
169Th Ave Se
26Th St Se
Sheyenne River
172Nd Ave
27Th St Se
0 1,000 2,000
Feet
N
W
E
S
For Environmental Review Purposes Only
Figure C.3.2-2
Valley Expansion Project
I-29 Route Variation
Milepost
Proposed Route
I29 Route Alternative
Sheyenne Route Variation
Workspace- I29 Route Alternative
Workspace- Proposed Route
Drain Tile System

The I-29 Variation is about 0.2 mile longer and impacts about 1.9 more acres of land, including 0.4 acre more prime farmland and 0.2 acre more forested land (consisting of a wind row), and is co-located for 0.7 mile less than the proposed route. In addition, the I-29 Variation is within 0.5 mile of 22 more residences, primarily near the I-29 crossing, with the nearest residence approximately 800 feet immediately south of the I-29 crossing. The primary advantages of the I-29 Variation are that it avoids 2 crossings of the Sheyenne River (similar to the Sheyenne River Variation), does not affect any new landowners, and appears to address the concerns of the Diversion Authority by moving the proposed route up to 4,500 feet south and east of the FMADC workspace, which would avoid any overlap during construction of the two projects. In addition, the I-29 Variation appears to address the concerns of the landowner on the east side of I-29 by avoiding adverse impacts on an existing drain tile system.

WBI Energy has surveyed approximately half of the I-29 Variation for cultural resources, and about three-quarters of the I-29 Variation for natural resources (i.e., wetlands, waterbodies, and sensitive species and habitats), and has not identified any sensitive resources that would be impacted by this alternative. WBI Energy plans to survey the remaining areas in the fall of 2017 and committed to file reports for FERC and agency reviews upon completion.

While the I-29 Variation is closer to more residences, WBI Energy is required to construct and operate its pipeline in accordance with the safety requirements of the Pipeline and Hazardous Materials Safety Administration, which we conclude is acceptable. These residences could experience more construction related noise, particularly during construction of the HDDs, when compared to noise generated by construction of the proposed route. However, the noise generated during construction would be temporary and may not be perceptible due to existing background noise associated with the residences all being near I-29, the Burlington Northern-Santa Fe Railroad, and County Highway 81. However, WBI Energy has not provided any analysis of the potential for the HDD equipment to generate noise or an estimate of the noise impact at the nearest NSAs, similar to other HDD crossings evaluated for the Project.

Based on our review, the I-29 Variation would address the Diversion Authority's concerns about the overlap of workspace between the two projects, eliminate crossing the Sheyenne River (that would address the Cass County JWRD's concerns regarding this crossing and a landowner request to locate the proposed route on the west side of the Sheyenne River described in section C.3.2.2 below), and reduce potential drain tile impacts. While we note that the MOU with the Diversion Authority has not yet been completed, we believe that this alternative would provide a significant environmental advantage to the proposed route. Therefore, we conclude adoption of this route variation is justified. However, WBI Energy has not yet filed addendums to its cultural resources or natural resource survey reports, has not provided documentation from the North

Dakota SHPO concurring with its survey results, and has not provided an analysis of noise impacts on the nearest NSAs. Therefore, **we recommend that:**

Prior to construction, WBI Energy should adopt the I-29 Variation and file with the Secretary:

a. **revised alignment sheets for review and written approval by the Director of OEP;**
b. **addendum reports documenting that areas impacted by the I-29 Variation have been surveyed for cultural resources and natural resources (i.e., wetlands, waterbodies, and sensitive species and habitats), and that the North Dakota SHPO has reviewed WBI Energy's addendum cultural resources survey report and concurs with its findings; and**
c. **an HDD noise analysis identifying the existing and projected noise levels at each NSA within 0.5 mile of each HDD entry and exit site. If noise attributable to the HDD is projected to exceed an L_{dn} of 55 dBA at any NSA, WBI Energy should file with the noise analysis a mitigation plan to reduce the projected noise levels for the review and written approval by the Director of OEP. During drilling operations, WBI Energy should implement the approved plan, monitor noise levels, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSAs.**

We note that WBI Energy has facilitated the USC's site review of the northern portion of this route variation and the USC did not identify any issues or concerns; however, the USC has asked to monitor construction activities in this area, which WBI Energy would facilitate with the USC.

B.8.1.4 Sheyenne River Variation

The Sheyenne River Variation was evaluated to avoid Sheyenne River crossings in response to comments raised by the Cass County JWRD and to address a landowner request to locate the proposed route on the west side of the Sheyenne River in that area. The Sheyenne River Variation avoids crossing the Sheyenne River by remaining north and west of the river (see figure C.3.2-3). Specifically, the Sheyenne River Variation deviates from the proposed route at MP 20.8, extends southwesterly approximately 0.8 mile to a point about 0.1 mile east of 171st Avenue SE and 1.1 miles north of 27th Street SE, and then turns southerly for 0.6 mile, to intersect the proposed route at approximately MP 22.4. Table C.3.2-3 summarizes key comparative factors between the proposed route and the Sheyenne River Variation.

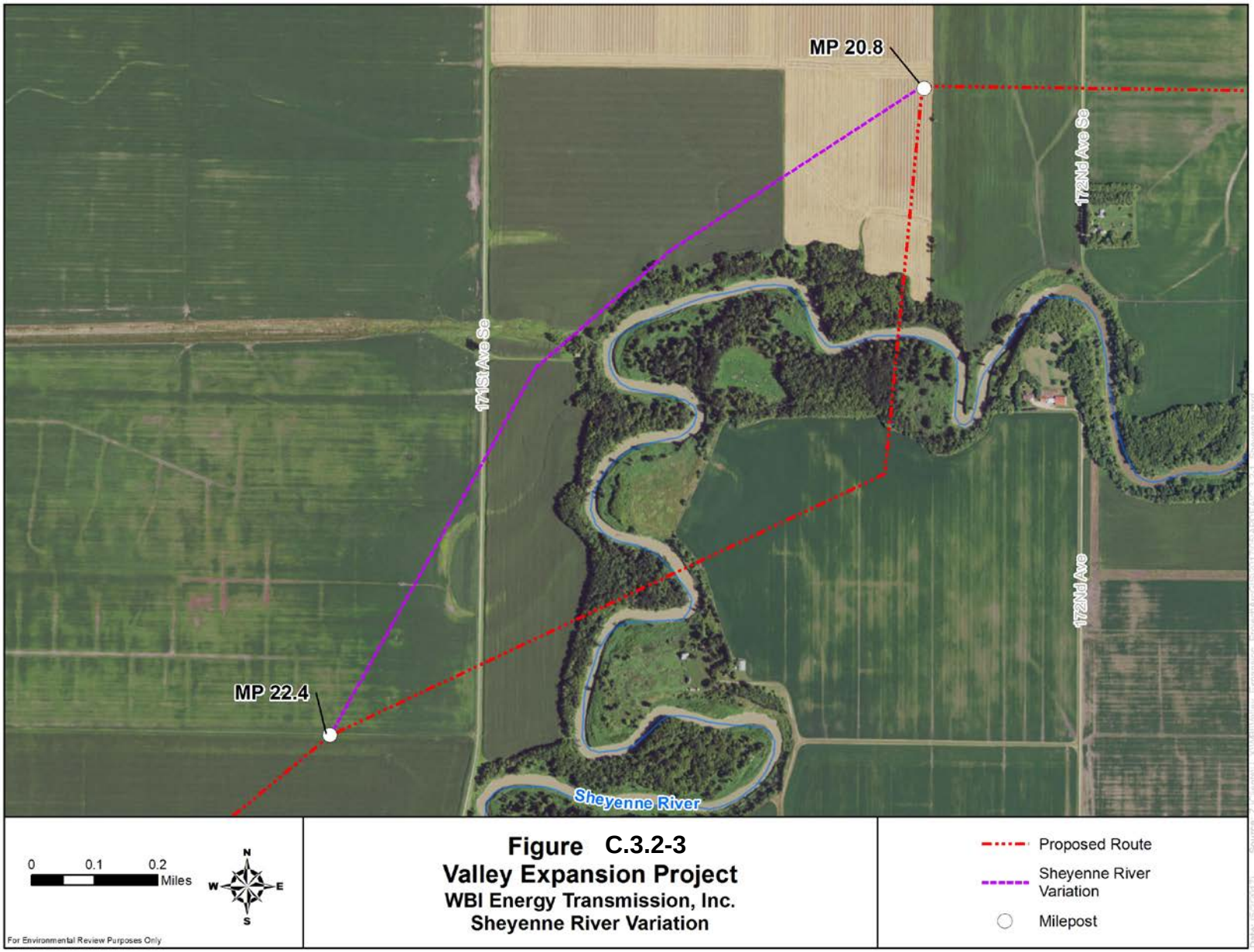

MP 20.8
MP 22.4
171St Ave Se
172Nd Ave Se
172Nd Ave
Sheyenne River
0 0.1 0.2 Miles
N
W
E
S
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Figure C.3.2-3
Valley Expansion Project
WBI Energy Transmission, Inc.
Sheyenne River Variation
Proposed Route
Sheyenne River Variation
Milepost

Table C.3.2-3

Environmental Comparison of the Proposed Route to the Sheyenne River Variation

Comparative Factor	Unit	Corresponding Segment of Proposed Route (MP 20.8 to 22.4)	Sheyenne River Variation[c]
Length	miles	1.6	1.4
Construction Workspace [a]	acres	19.3	17.2
Collocation			
Parallel to Existing Rights-of-Way [b]	miles / percent	0 / 0	0 / 0
Greenfield	miles / percent	1.6 / 100	1.4 / 100
Field Survey Coverage – Cultural Resources	percent	100	44
Field Survey Coverage – Natural Resources	percent	100	44
Land Use Crossings			
Agricultural	miles	1.1	1.3
Open Land	miles	<0.1	<0.1
Forest/Woodland	miles	0.4	0.1
Developed	miles	0	0
Open Water	miles	0.1	0
Fargo Moorhead Diversion Channel Crossings	number	0	0
Waterbody Crossings	number	2	1
Sheyenne River Crossings	number	2	0
Wetland Crossings	miles	<0.1	<0.1
Prime Farmland	miles	1.4	1.4

[a] Assumes a 100-foot-wide temporary construction right-of-way along the entire length; does not account for additional temporary workspace.

[b] Includes roads, pipelines, and powerlines parallel and within 300 feet of the proposed route.

[c] Unsurveyed areas are parcels where landowner permission has been denied or is unavailable.

MP = milepost

The Sheyenne River Variation avoids crossing the proposed FMADC, staying east of the FMADC and avoiding sensitive resources. This route variation affects the same landowner as the proposed route, who owns the land on both sides of the river, and is about 0.2 mile shorter than the corresponding segment of the proposed route and avoids crossing a sensitive resource. WBI Energy conducted cultural resource and natural resource surveys of accessible portions of the Sheyenne River Route Variation in April 2017. Based on that survey, no sites are crossed by this variation that are considered eligible for the NRHP. In addition, WBI Energy would use the HDD method for construction in this area to avoid sensitive resources. Further, WBI Energy has facilitated the USC's site review of this route variation and the USC did not identify any issues or

concerns with the Sheyenne River Variation; however, the USC has asked to monitor construction activities in this area, which WBI Energy can facilitate with the USC. WBI Energy requested North Dakota SHPO concurrence that the Sheyenne River Route Variation would not affect sites eligible for listing on the NRHP in a letter dated May 26, 2017. The North Dakota SHPO responded on June 5, 2017, and concurred with the findings. Consultation is ongoing for the unsurveyed areas.

While the proposed route avoids impacting the Sheyenne River due to WBI Energy's use of the HDD method and would only temporarily impact the landowner in this area, the Sheyenne River Variation avoids two Sheyenne River crossings, reduces the length of the pipeline, impacts less acres of forest land, and addresses the Cass County JWRD and landowner comments. WBI is willing to adopt this route variation; however, has not yet changed its proposed route. Subsequently, WBI Energy identified an additional route variation which includes this location and would meet the objective of minimizing the number of crossings of the Sheyenne River and the landowner's concerns. This alternative is described and recommended previously (see section C.3.2.1).

B.8.1.4 Maple River Variation

Two Maple River Variations were evaluated to avoid or minimize the number of Maple River crossings in response to comments raised by the Cass County JWRD (see figure C.3.2-4). Maple River Variation 1 deviates from the proposed route at MP 31.7, extending westerly about 3.2 miles to a point about 0.4 mile east of 163rd Avenue SE and 0.6 mile north of 33rd Street SE, then turns southerly for about 1.5 miles, then due west for about 0.4 mile to cross 163rd Avenue SE, and then due south to MP 37.0 on the proposed route. Maple River Variation 2 deviates from the proposed route at MP 32.5, extending westerly along County Road 20 about 2.1 miles to the intersection with 164th Avenue SE and then turns southerly for about 1.0 mile, then due west for about 1.0 mile crossing 163rd Avenue SE, and then running due south to MP 37.0 on the proposed route. Table C.3.2-4 summarizes key comparative factors between the proposed route and the Maple River Variation.

The Maple River Variation 1 avoids crossing the Maple River by staying north and west of the river. However, the Maple River Variation is about 0.2 mile longer; crosses one additional waterbody, including the Lower Branch Rush River in three locations. While this variation may be feasible and avoids crossing the Maple River, the proposed route avoids impacts on the Maple River by WBI Energy's plan to cross the river using the HDD method. The Maple River Variation 2 also avoids crossing the Maple River by staying north and west of the river. However, the Maple River Variation is about 0.1 mile longer and the landowner of these parcels is unwilling to grant an easement for the pipeline. While this variation may be feasible and avoids crossing the Maple River, the proposed route avoids impacts on the Maple River by WBI Energy's plan to cross the river using the HDD method. As a result, we conclude the Maple River

Variations do not provide a significant environmental advantage over the proposed route. Therefore, we conclude that WBI's Project, is the preferred alternative that can meet the Project objectives.

Table C.3.2-4

Environmental Comparison of the Proposed Route to the Maple River Variation

Comparative Factor	Unit	Corresponding Segment of Proposed Route (MP 31.7 to 37.0)	Maple River Variation 1	Maple River Variation 2[c]
Length	miles	5.3	5.5	5.4
Construction Workspace [a]	acres	63.8	66.7	65.5
Collocation				
Parallel to Existing Rights-of-Way [b]	miles / percent	1.5 / 28	0.4 / 7	4.5/95
Greenfield	miles / percent	3.8 / 72	5.0 / 93	.95/5
Field Survey Coverage – Cultural Resources	percent	100	0	0
Field Survey Coverage – Natural Resources	percent	100	0	0
Land Use Crossings				
Agricultural	miles	4.4	5.3	5.4
Open Land	miles	0.8	0.1	0
Forest/Woodland	miles	0	0	0
Developed	miles	<0.1	0.1	0
Open Water	miles	0.1	0	0
Waterbody Crossings	number	3	4	0
Wetland Crossings	miles	<0.1	<0.1	0
Prime Farmland	miles	5.3	5.5	5.4

[a] Assumes a 100-foot-wide temporary construction right-of-way along the entire length; does not account for additional temporary workspace.

[b] Includes roads, pipelines, and powerlines parallel and within 300 feet of the proposed route.

[c] Estimates based on review of Google Earth mapping.

