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Bismarck, ND 58506-5601
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October 27, 2021

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: WBI Energy Transmission, Inc.
Wahpeton Expansion Project
Docket No. PF21-4-000

Dear Ms. Bose:

WBI Energy Transmission, Inc. (WBI Energy) hereby submits the following information for the proposed Wahpeton Expansion Project in accordance with 18 CFR §157.21(f)(5).

The filing includes the following volumes:

Volume I consists of a draft of Resource Report 1 and related