MP = milepost

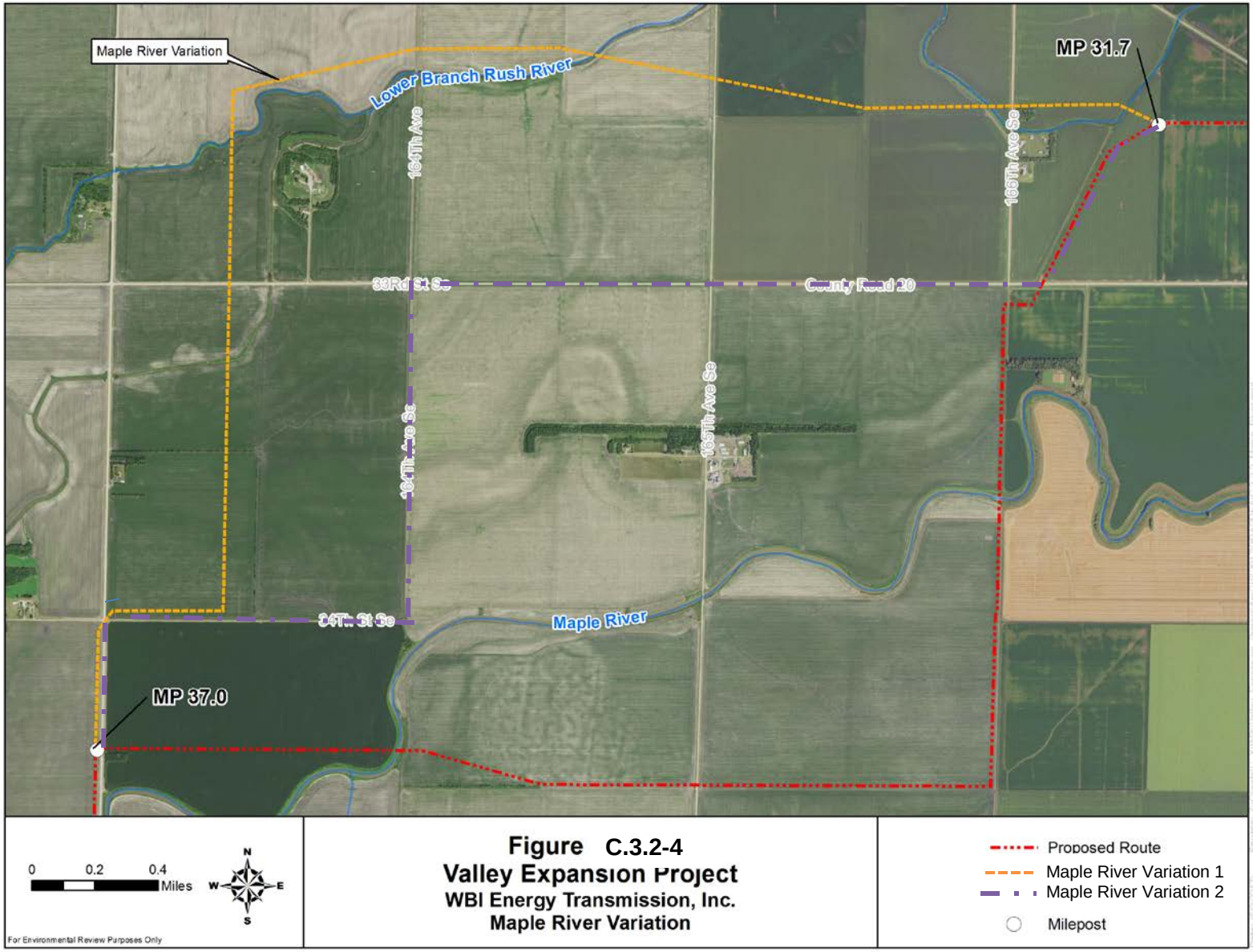
Maple River Variation
Lower Branch Rush River
MP 31.7
165Th Ave
166Th Ave Se
County Road 20
165Th Ave Se
Maple River
MP 37.0
0
0.2
0.4
Miles
N
W
E
S
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Figure C.3.2-4
Valley Expansion Project
WBI Energy Transmission, Inc.
Maple River Variation
Proposed Route
Maple River Variation 1
Maple River Variation 2
Milepost

A.8.2.1 Red Lake Band Variations

The Red Lake Band identified lands potentially encumbered by terms in the Red Lake and Pembina Treaty of 1863 (Treaty) and identified four route variations to avoid or minimize the potential impacts on parcels of land that are crossed by the pipeline route. The Red Lake Band expressed concerns that the pipeline may have an impact on cultural resources and land valuations for these parcels.

We requested that WBI Energy conduct field surveys of each variation for archaeological and biological resources, and to provide a detailed engineering and economic analysis in comparison to the corresponding portion of the proposed route to more fully evaluate each variation. A summary of our analysis of the Red Lake Band variations is provided in the following subsections.

Red Lake Band Variations 1A and 1B, and WBI Energy's Variation to 1A

As depicted on figure C.3.2-5, the Red Lake Band Variations 1A and 1B deviate from the proposed route between MPs 26.1 and 27.7. Both variations initially turn southwesterly onto an adjoining property to avoid a subject tract at MP 26.1, and then turn southerly about 50 feet outside of the western property line of the subject tract, until reaching 76th Avenue North in Cass County, North Dakota. Variation 1A then continues south for approximately 0.4 mile outside the eastern boundary of another subject tract, then turns southwesterly for approximately 0.7 mile, crosses 81st Street North, and intersects the proposed route near approximate MP 27.7 just north of the intersection of County Road 22 (also known as North 64th Avenue) and west of 81st Street North. Variation 1B turns west immediately north of 76th Avenue North and follows a route between 76th Avenue North and the south side of the Lower Branch Rush River for approximately 0.6 mile, then turns to the south, crossing 76th Avenue North, and continues parallel to the west side of 81st Street North for approximately 0.9 mile until intersecting the proposed route near MP 27.6 on the north side of County Road 22. Variations 1A and 1B and the subject tracts are depicted on figure C.3.2-5 with the corresponding segment of the proposed route.

In considering other potential variations to avoid these tracts, WBI Energy developed a variation to 1A that avoids the subject tracts and minimizes impacts on adjoining land and landowners. The WBI Energy Variation to 1A initially follows 1A but turns south-southwesterly for about 0.5 mile immediately after crossing 76th Avenue North to a point about 50 feet outside the southeast corner of a subject tract, and then turns southwesterly for about 0.6 mile to cross 81st Street North and intersect with the proposed route near approximate MP 27.7. Table C.3.2-5 presents a summary of relevant environmental factors in comparison to the proposed route. The WBI Variation to 1A is depicted on figure C.3.2-5.

As summarized in table C.3.2-5, the route variations are all longer and cross more prime farmlands, but they avoid crossing the Red Lake Band properties of concern.

TABLE C.3.2-5

Comparison of the Proposed Route to Red Lake Band Variations 1A, 1B, and WBI Energy Variation to 1A

Comparative Factor	Unit	Corresponding Segment of Proposed Route	Red Lake Band Variation 1A	WBI Variation to 1A	Red Lake Band Variation 1B
Length	miles	1.6	1.7	1.7	2.0
Length of Subject Parcels Crossed	miles	0.7	0.0	0.0	0.0
Co-location					
Parallel to Existing ROW[a]	miles / percent	0.1 / <10	0.1 / <10	0.1 / <10	1.4 / 70
Greenfield	miles / percent	1.5 / >90	1.6 / >90	1.6 / >90	0.6 / 30
Pipeline Bends	number	2	3	3	3
Land Use Considerations [b]					
Cultivated Crops	miles	1.6	1.7	1.7	1.9
Developed Open Space	miles	<0.1	<0.1	<0.1	0.1
Field Survey Coverage – Cultural Resources	percent	100	100	100	93
Field Survey Coverage – Natural Resources	percent	100	100	100	93
Waterbody Crossings	number	1	1	1	1
Road Crossings	number	1	1	1	2
Cemetery Crossings	number	0	0	0	1
Total Tracts Crossed	number	9	10	10	8
Prime Farmland [c]	miles	1.6	1.7	1.7	2.0

[a] Includes roads, pipelines, and powerlines parallel to and within 300 feet of the proposed route.
[b] Source: U.S. Geological Survey. 2014.
[c] Unsurveyed areas are parcels where landowner permission has been denied or is unavailable.
Source: U.S. Department of Agriculture. 2015.

Variations associated with 1A are about 0.1 mile longer and Variation 1B is about 0.3 mile longer than the proposed route. Variation 1B is collocated with existing roadways for about 70 percent of its length compared to about 10 percent for all the other variations and the proposed route. However, Variation 1B impacts three new landowners, including one who has denied permission to survey, and crosses the entrance to and about 250 feet of the eastern edge of the Lower Maple River Cemetery, which would be avoided by the proposed route and the variations associated with 1A.

The variations are considered technically capable of being constructed; however, Variation 1B is not considered a practical route because it crosses a cemetery and overlaps an existing road right-of-way and a USACE Section 408 (Public Works Project) waterbody. As a result, riparian vegetation and the bank of the river would be disturbed, which could compromise the stability of the river bank and/or the road. Therefore, while Variation 1B may be constructible, it is not considered a practical route and does not provide a significant environmental advantage.

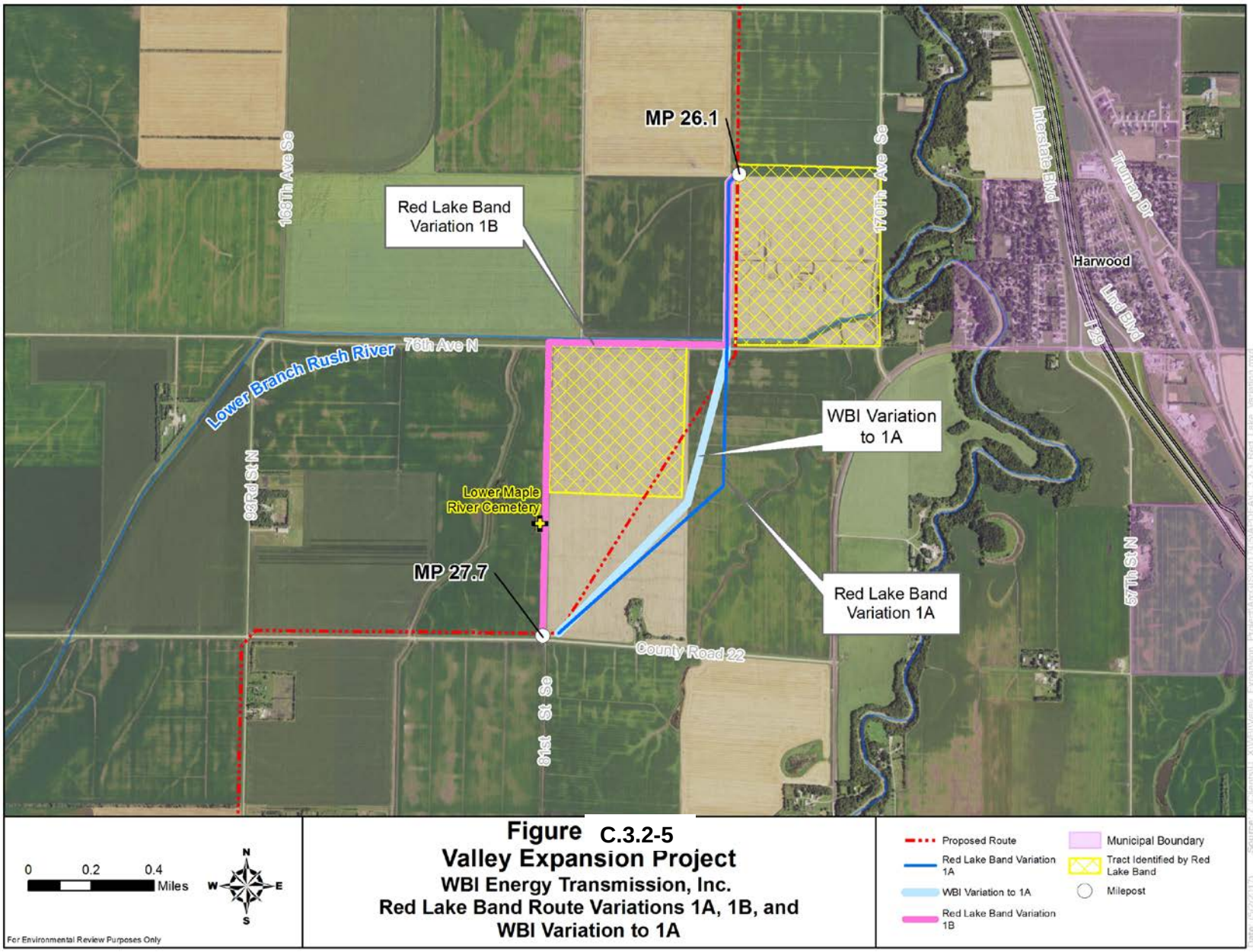

Figure C.3.2-5
Valley Expansion Project
WBI Energy Transmission, Inc.
Red Lake Band Route Variations 1A, 1B, and WBI Variation to 1A

Surveys conducted by WBI Energy confirmed that no archaeological or biological resources would be impacted by the variations or the proposed route, and we believe that the pipeline crossings of these tracts would not affect land valuations (see section B.7.2, Socioeconomics). In addition, all of the tracts are used for agricultural production and could continue to be farmed over the life of the pipeline. While we acknowledge the concerns raised by the Red Lake Band in avoiding or minimizing impacts on the subject parcels, our analysis finds that none of the variations provide a significant environmental advantage over the proposed route. Therefore, we conclude that WBI's Project, is the preferred alternative that can meet the Project objectives.

Red Lake Band Variations 2A and 2B

As depicted on figure C.3.2-6, the Red Lake Band Variations 2A and 2B deviate from the proposed route between about MP 35.4 to 37.3. Variation 2A deviates southwesterly from MP 35.4 for approximately 1.1 miles; crosses two unnamed tributaries to the Maple River; enters the northern limits of the City of Mapleton; then turns due west for about 0.5 mile across another unnamed tributary, the Maple River, and 163rd Avenue SE; and then turns due north to cross Old County Road 10 and follow the west side of 163rd Avenue SE for about 0.4 mile to the Mapleton Compressor Station. Variation 2B deviates due west from MP 35.4 for about 1.5 miles, then crosses County Road 11, and turns due south for about 0.1 mile into the Mapleton Compressor Station. Variations 2A and 2B and the subject tracts are depicted on figure C.3.2-6 with the corresponding segment of the proposed route. Table C.3.2-6 presents a summary of relevant engineering and environmental factors in comparison to the proposed route.

Variation 2A avoids crossing a property of concern but it is 0.2 mile longer, crosses three more waterbodies, and impacts more prime farmland, one new landowner, and one farm homestead that would be avoided by the proposed route. Variation 2A is considered economically feasible by WBI Energy because the increased costs would not be prohibitive or affect the economic viability of the Project. The variation is also technically capable of being constructed but introduces a constructability challenge for routing near its crossing of County Road 11 where a 90-degree bend would need to be designed in proximity to deep and meandering bends in the Maple River and where two roads intersect near a well-established farmstead. Additionally, there is an existing pipeline and other utilities (e.g., fiber optics, power lines) along County Road 11. Variation 2A also impacts one new landowner who has denied survey permission.

As previously described, Variation 2A is 0.2 mile longer, crosses three more waterbodies, and impacts more prime farmland, one new landowner, and one farm homestead that would be avoided by the proposed route. This variation would not provide a significant environmental advantage over the proposed route. Therefore, we conclude that WBI's Project is the preferred alternative that can meet the Project objectives.

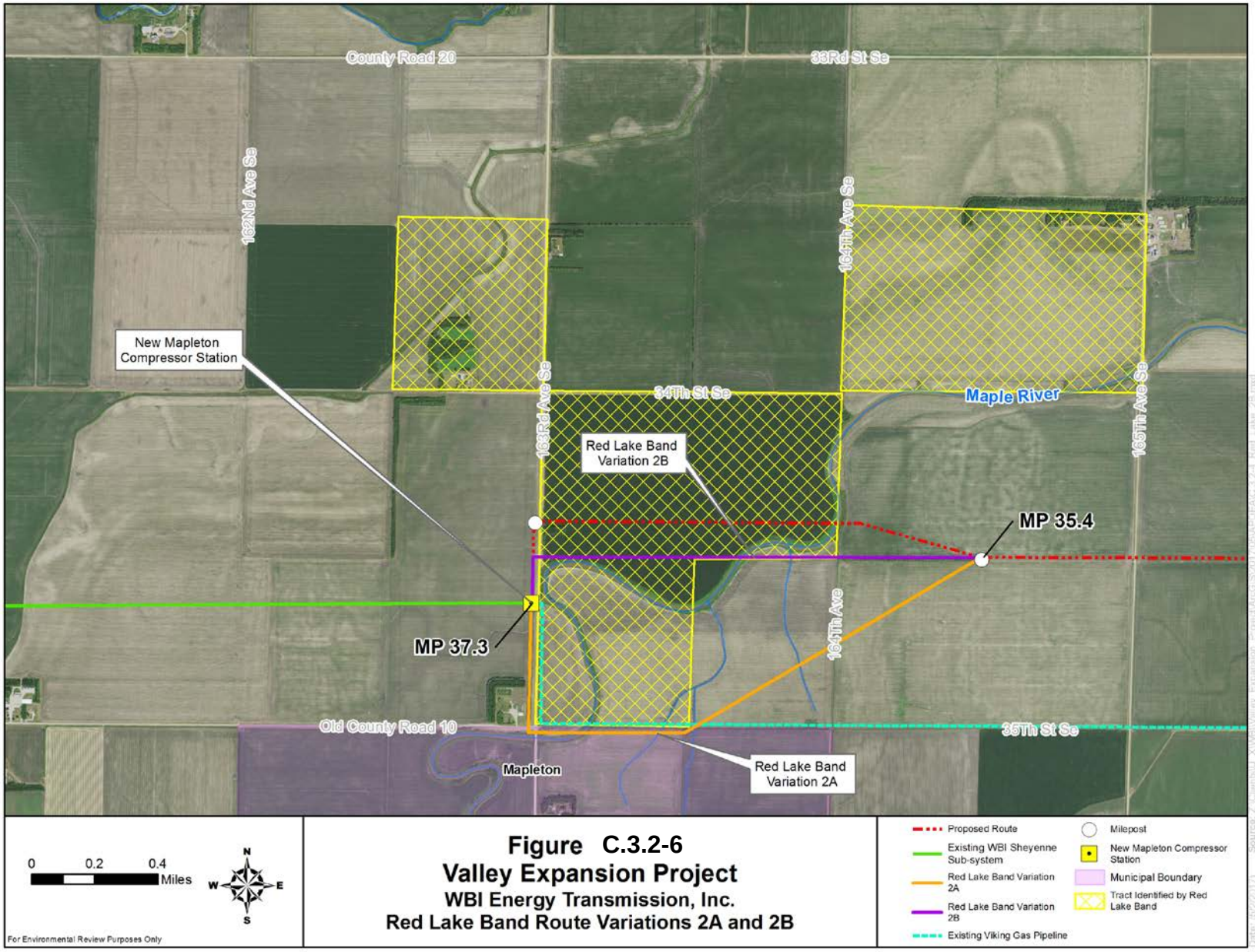
County Road 20
33Rd St Se
162Nd Ave Se
164Th Ave Se
New Mapleton Compressor Station
34Th St Se
Maple River
163Rd Ave Se
165Th Ave Se
Red Lake Band Variation 2B
MP 35.4
MP 37.3
164Th Ave
Old County Road 10
35Th St Se
Mapleton
Red Lake Band Variation 2A
0 0.2 0.4 Miles
N
W
E
S
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Figure C.3.2-6
Valley Expansion Project
WBI Energy Transmission, Inc.
Red Lake Band Route Variations 2A and 2B
Proposed Route
Existing WBI Sheyenne Sub-system
Red Lake Band Variation 2A
Red Lake Band Variation 2B
Existing Viking Gas Pipeline
Milepost
New Mapleton Compressor Station
Municipal Boundary
Tract Identified by Red Lake Band

TABLE C.3.2-6

Environmental Comparison of the Proposed Route to Red Lake Band Variations 2A and 2B

Comparative Factor	Unit	Corresponding Segment of Proposed Route	Red Lake Band Alternative 2A	Red Lake Band Alternative 2B
Length	miles	1.8	2.0	1.6
Length of Subject Parcel Crossed	miles	1.0	0	1.0
Co-location				
Parallel to Existing ROW [a]	miles / percent	0.2 / 11	0.9 / 45	0.1 / <10
Greenfield	miles / percent	1.6 / 89	1.6 / 80	1.2 / >90
Engineering and Economic Considerations				
Constructability of Alignment	Yes / No	Yes	No	Yes
Pipeline Bends	number	2	2	0
HDD / Guided Bore Crossings	number / approximate length(s) in feet	2 / 700, 305	4 / various (unknown)	2 / 2,200 and 2,700
Additional Geotechnical Test Bores	number	0	Up to 8	Up to 4
Waterbody Crossings	number	1	4	2
New Landowners Crossed [b]	number	0	1	1
Likelihood of Need for Land Condemnation	Yes / No	No	Yes	Yes
Land Use Considerations [c]				
Cultivated Crops	miles	1.6	1.8	1.6
Developed (Low to Medium Intensity)	miles	<0.1	0.1	<0.1
Developed Open Space	miles	0.1	0.1	<0.1
Tribal Properties of Concern Impacted	number / approximate miles crossed	1 / 1.0	0	2 / 1.0
Field Survey Coverage – Cultural Resources	percent	100	37 [d]	49[d]
Field Survey Coverage – Natural Resources	percent	100	37 [d]	49 [d]
Waterbody Crossings [e]	number	1	4	2
Road Crossings	number	1	2	1
Farm Homesteads Crossed [f]	number	0	1	0
Windrows Crossed	number	0	1	0
Total Tracts Crossed	number	5	6	7
Prime Farmland	miles	1.8	2.0	1.6

[a] Includes roads, pipelines, and powerlines parallel and within 300 feet of the proposed route.

[b] New landowners refers to landowners that previously were not crossed by the Project route and, therefore, were not included in the mailing list for the Project and have not been included in Project notifications or correspondence.

[c] Source: U.S. Geological Survey (USGS). 2014. USGS, National Land Cover Database 2011 (NLCD 2011).

[d] Remaining areas represent parcels where landowner permission has been denied or is unavailable.

TABLE C.3.2-6

Environmental Comparison of the Proposed Route to Red Lake Band Variations 2A and 2B

Comparative Factor	Unit	Corresponding Segment of Proposed Route	Red Lake Band Alternative 2A	Red Lake Band Alternative 2B
[e] Source: USGS National Hydrography Dataset. 2016. USGS, Hydrography, National Hydrography Dataset.				
[f] Locations where the route crosses directly within, or needs to be routed around, established farm homesteads (i.e., locations where homes, farm buildings, and windrows are established)				

Variation 2B is 0.2 mile shorter and impacts 0.2 acre less prime farmland, but requires one additional waterbody crossing, impacts one new landowner, and does not avoid the properties of concern. Variation 2B could potentially impact one additional property of concern because the recommended alignment straddles the property line between two properties. This variation would impact a new landowner who has denied survey permission.

WBI Energy has conducted environmental surveys of areas along Variation 2B and no sensitive resources were identified, similar to the proposed route, however, it would not avoid the properties of concern. This variation would not provide a significant environmental advantage over the proposed route. Therefore, we conclude that WBI's Project is the preferred alternative that can meet the Project objectives.

C.3.3 Aboveground Site Alternatives

Site alternatives were considered for the compressor station and the proposed Viking Interconnect site. The main considerations for siting these facilities include engineering design (for example, proximity to existing WBI Energy and Viking facilities, and hydraulic considerations), land availability, site access, and impacts on environmental resources. A summary of alternatives considered for the compressor station and interconnect is provided in the following subsections.

B.8.1.4 Mapleton Compressor Station Site Alternative

Because the proposed location for the Mapleton Compressor Station did not present any environmental concerns, the alternative site locations for the compressor station are not evaluated here.

B.8.1.4 Viking Interconnect Site Alternatives

Comments regarding the location of the proposed Viking Interconnect Site were submitted under the FERC docket for the Project on May 29, 2017 by Charles J. Larson, the landowner of the proposed Viking Interconnect site. Two alternative sites (Options A and B) were considered, which are both located at existing tie-ins along the Viking pipeline, as depicted on figure C.4.2-1. WBI Energy subsequently identified and

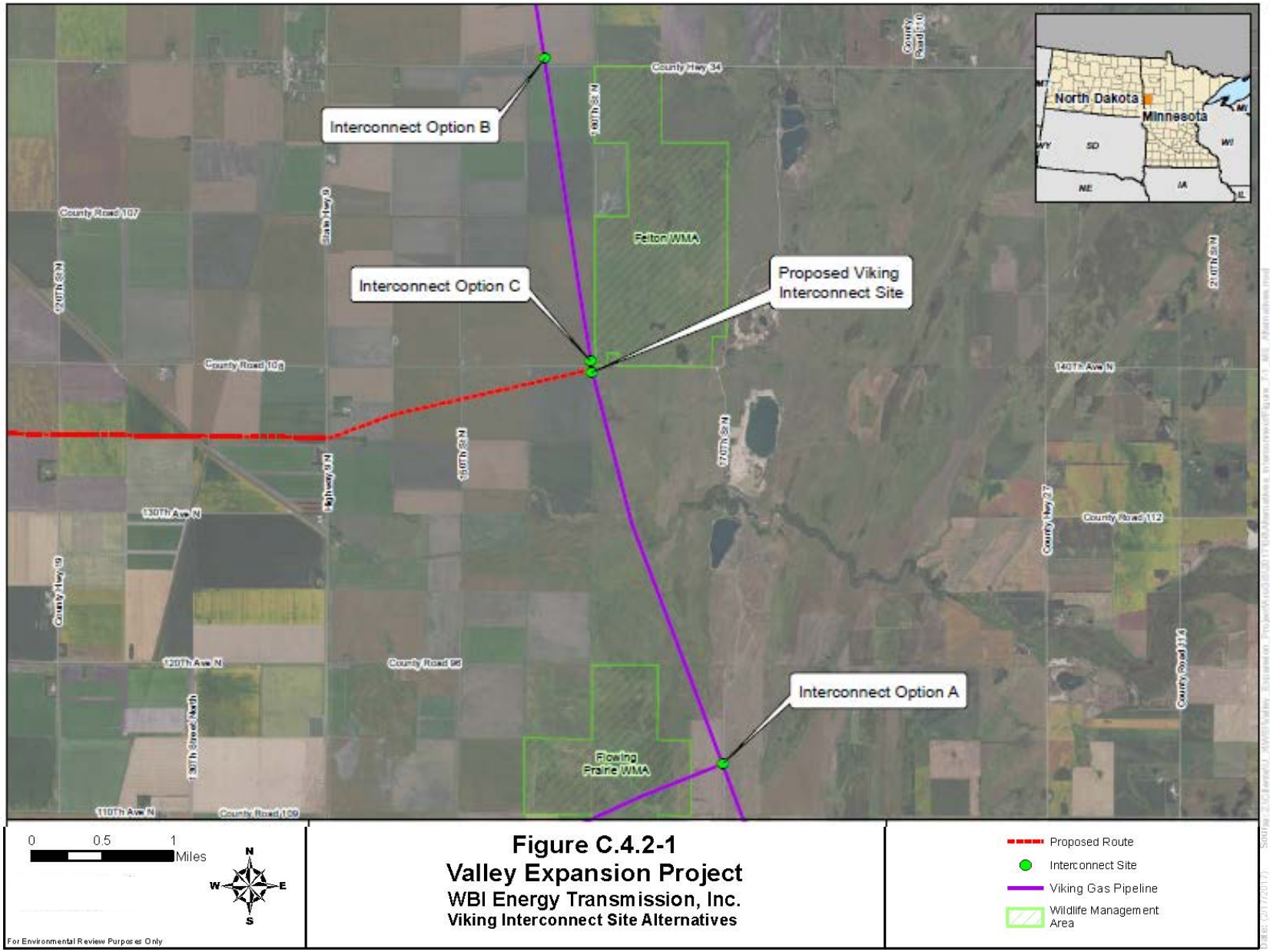
evaluated one additional alternative (Option C) based on easement negotiations with Mr. Larson.

The proposed Viking Interconnect site is located in agricultural land directly adjacent to the site of a planned measurement facility that will be constructed, owned, and operated by Viking. Construction of the Viking Interconnect would affect a 4.9-acre area and following construction a 0.5-acre area would be fenced and maintained for operation of WBI Energy's interconnect facility. The two companies would also share an access road (0.1 acre) off of County Road 108.

Option A is located in actively cultivated agricultural land about 2.0 miles south of the proposed interconnect site and would require a crossing of the Flowing Prairie WMA, which is not crossed by the proposed route. Vehicle access to the Option A site requires travel down about 2.0 miles of minimum maintenance road, followed by about 0.5 mile of travel along a two-track road through pasture land, compared to the proposed site that is located directly off of County Road 108, a paved road, and does not cross any WMA. While both sites would involve comparable amounts of pipeline length, we do not find that Option A provides a significant environmental advantage.

Option B is located in actively cultivated agricultural land at the end of a looped section of the Viking pipeline about 2.0 miles north of the proposed interconnect, and near a public, paved roadway that would provide direct vehicle access to the site. Additional length of pipeline would be required to reach this Option B, which would increase the number of landowners affected and result in additional environmental impacts as compared to the proposed Viking Interconnect site. Therefore, Option B does not provide a significant environmental advantage over the proposed site.

Option C, suggested by Mr. Larson during easement negotiations with WBI Energy, is located immediately north of the proposed site, across County Road 108 (140th Avenue North). Option C is identical to the proposed site in terms of size, land use, vegetation, prime farmland, and its footprint within the Felton Prairie IBA. It is also similarly located directly off of an existing road and, based on desktop data, does not impact wetlands, waterbodies, or other sensitive areas such as wildlife management areas. Option C would impact a landowner who is currently crossed by the proposed pipeline (just west of the Charles J. Larson property), but is not currently affected by any aboveground facilities. That property is in a location where drain tile and pumping facilities currently exist. This landowner was contacted by WBI Energy in early June 2017 to explore the possibility of siting the facility at this location; however, the landowner stated they are not interested in this alternative due to concerns of potential effects on the existing drainage system from the aboveground facility. While the landowner at the proposed site is also concerned about drainage issues, the proposed site is not currently tiled, and WBI Energy has offered to provide a professionally designed drainage system to avoid drainage issues.


Interconnect Option B
Interconnect Option C
Proposed Viking Interconnect Site
Interconnect Option A
Felton WMA
Flowing Prairie WMA
County Road 107
County Road 108
County Road 112
County Road 114
County Road 109
County Hwy 34
County Hwy 27
County Hwy 19
130th Ave N
140th Ave N
120th Ave N
110th Ave N
North Dakota
Minnesota
0 0.5 1 Miles
N
W
E
S
For Environmental Review Purposes Only
Figure C.4.2-1
Valley Expansion Project
WBI Energy Transmission, Inc.
Viking Interconnect Site Alternatives
Proposed Route
Interconnect Site
Viking Gas Pipeline
Wildlife Management Area

Option C would require WBI Energy to cross one additional road, install at least one new pipeline bend, and install approximately 600 feet of additional pipeline thereby creating additional land impacts. Option C would result in the transference of impacts to another landowner with no environmental advantages, while also requiring additional engineering, materials, and construction costs. Therefore, we conclude that WBI's Project is the preferred alternative that can meet the Project objectives.

SECTION D – STAFF'S CONCLUSIONS AND RECOMMENDATIONS

Based upon the analysis in this EA, we have determined that if WBI Energy constructs and operates the proposed facilities in accordance with its application, supplements, and staff's recommended mitigation measures below, approval of the Project would not constitute a major federal action significantly affecting the quality of the human environment.

We recommend that the Commission Order contain a finding of no significant impact and that the following mitigation measures be included as conditions to any Certificate the Commission may issue:

1. WBI Energy shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Order. WBI Energy must:

    a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;

    b. justify each modification relative to site-specific conditions;

    c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and

    d. receive approval in writing from the Director of OEP **before using that modification.**

2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the project, which shall include:

    a. the authority to modifiy the conditions of the Order;

    b. stop-work authority; and

    c. the imposition of any additional measures deemed necessary to assure continued compliance with the intent of the environmental conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from project construction and operation.

3. **Prior to any construction**, WBI Energy shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel,

EIs, and contractor personnel shall be informed of the EIs' authority and have been or shall be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EA, as supplemented by filed alignment sheets, and shall include the staff's recommended I-29 Variation identified in section C.3.2.1 of the EA. **As soon as they are available, and before the start of construction**, WBI Energy shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

   WBI Energy's exercise of eminent domain authority granted under NGA Section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. WBI Energy's right of eminent domain granted under NGA Section 7(h) does not authorize it to increase the size of its natural gas facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. WBI Energy shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area**.

   This requirement does not apply to extra workspace allowed by our Plan and/or minor field realignments per landowner needs and requirements that do not affect other landowners or sensitive environmental areas such as wetlands. Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

   a. implementation of cultural resources mitigation measures;

b. implementation of endangered, threatened, or special concern species mitigation measures;

c. recommendations by state regulatory authorities; and

d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of the authorization and before construction begins**, WBI Energy shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. WBI Energy must file revisions to the plan as schedules change. The plan shall identify:

a. how WBI Energy would implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;

b. how WBI Energy would incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;

c. the number of EIs assigned, and how the company would ensure that sufficient personnel are available to implement the environmental mitigation;

d. company personnel, including EIs and contractors, who would receive copies of the appropriate material;

e. the location and dates of the environmental compliance training and instructions WBI Energy would give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change);

f. the company personnel (if known) and specific portion of WBI Energy's organization having responsibility for compliance;

g. the procedures (including use of contract penalties) WBI Energy would follow if noncompliance occurs; and

h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for the:

i. completion of all required surveys and reports;

ii. environmental compliance training of onsite personnel;

iii. start of construction; and

iv. start and completion of restoration.

7. WBI Energy shall employ at least one EI per construction spread. The EI(s) shall be:

a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;

b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;

c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;

d. a full-time position, separate from all other activity inspectors;

e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and

f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, WBI Energy shall file updated status reports with the Secretary on a **biweekly** basis until all construction and restoration activities are complete. On request, these status reports shall also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

a. an update on WBI Energy's efforts to obtain the necessary federal authorizations;

b. the construction status of the Project, work planned for the following reporting period, and any schedule changes for work in environmentally sensitive areas;

c. a listing of all problems encountered and each instance of noncompliance observed by the EI(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);

d. a description of the corrective actions implemented in response to all instances of noncompliance, and their cost;

e. the effectiveness of all corrective actions implemented;

f. a description of any landowner/resident complaints that may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and

g. copies of any correspondence received by WBI Energy from other federal, state, or local permitting agencies concerning instances of noncompliance, and WBI Energy's response.

9. **Prior to receiving written authorization from the Director of OEP to commence construction of any Project facilities**, WBI Energy shall file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

10. WBI Energy must receive written authorization from the Director of OEP **before placing the Project into service**. Such authorization shall only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas affected by the Project are proceeding satisfactorily.

11. **Within 30 days of placing the authorized facilities in service**, WBI Energy shall file an affirmative statement with the Secretary, certified by a senior company official:

a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or

b. identifying which of the conditions in the Order WBI Energy has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

12. **Prior to construction in proximity to the FMADP**, WBI Energy shall file with the Secretary documentation regarding its consultation with the Diversion Authority, including updated mitigation measures and/or MOU.

13. WBI Energy **shall not begin construction** of facilities **and/or use** of all staging, storage, or temporary work areas and new or to-be improved access roads in North Dakota, **until**:

    a. WBI Energy files with the Secretary:

        i. reports, studies, or plans of additional cultural resources surveys in North Dakota;

        ii. site-specific avoidance and/or treatment plan(s), as required; and

        iii. comments on reports and plans from the North Dakota SHPO;

    b. the ACHP is afforded an opportunity to comment if historic properties would be adversely affected; and

    c. the FERC staff reviews and the Director of OEP approves the cultural resources reports and plans, and notifies WBI Energy in writing that avoidance and/ or treatment measures, as required, may be implemented and/or construction may proceed.

    All materials filed with the Commission containing **location, character, and ownership information** about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "**CUI//PRIV - DO NOT RELEASE**."

14. **WBI Energy shall file with the Secretary noise surveys for the Mapleton Compressor Station no later than 60 days after placing the station into service.** If a full power load condition noise survey is not possible, WBI Energy shall file an interim survey at the maximum possible power load **within 60 days** of placing the station into service and file the full power load survey **within 6 months**. If the noise attributable to operation of all equipment at the station under interim or full power load conditions exceeds an Ldn of 55 dBA at any nearby NSA, WBI Energy shall:

    a. file a report with the Secretary, for review and written approval by the Director of OEP, on what changes are needed;

    b. install additional noise controls to meet that level **within 1 year** of the in-service date; and

    c. confirm compliance with this requirement by filing a second full power load noise survey with the Secretary for review and written approval by the

Director of OEP **no later than 60 days** after it installs the additional noise controls.

15. **Prior to construction**, WBI Energy shall adopt the I-29 Variation and file with the Secretary:

    a. revised alignment sheets for review and written approval by the Director of OEP;
    b. addendum reports documenting that areas impacted by the I-29 Variation have been surveyed for cultural resources and natural resources (i.e., wetlands, waterbodies, and sensitive species and habitats), and that the North Dakota SHPO has reviewed WBI Energy's addendum cultural resources survey report and concurs with its findings; and
    c. an HDD noise analysis identifying the existing and projected noise levels at each NSA within 0.5 mile of each HDD entry and exit site. If noise attributable to the HDD is projected to exceed an L_{dn} of 55 dBA at any NSA, WBI Energy shall file with the noise analysis a mitigation plan to reduce the projected noise levels for the review and written approval by the Director of OEP. During drilling operations, WBI Energy shall implement the approved plan, monitor noise levels, and make all reasonable efforts to restrict the noise attributable to the drilling operations to no more than an L_{dn} of 55 dBA at the NSAs.

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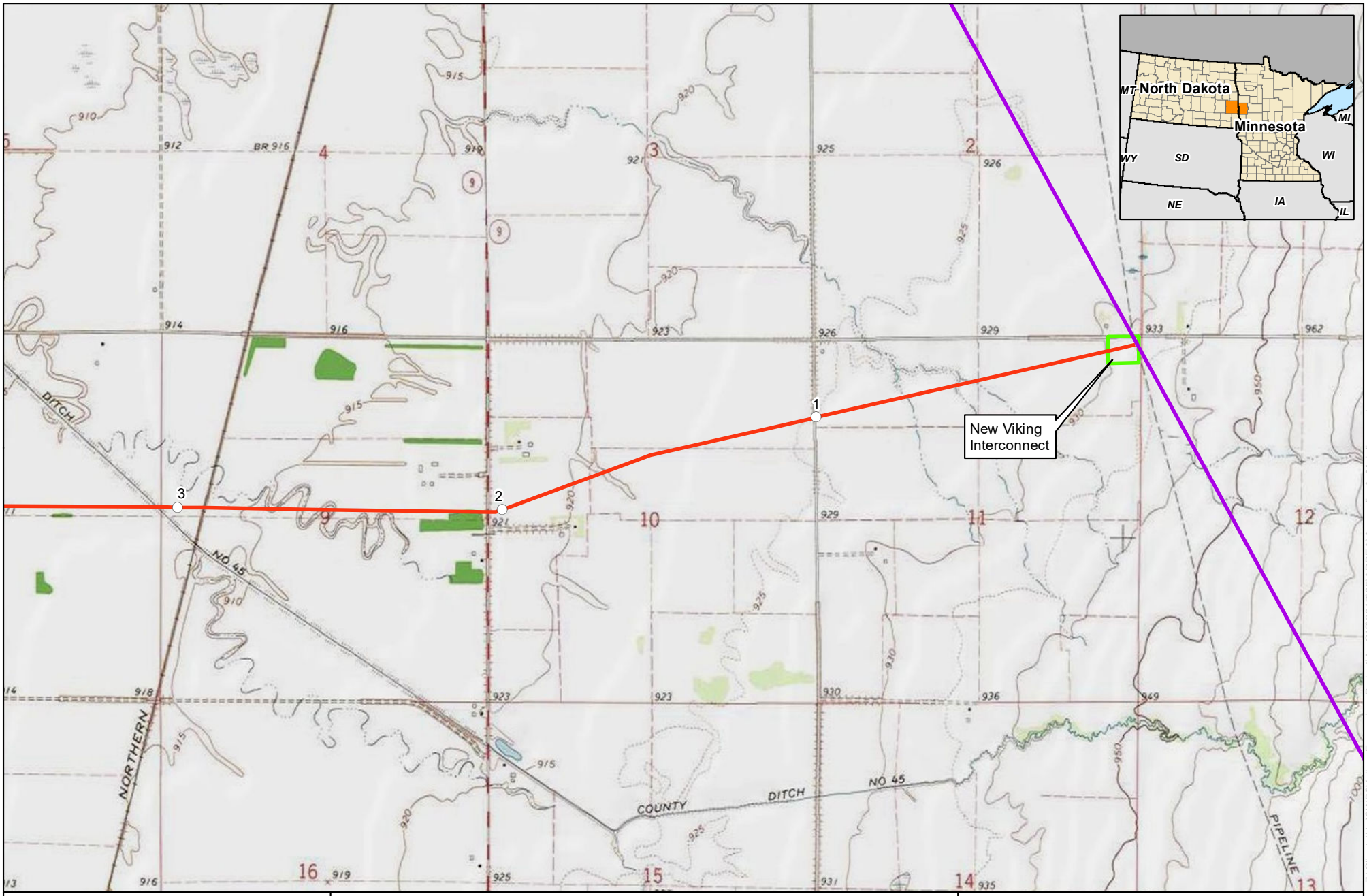
APPENDIX A

Pipeline Route and Site Location Maps



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For Environmental Review Purposes Only

Appendix A
Valley Expansion Project
WBI Energy Transmission, Inc.
Pipeline Route and Site Location Maps

- Proposed Route
- Proposed Mainline Valve
- Milepost
- Existing Viking Gas Pipeline
- Existing WBI Pipeline System
- New Mapleton Compressor Station
- New Viking Interconnect

Source: Z:\Clients\U_X\WBI\Valley_Expansion_Project\ArcGIS\2017\05\APDEA\Appendix_A_Mainline.mxd

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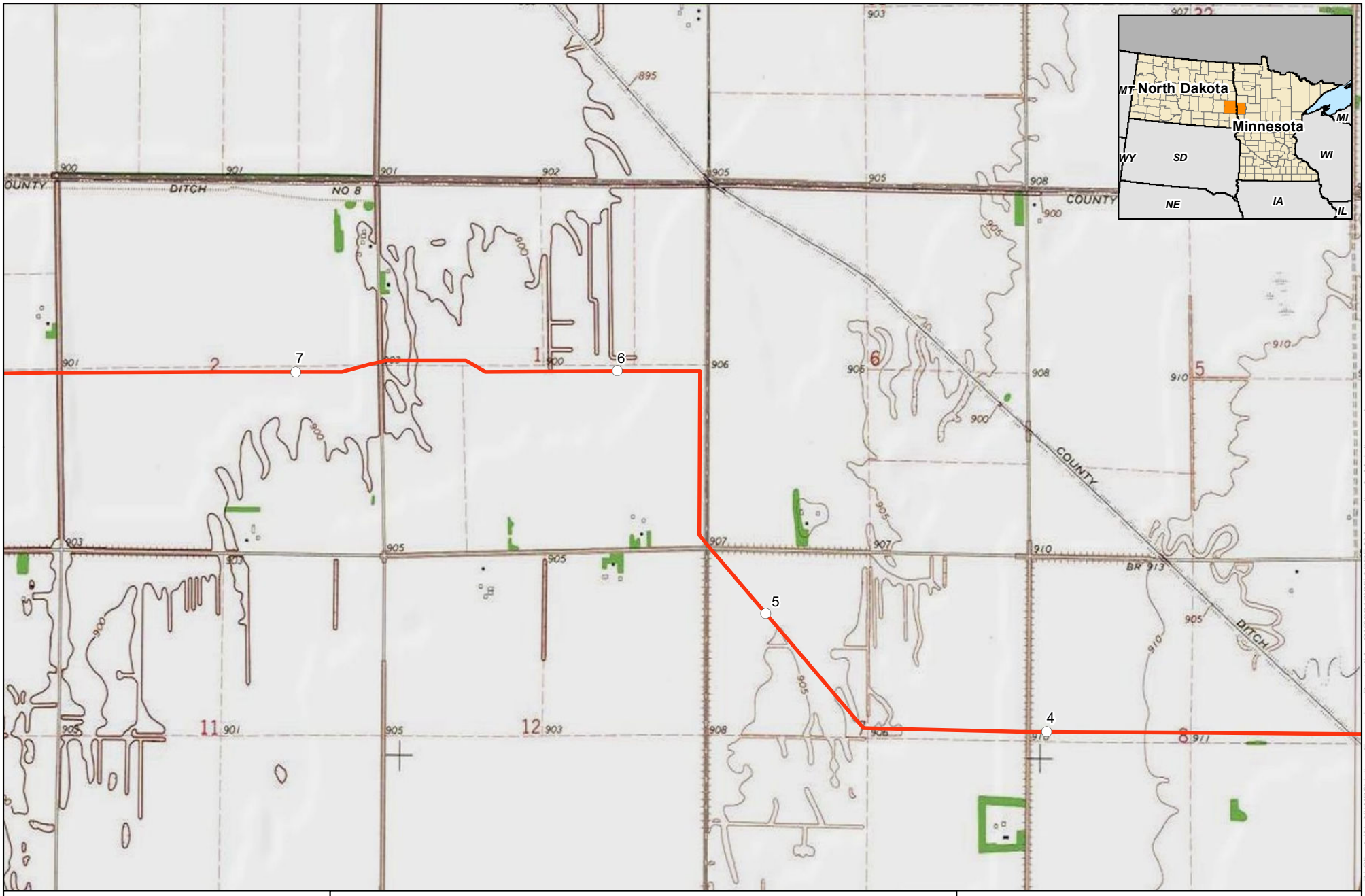

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Source: Z:\Clients\U_X\WBI\Valley_Expansion_Project\ArcGIS\2017\05\APDEA\Appendix_A_Mainline.mxd

Date: (4/27/2017)

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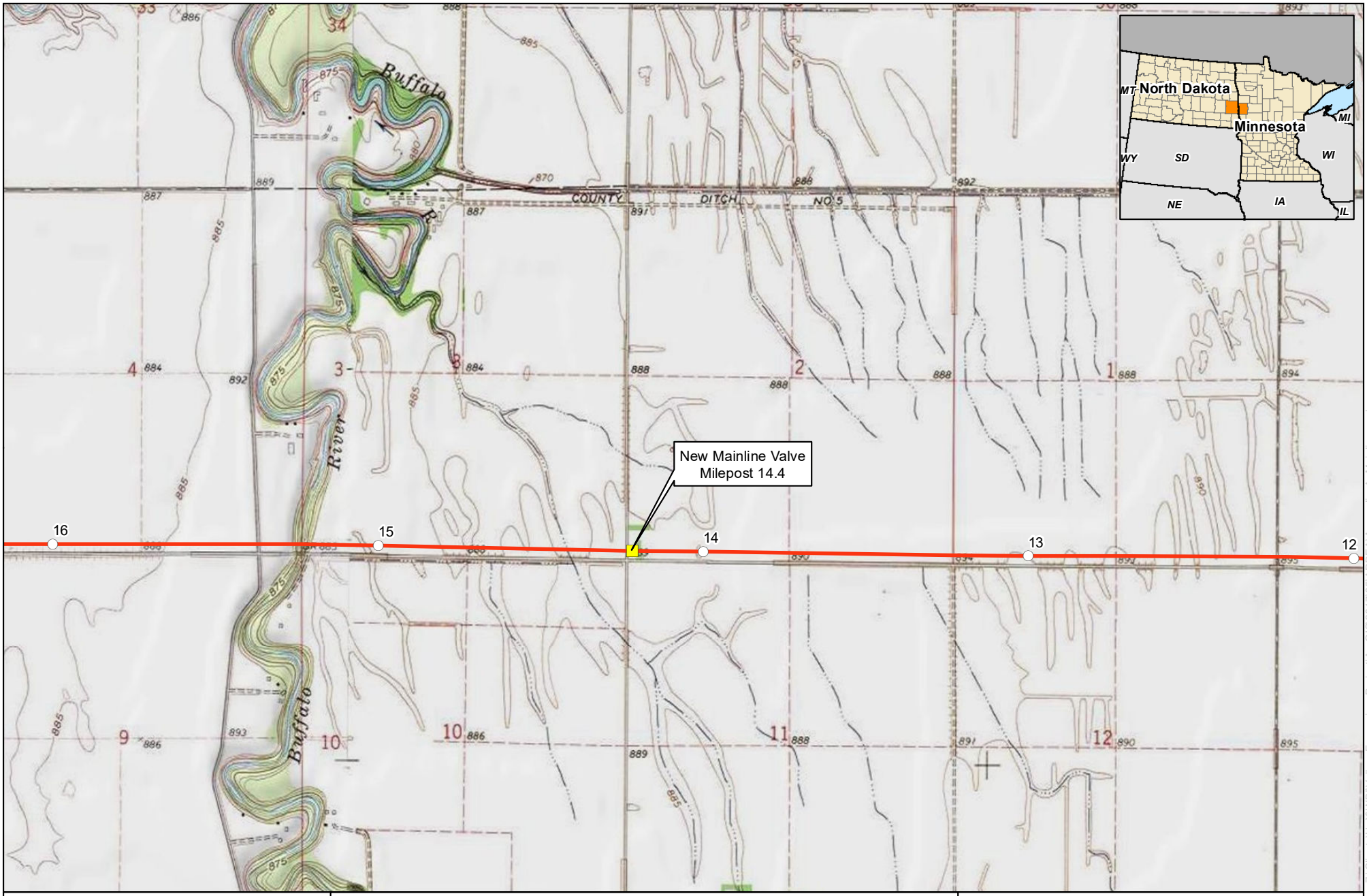

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Source: Z:\Clients\U_X\WBI\Valley_Expansion_Project\ArcGIS\2017\05\APDEA\Appendix_A_Mainline.mxd

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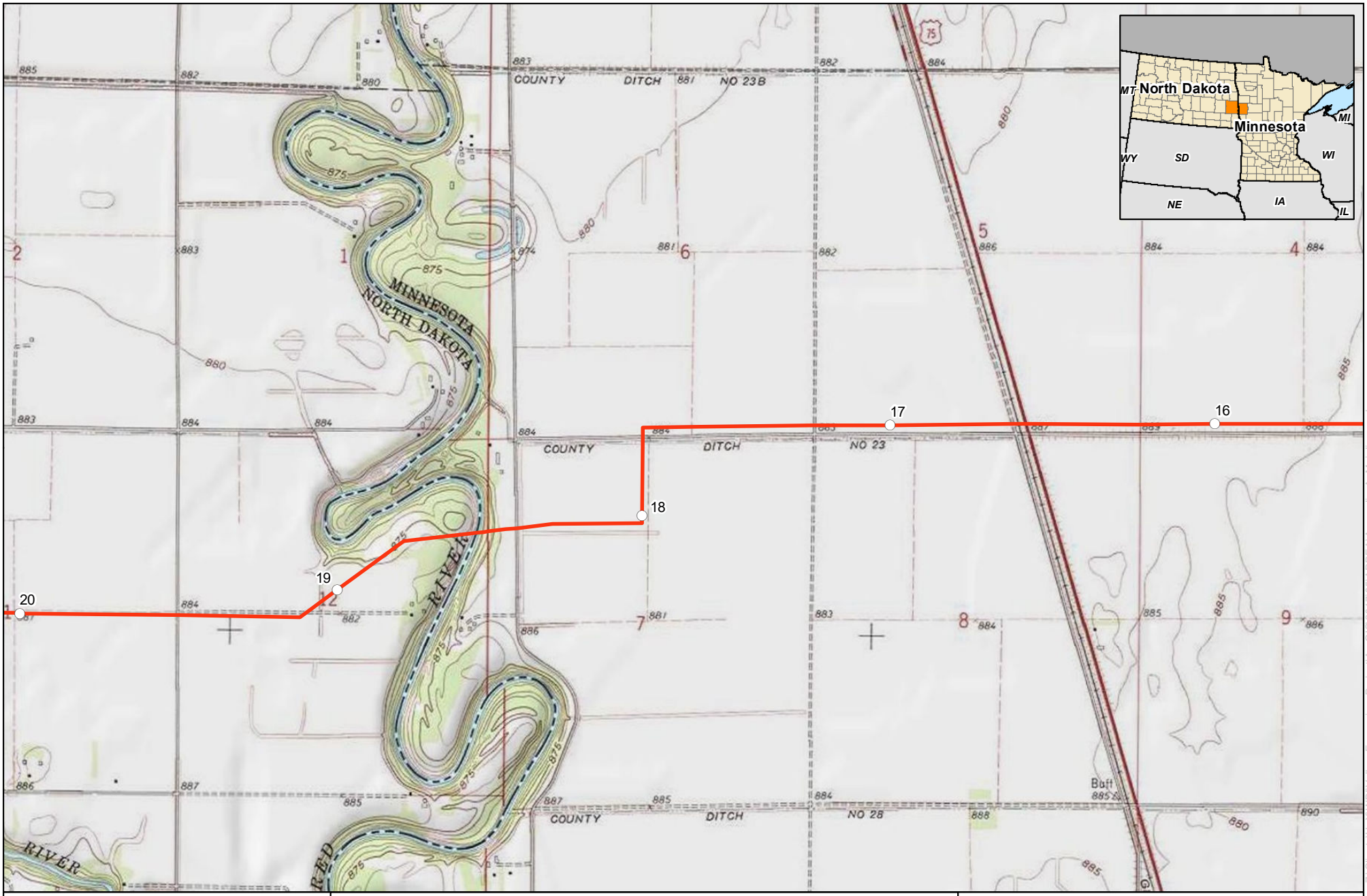

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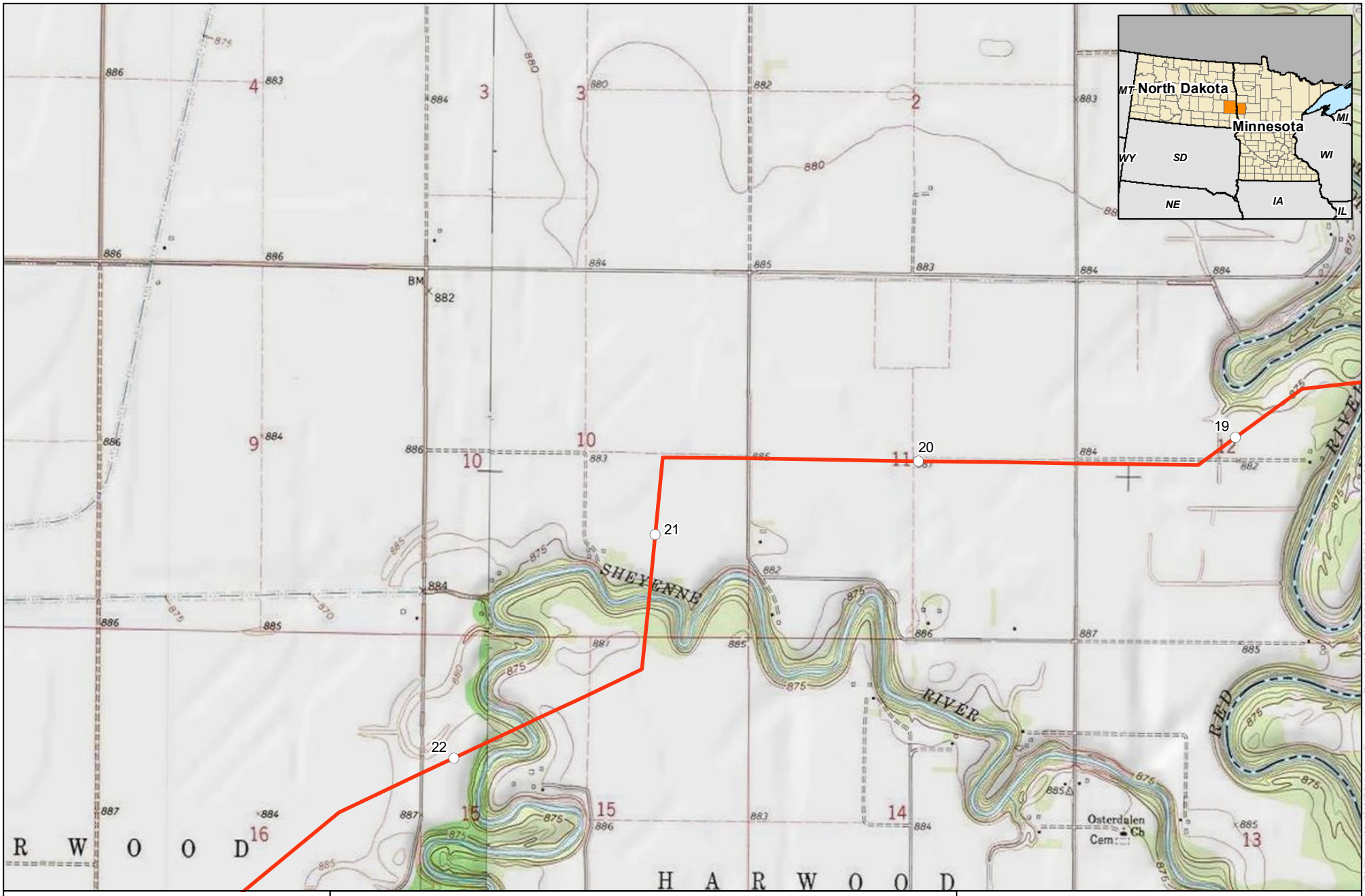

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Source: Z:\Clients\U_XWBI\Valley_Expansion_Project\ArcGIS\2017\05\APDEA\Appendix_A_Mainline.mxd

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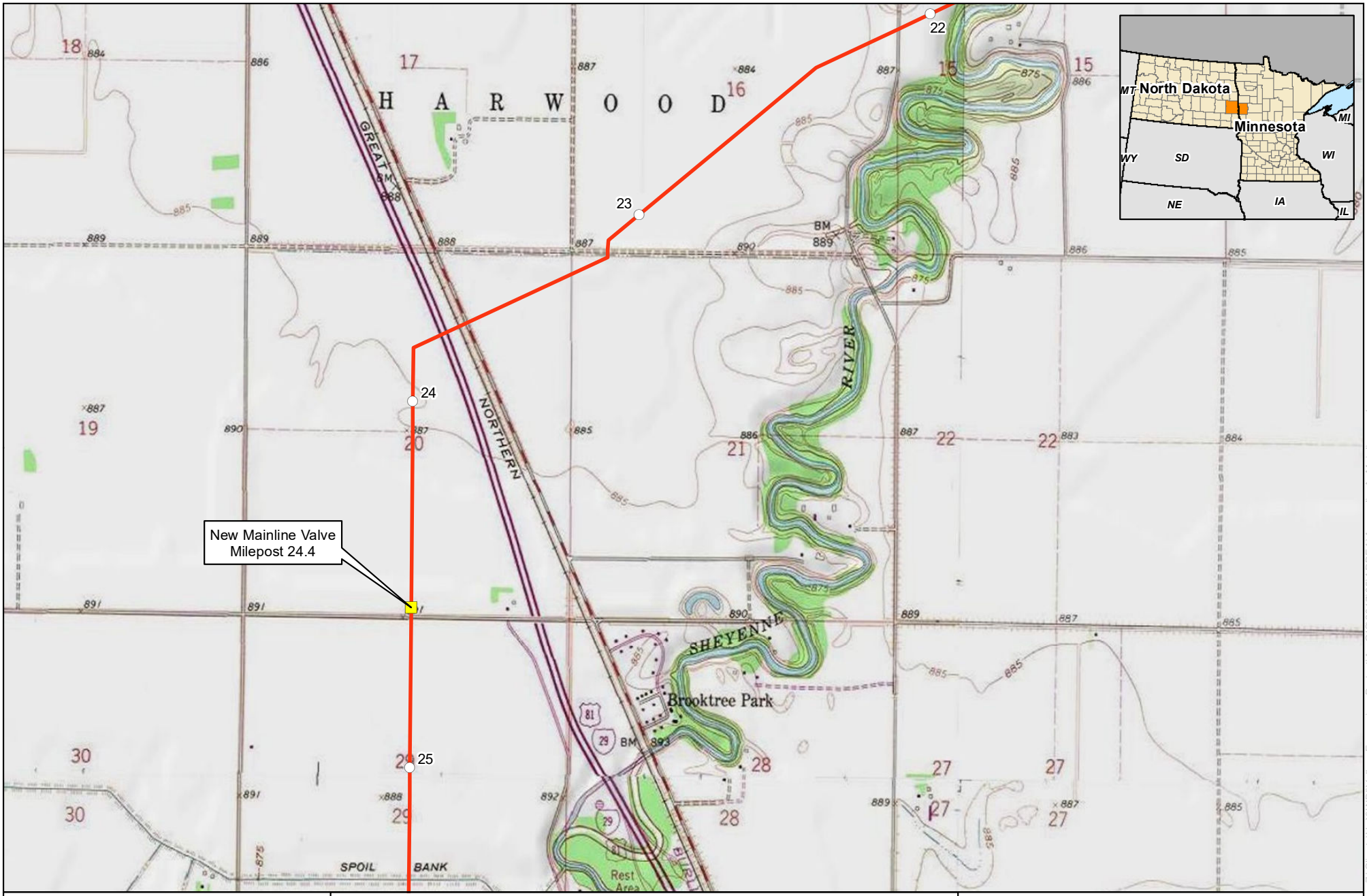

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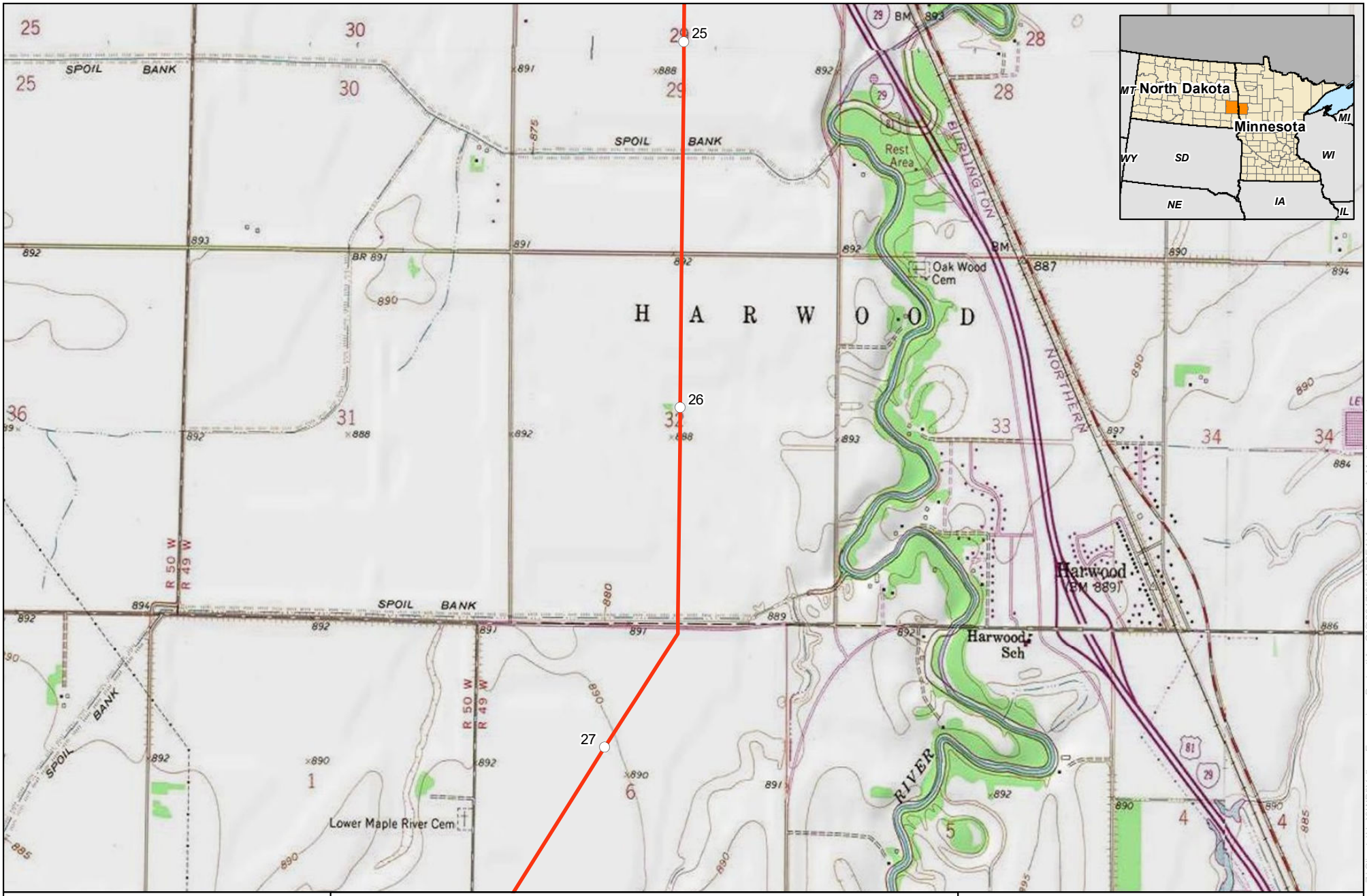

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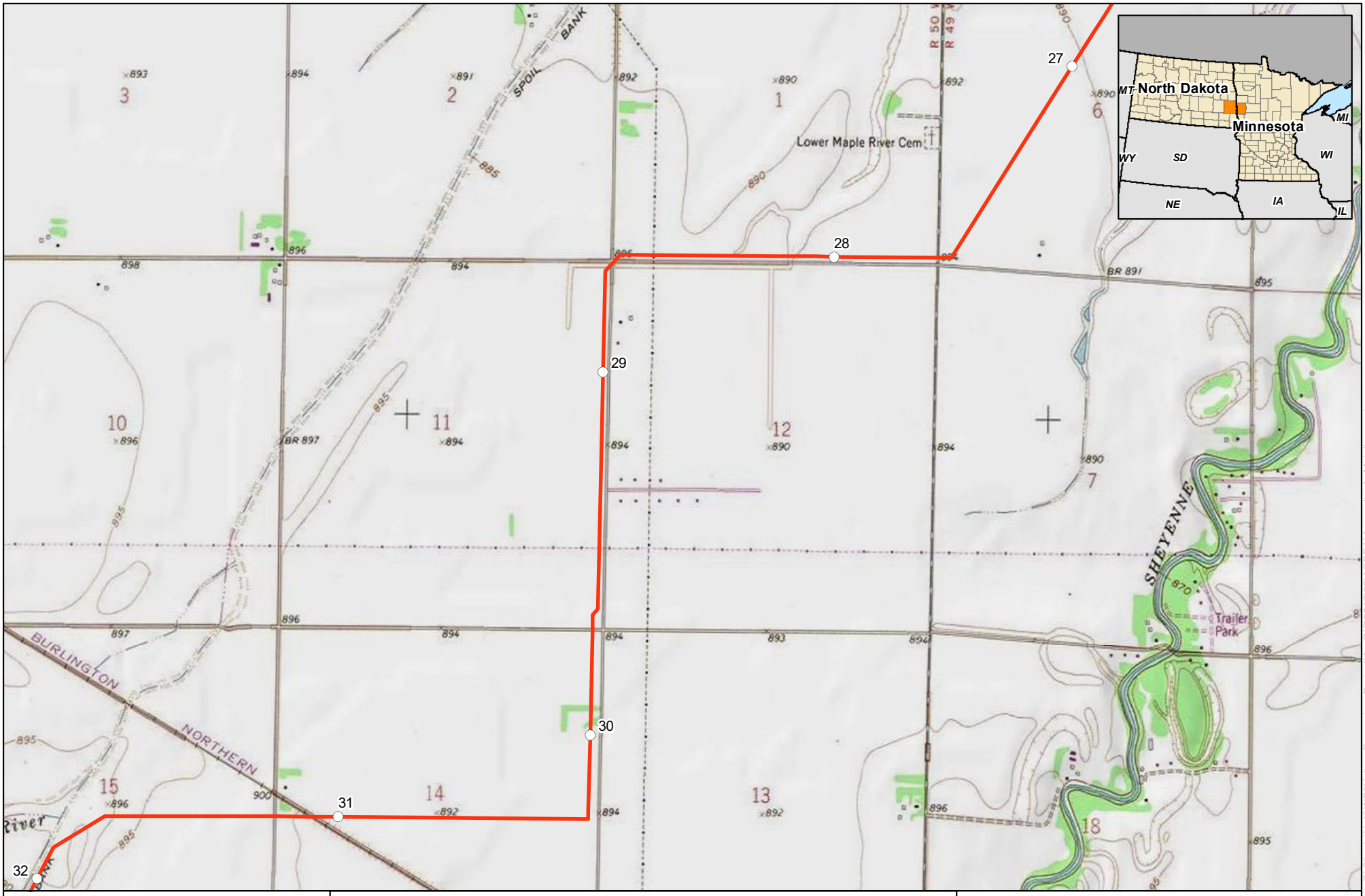

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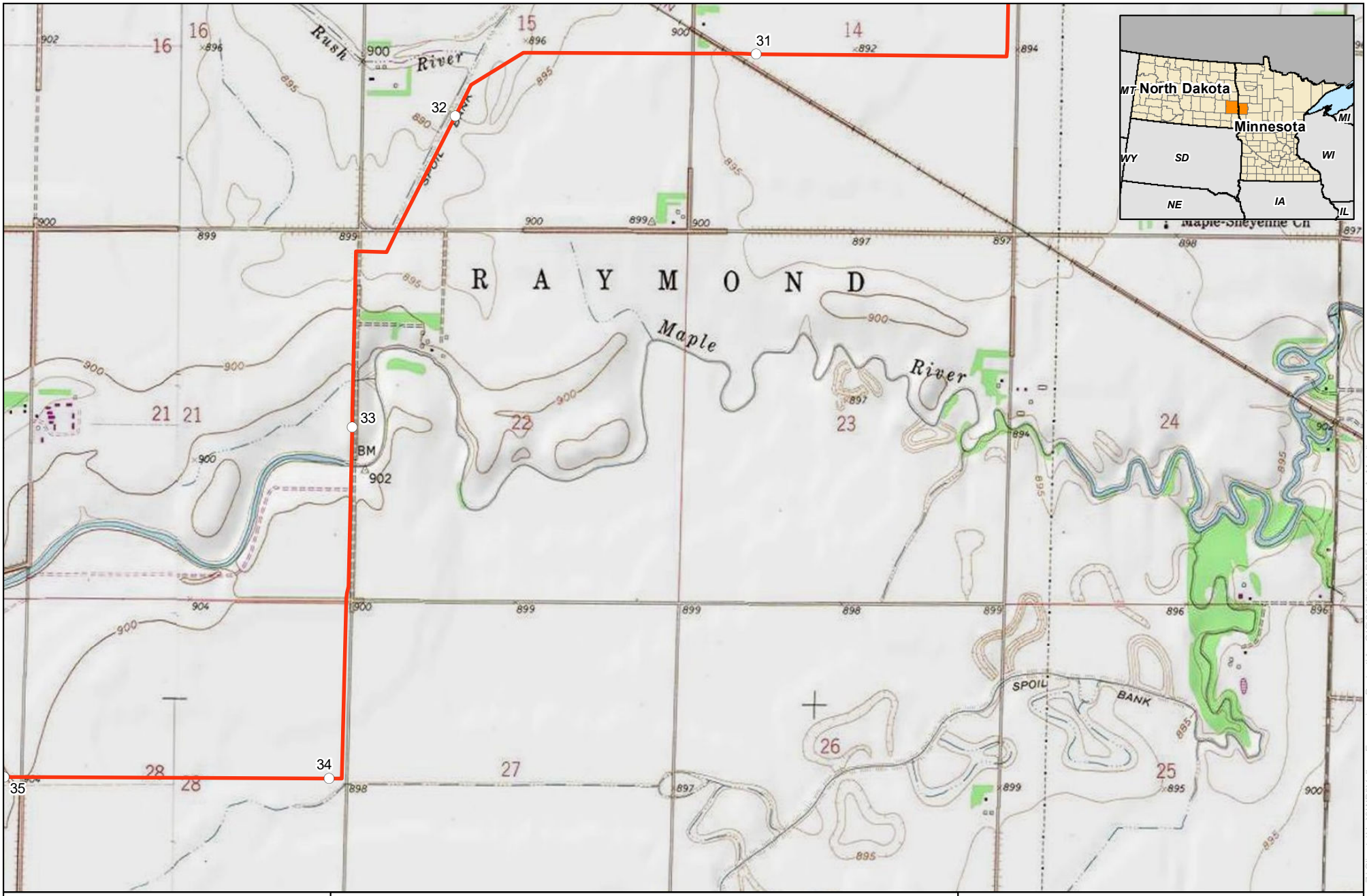

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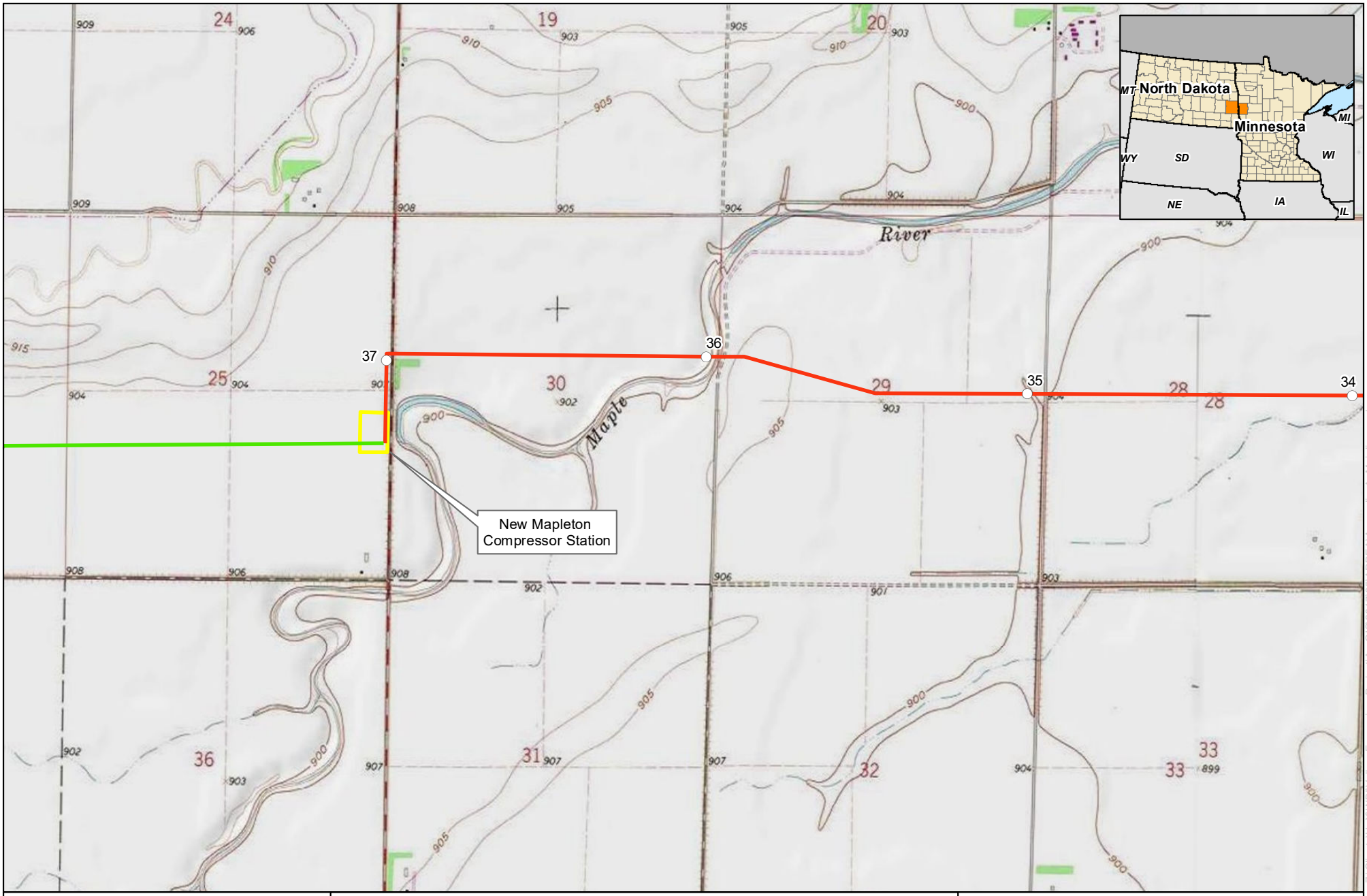

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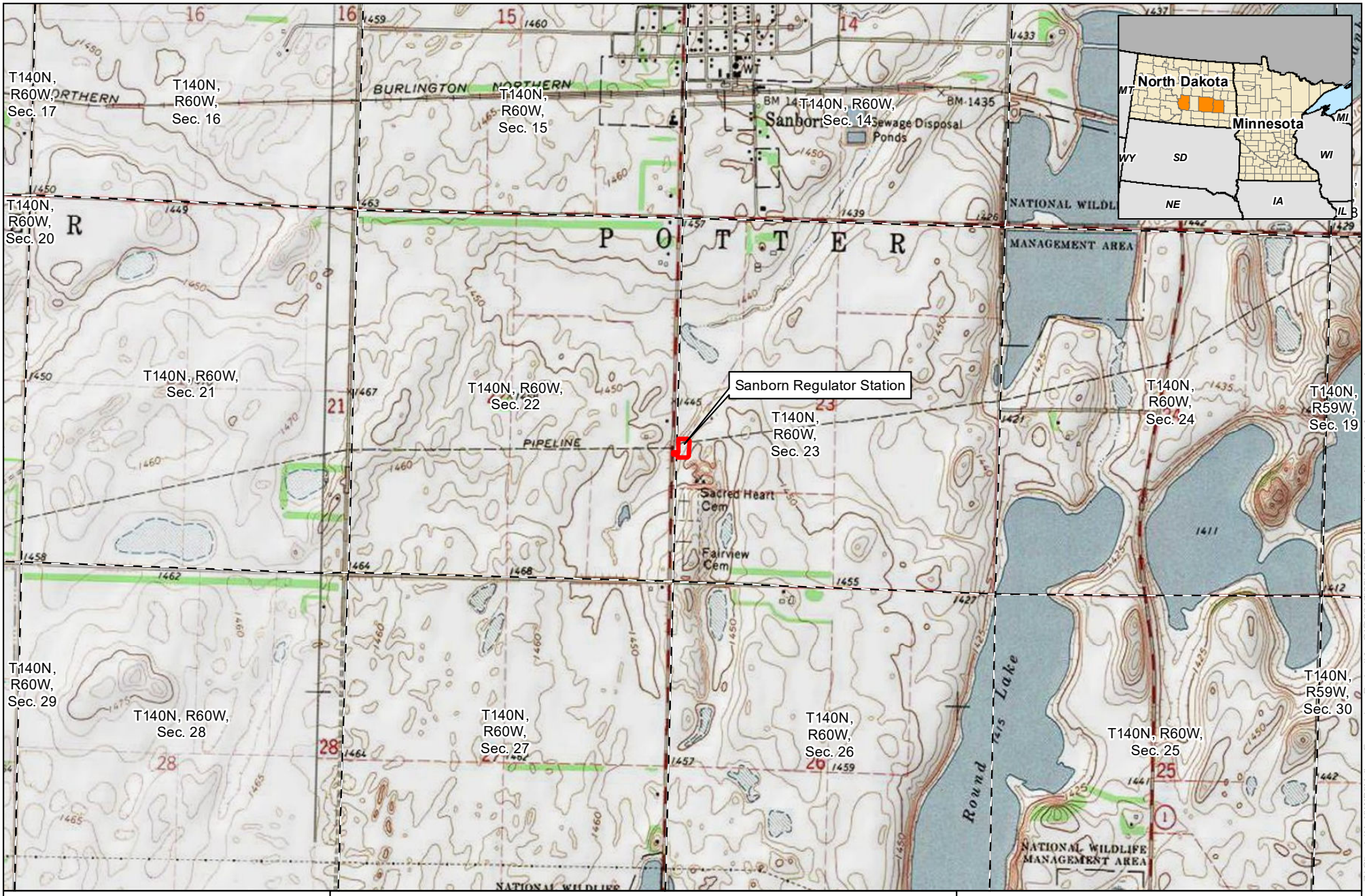

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Appendix A
Valley Expansion Project
WBI Energy Transmission, Inc.
Pipeline Route and Site Location Maps

Facility Upgrade Area

Section Boundary

Source: Z:\Clients\U_X\WBI\Valley_Expansion_Project\ArcGIS\2017\05\APDEA\Appendix_A_Upgrade_Areas.mxd

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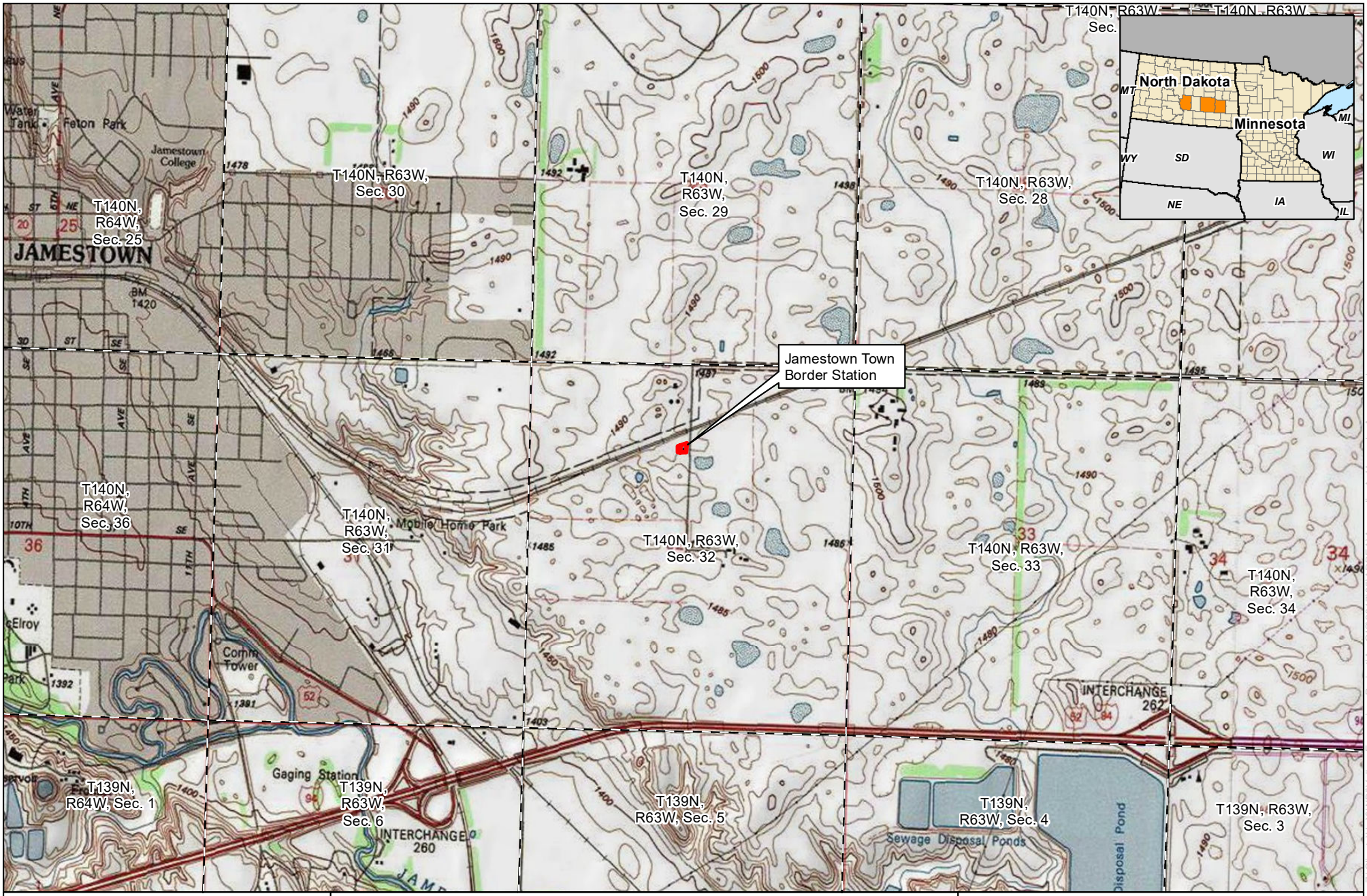

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Facility Upgrade Area

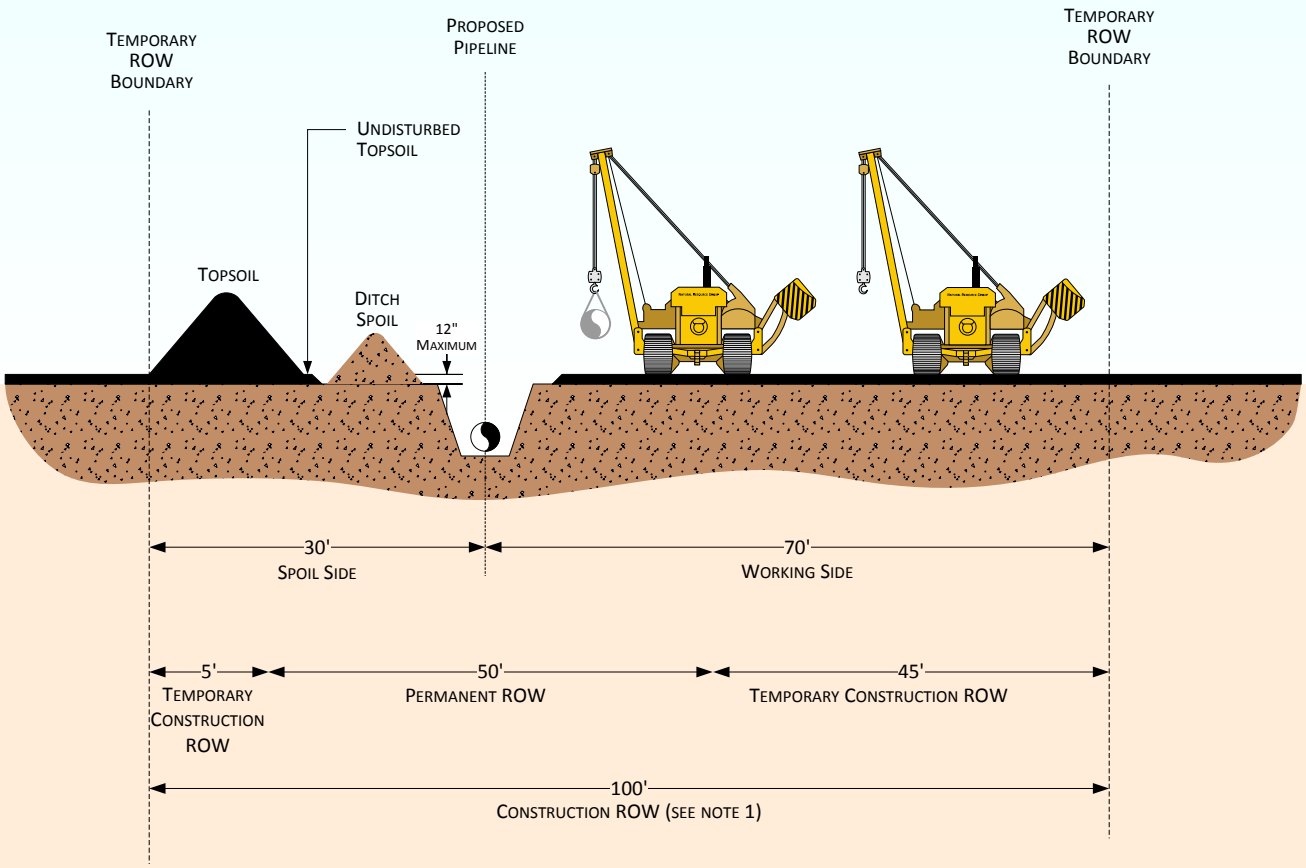
Section Boundary

Source: Z:\Clients\U_X\WBI\Valley_Expansion_Project\ArcGIS\2017\05\APDEA\Appendix_A_Upgrade_Areas.mxd

Date: (4/27/2017)

APPENDIX B

Construction Right-of-Way Cross Section Drawings



PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 100' WIDE. THE PERMANENT RIGHT-OF-WAY WILL BE 50'. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, WHERE FULL RIGHT-OF-WAY TOPSOIL STRIPPING IS CONDUCTED, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.
2. THIS DRAWING REFLECTS "TRENCH AND SPOIL SIDE" TOPSOIL STRIPPING PROCEDURE.
3. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE ENVIRONMENTAL INSPECTOR.

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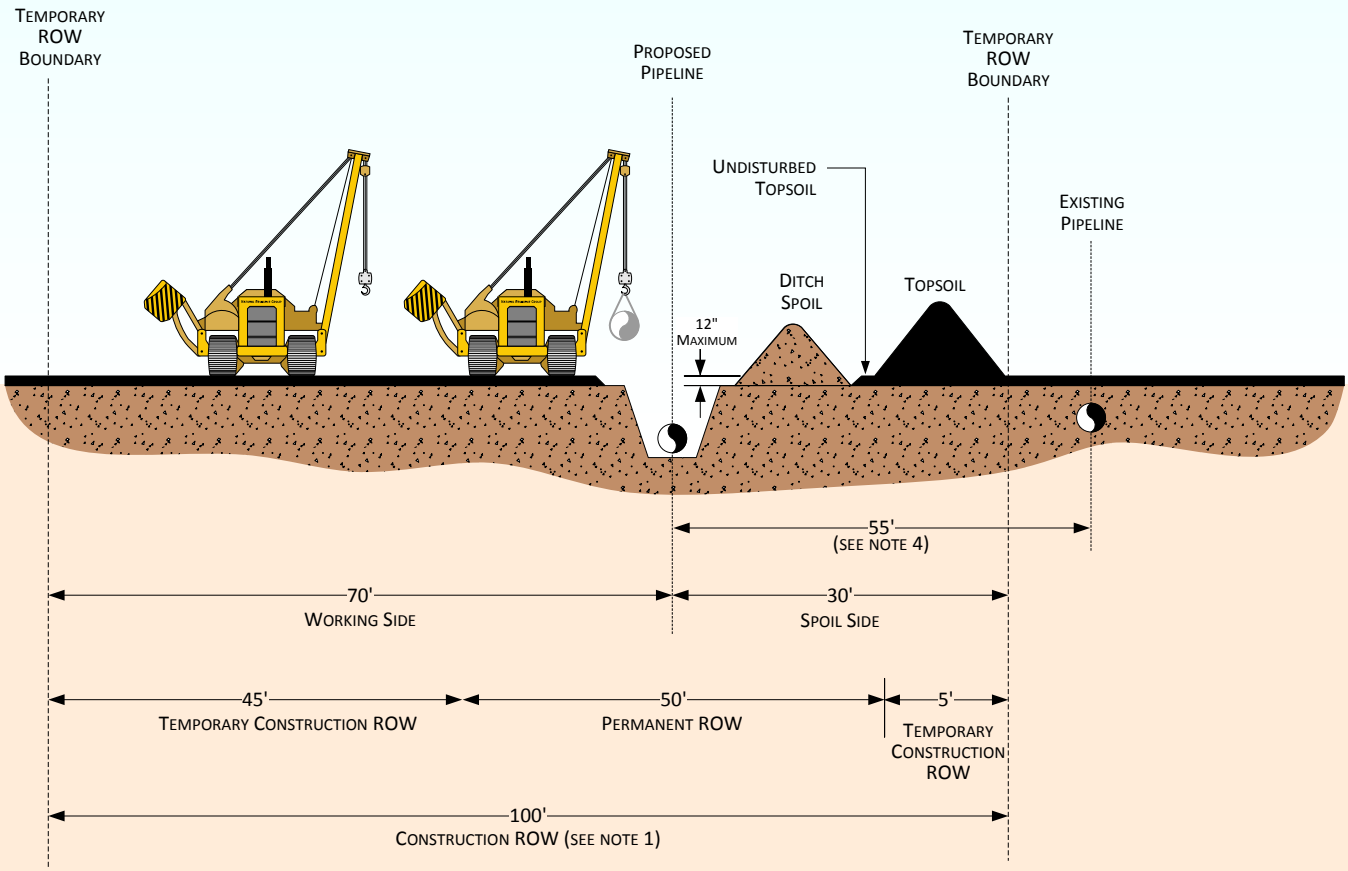
An MDU Resources Group company

Valley Expansion Project

Typical Construction ROW
East to West Construction



PROFILE

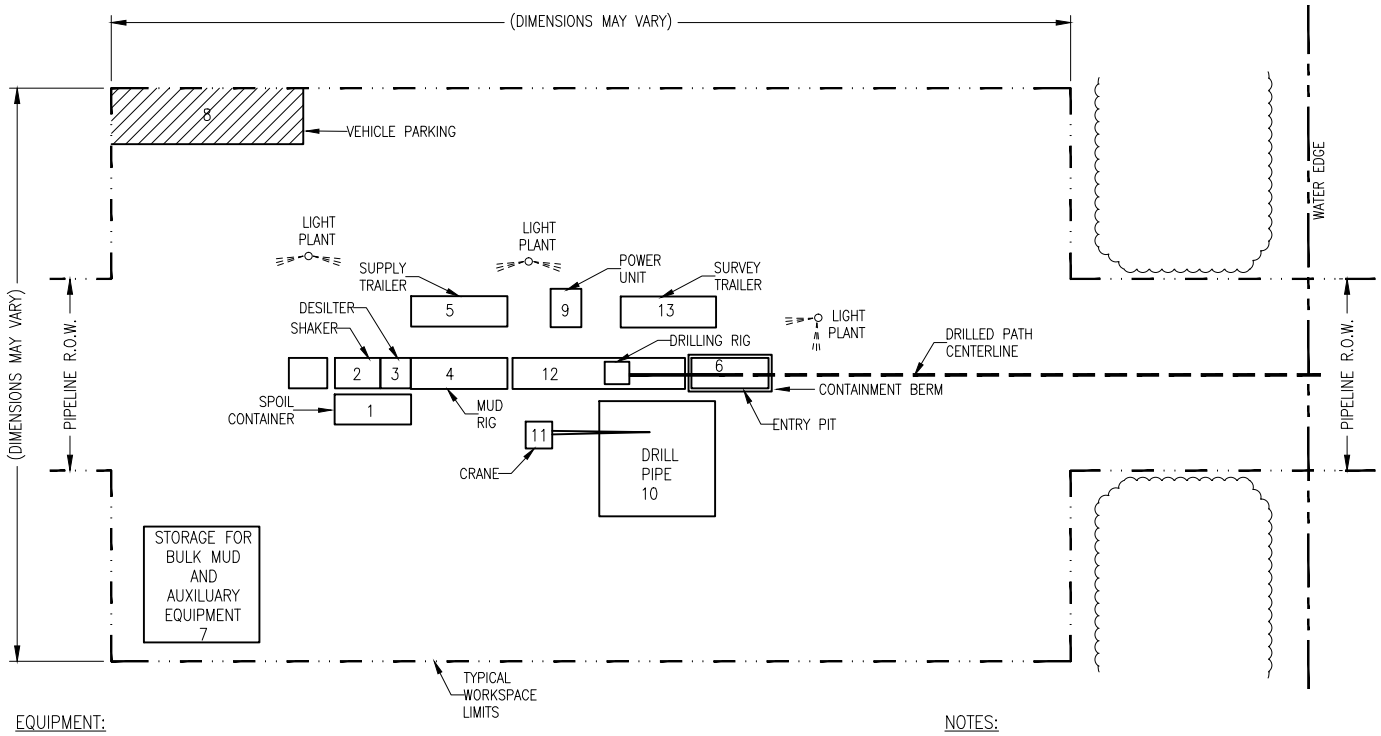
NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 100' WIDE. THE PERMANENT RIGHT-OF-WAY WILL BE 50'. ADDITIONAL TEMPORARY WORKSPACE WILL BE NECESSARY AT MAJOR ROAD, RAIL, RIVER CROSSINGS, SIDESLOPES, WHERE FULL RIGHT-OF-WAY TOPSOIL STRIPPING IS CONDUCTED, AND OTHER SPECIAL CIRCUMSTANCES AS REQUIRED.
2. THIS DRAWING REFLECTS "TRENCH AND SPOIL SIDE" TOPSOIL STRIPPING PROCEDURE.
3. STOCKPILE TOPSOIL SEPARATELY FROM DITCH SPOIL AS SHOWN OR IN ANY CONFIGURATION APPROVED BY THE ENVIRONMENTAL INSPECTOR.
4. THE OFFSET FROM ACTIVE PIPELINE, WHERE APPLICABLE, WILL BE 55' FOR MOST LOCATIONS BUT MAY BE INCREASED OR DECREASED DEPENDING ON THE SITE SPECIFIC CONSTRUCTION REQUIREMENTS.

Valley Expansion Project

Typical Construction ROW
Collocated Pipeline

WBI ENERGY TRANSMISSION
An MDU Resources Group company



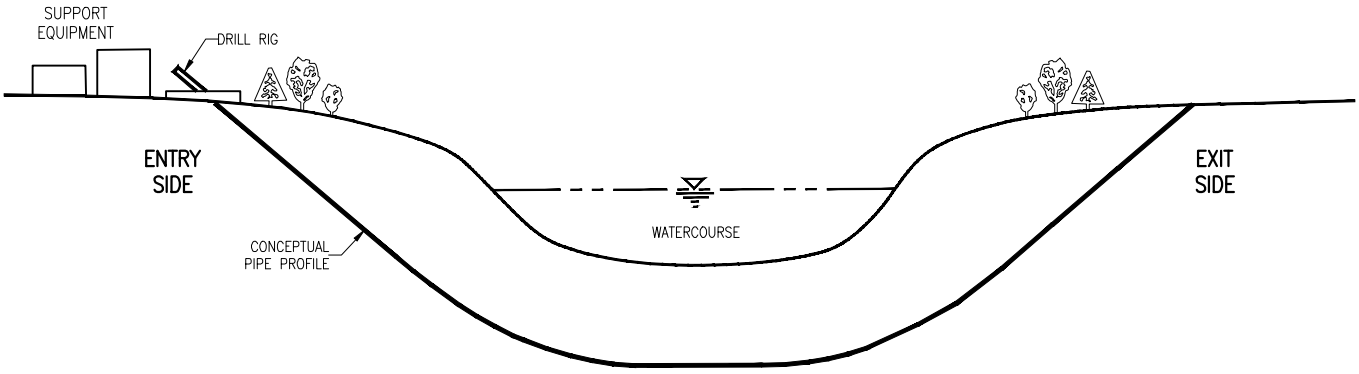
EQUIPMENT:
1. SPOIL CONTAINMENT
2. SHAKER
3. DESILTER
4. MUD RIG
5. SUPPLY TRAILER
6. ENTRY PIT
7. STORAGE
8. VEHICLE PARKING
9. POWER UNIT
10. DRILL PIPE
11. CRANE
12. DRILLING RIG
13. SURVEY TRAILER

ENTRY SITE PLAN

NOTES:
1. TYPE OF EQUIPMENT AND EQUIPMENT ORIENTATION MAY VARY DEPENDING ON CONTRACTOR OR SITE CONDITIONS.

2. EQUIPMENT TO BE SUPPORTED ON THE GROUND SURFACE OR TIMBER MATS AS CONDITIONS DICTATE.

3. SILT FENCE, BERMS AND/OR STRAW BALE BARRIER TO BE USED AS REQUIRED TO PREVENT IMPACTS FROM OCCURRING OUTSIDE OF PROJECT LIMITS.



PROFILE

GENERAL NOTES:
1.) PIPE DEPTHS MAY VARY.

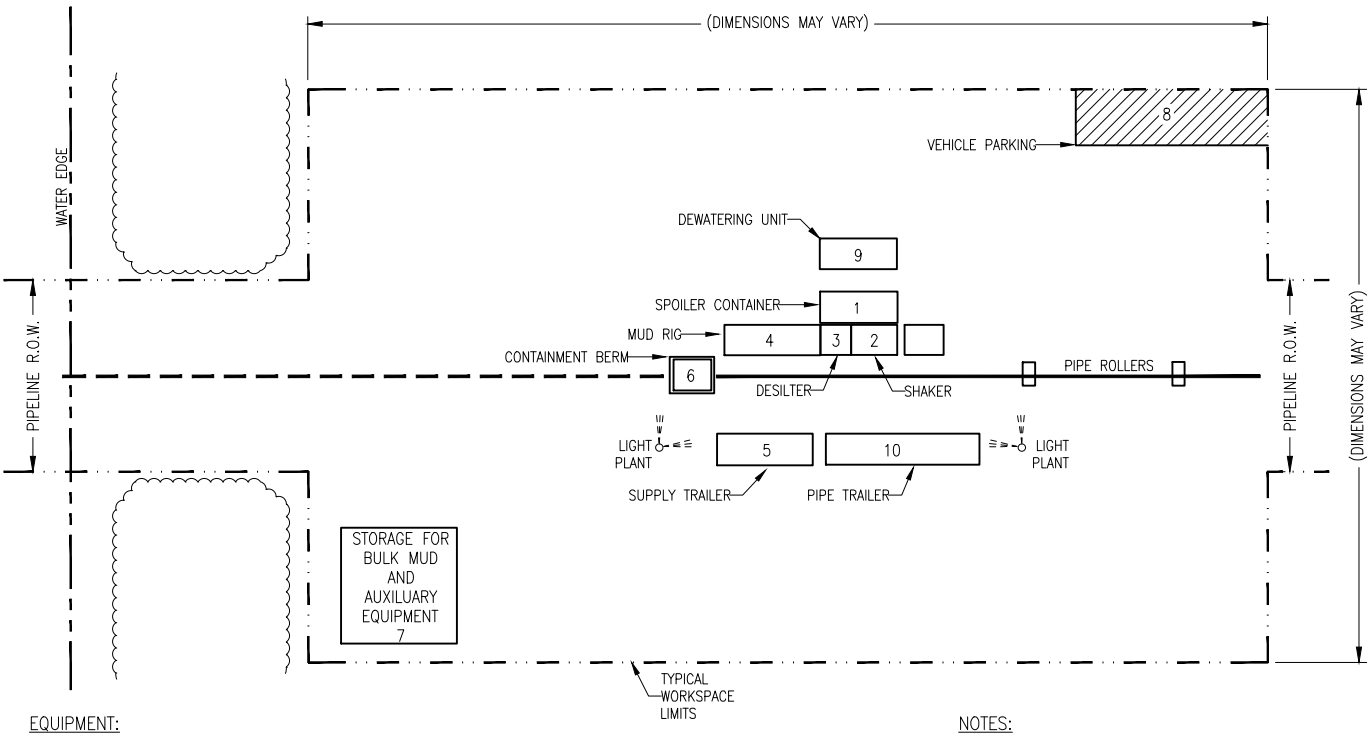
NO.	DATE	DRWN BY	DSGN BY	CHKD BY	DESCRIPTION
–	–	–	–	–	–

WBI ENERGY TRANSMISSION
An MDU Resources Group Company

MAINLINE CONCTRUCTION
TYPICAL DIRECTIONAL DRILL
ENTRY SITE PLAN & PROFILE

W.O. #	XXXXXXX.XXXX.XXXX
DESIGNED BY	J.L.
DRAWN BY	TJR
CHECKED BY	–
DATE CREATED	4/8/15

SCALE	FILE NAME	DWG. NO.	SHEET NO.
NONE	A-8-9671	A9671	2 OF 2



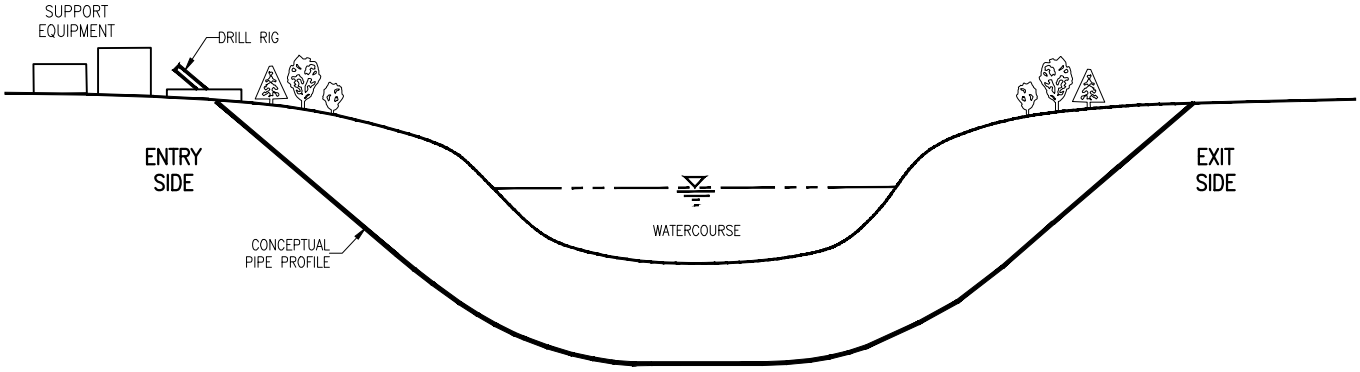
EQUIPMENT:
1. SPOIL CONTAINMENT
2. SHAKER
3. DESILTER
4. MUD RIG
5. SUPPLY TRAILER
6. EXIT PIT
7. STORAGE
8. VEHICLE PARKING
9. DEWATERING UNIT
10. PIPE TRAILER

EXIT SITE PLAN

NOTES:
1. TYPE OF EQUIPMENT AND EQUIPMENT ORIENTATION MAY VARY DEPENDING ON CONTRACTOR OR SITE CONDITIONS.

2. EQUIPMENT TO BE SUPPORTED ON THE GROUND SURFACE OR TIMBER MATS AS CONDITIONS DICTATE.

3. SILT FENCE, BERMS AND/OR STRAW BALE BARRIER TO BE USED AS REQUIRED TO PREVENT IMPACTS FROM OCCURRING OUTSIDE OF PROJECT LIMITS.



PROFILE

GENERAL NOTES:
1.) PIPE DEPTHS MAY VARY.

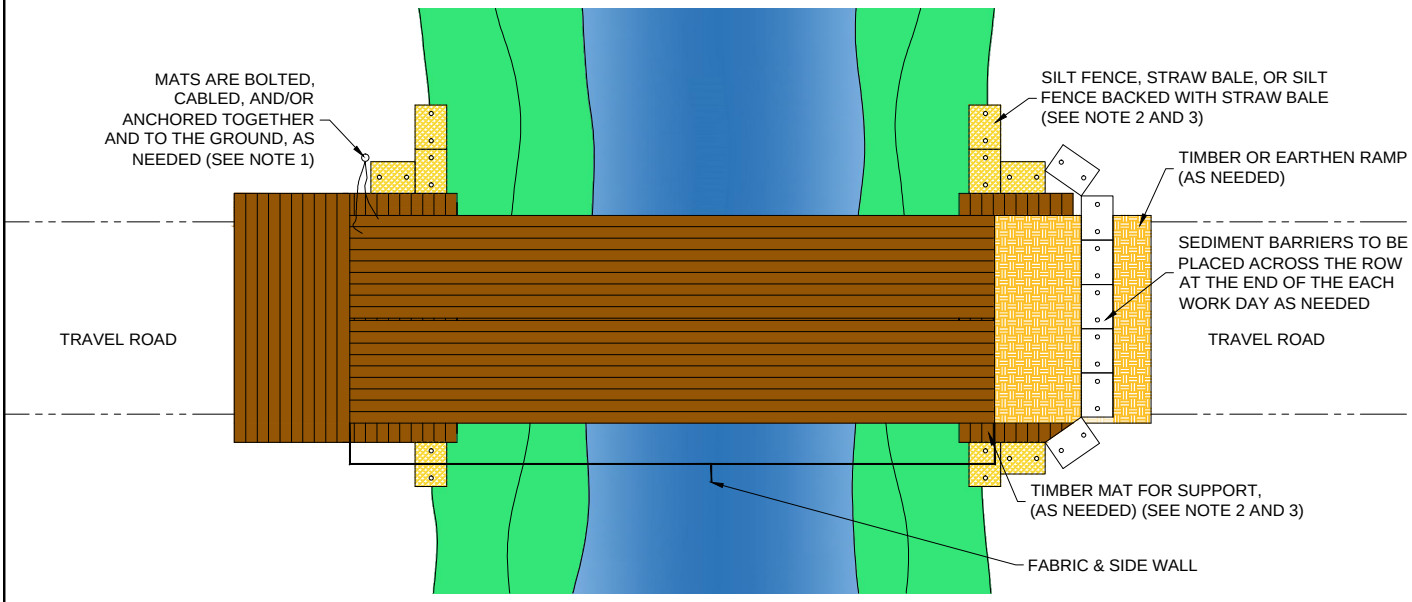
NO.	DATE	DRWN BY	DSGN BY	CHKD BY	DESCRIPTION
–	–	–	–	–	–

WBI ENERGY TRANSMISSION
An MDU Resources Group Company

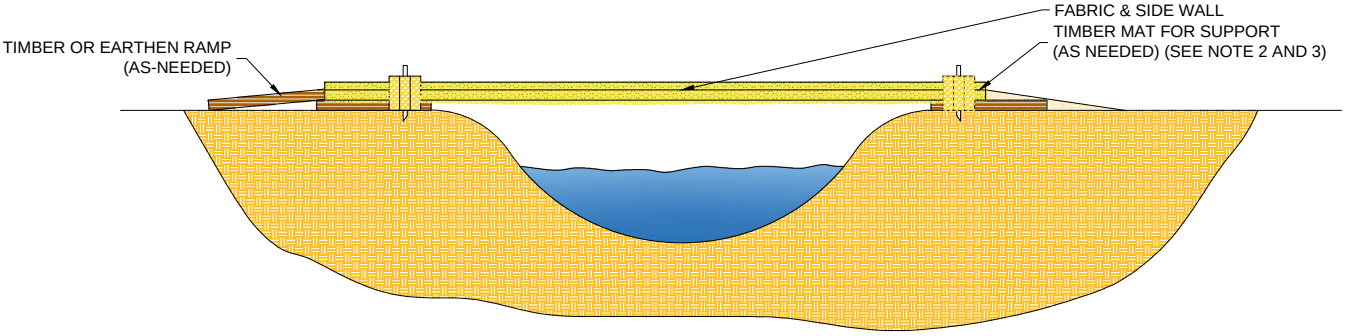
MAINLINE CONCTRUCTION
TYPICAL DIRECTIONAL DRILL
EXIT SITE PLAN & PROFILE

W.O. #	XXXXXXX.XXXX.XXXX
DESIGNED BY	J.L.
DRAWN BY	TJR
CHECKED BY	–
DATE CREATED	4/8/15

SCALE	FILE NAME	DWG. NO.	SHEET NO.
NONE	A-8-9671	A9671	1 OF 2



PLAN VIEW



PROFILE VIEW

NOTES:
1. THE BRIDGE MUST BE FIRMLY ANCHORED TO PREVENT IT FROM BEING TRANSPORTED DOWNSTREAM DURING HIGH FLOW.
2. THE BRIDGE MUST SPAN FROM TOP OF BANK TO TOP OF BANK.
3. ADDITIONAL SUPPORT MUST BE ADDED ON TOP OF THE BANK IF INITIAL SUPPORT STARTS TO SETTLE.
4. INSPECT BRIDGE ELEVATION SO BRIDGE REMAINS SUPPORTED ABOVE HIGH BANK AND DOES NOT SINK INTO BANK.
5. INSPECT BRIDGE OPENING PERIODICALLY AND FOLLOWING RAIN EVENTS. REMOVE ANY DEBRIS RESTRICTING FLOW AND DEPOSIT AT AN UPLAND SITE OUTSIDE THE FLOODPLAIN.

NO.	DATE	DRWN BY	DSGN BY	CHKD BY	DESCRIPTION
–	–	–	–	–	–

APPROVED AS FINAL
BY: K. STEFKA
DATE: 2/17/17

WBI ENERGY TRANSMISSION
An MDU Resources Group Company

TYPICAL TRAVEL LANE

W.O. #	XXXXXXX.XXXX.XXXX
DESIGNED BY	K.S.
DRAWN BY	TJR
CHECKED BY	GWH
DATE CREATED	1/31/17

SCALE	FILE NAME	DWG. NO.	SHEET NO.
NONE	A-8-9699	A9699	1 OF 1

APPENDIX C

Special Status Species Potentially Occurring in the Vicinity of the Project

Appendix C

Special Status Species Potentially Occurring in the Vicinity of the Project

Species Name	Status	State and County of Occurrence	Habitat Description	Suitable Habitat Present
Mammals				
Northern long-eared bat (*Myotis septentrionalis*) [a b c d e]	Federal Endangered	MN: Clay ND: Cass, Barnes, Stutsman, Burleigh	Hibernates in caves and mines; roosts and forages in upland forests.	Pipeline, Bishop Yard
Gray wolf (*Canis lupus*) [b c d e]	Federal Threatened	ND: Cass, Barnes, Stutsman, Burleigh	Wide range of habitat, including forests, plains, prairies, agricultural areas, swamps, and barren lands.	Pipeline, Contractor Laydown Yards, Aboveground Facilities
Birds				
Bald eagle (*Haliaeetus leucocephalus*) [g]	Delisted (Protected under Bald and Golden Eagle Protection Act)	MN: Clay ND: Cass, Barnes, Stutsman, Burleigh	Near lakes and rivers in forested areas where tall, large diameter trees are available for nesting.	Pipeline
Whooping crane (*Grus americana*) [b c d e]	Federal Endangered	ND: Cass, Barnes, Stutsman, Burleigh	Palustrine wetlands, including farmed wetlands. Seasonal and temporary wetlands are most commonly preferred, with larger wetlands being used for roosting and smaller wetlands for foraging.	Pipeline, Jamestown TBS
Piping plover (*Charadrius melodus*) [d e]	Federal Threatened, Critical Habitat	ND: Stutsman, Burleigh	Prefer to breed on open beaches typically comprised of sand or gravel. Found on islands, lake and river shores, and in coastal areas.	Not Present
Red knot (*Calidris canutus rufa*) [d e]	Federal Threatened	ND: Stutsman, Burleigh	Shoreland habitats, typically beaches and mudflats.	Not Present
Least tern (*Sterna antillarum*) [e]	Federal Endangered	ND: Burleigh	Islands, typically alluvial or comprised of dredged spoil.	Not Present
Yellow-billed cuckoo (*Coccyzus americanus*) [h]	State Special Concern	ND: Cass	Dense cover, often inhabiting wooded habitat including woodlands, scrub-shrub areas, dense thickets, and other overgrown areas with water nearby. They often nest in willows along waterbodies.	Pipeline, Bishop Laydown Yard
Greater prairie chicken (*Tympanuchus cupido*) [f]	State Special Concern	MN: Clay	Native tallgrass prairie with low disturbance, often associated with agricultural land. Nesting tends to occur in dense vegetation near the relatively bare site of assemblage, known as a lek. Winter habitat generally includes shelter belts and similar wooded areas adjacent to agricultural fields.	Pipeline
Mollusks				
Black sandshell (*Ligumia recta*) [f h]	State Special Concern	MN: Clay ND: Cass	Riffle and run areas of medium to large rivers in areas dominated by sand or gravel. They spend most of their lives buried in the bottom sediments of permanent waterbodies. Often found in mussel beds.	Pipeline
Wabash pigtoe (*Fusconaia flava*) [h]	State Special Concern	ND: Cass	Creeks and large rivers in mud, sand, and gravel. Spend most of their lives buried in the bottom sediments of permanent waterbodies. Often found in mussel beds.	Not Present

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Special Status Species Potentially Occurring in the Vicinity of the Project

Species Name	Status	State and County of Occurrence	Habitat Description	Suitable Habitat Present
Pink heelsplitter (*Potamilus alatus*) [h]	State Special Concern	ND: Cass	Large rivers and reservoirs in mud, or mud mixed with sand and gravel. Spend most of their lives buried in the bottom sediments of permanent waterbodies. Often found in mussel beds.	Pipeline
Mapleleaf (*Quadrula quadrula*) [h]	State Special Concern	ND: Cass	Mud, or mud mixed with sand and gravel. Spend most of their lives buried in the bottom sediments of permanent waterbodies. Often found in mussel beds.	Pipeline
Fish				
Pallid sturgeon (*Scaphirhynchus albus*) [e]	Federal Endangered	ND: Burleigh	Large, silty river bottoms with braided channels, sand bars, sand flats and gravel bars.	Not Present
Logperch (*Percina caprodes*) [h]	State Special Concern	ND: Cass	Medium to large streams in non-prairie areas, and are known specifically to inhabit the Red River of the North. Spawn in riffle areas of streams and rivers and shallow sandy lakebeds.	Pipeline
Carmine shiner (*Notropis percobromus*) [h]	State Special Concern	ND: Cass	Swift-flowing streams with sandy or rocky substrate. Typically, about 1 ½ meters deep and 3-24 meters in width. Often found in pool habitats or adjacent swift-flowing areas.	Pipeline
Insects				
Dakota skipper (*Hesperia dacotae*) [a i]	Federal Threatened, Critical Habitat	MN Clay ND: Stutsman, Barnes	High quality tallgrass and mixed grass prairie.	Pipeline
Poweshiek skipperling (*Oarisma poweshiek*) [a i]	Federal Critical Habitat	MN: Clay	Tallgrass prairie, selecting high quality areas in both wetland and upland. Nectar from native prairie flowers is their preferred food source, and larvae are known to utilize native grasses, such as sedges and prairie dropseed.	Pipeline
Plants				
Western prairie fringed orchid (*Platanthera praeclara*) [a]	Federal Threatened	MN: Clay	Tall grass prairies with mesic to wet regimes. Also found in fallow agricultural fields and roadside ditches.	Pipeline

[a] U.S. Fish and Wildlife Service (FWS) (2016a).
[b] FWS (2016b)
[c] FWS (2016c).
[d] FWS (2016d).
[e] FWS (2016e).
[f] Minnesota Department of Natural Resources (2016a)
[g] North Dakota Game and Fish Department (2016a)
[h] North Dakota Parks and Recreation Department (2015)
[i] FWS (2016f; 2016g)

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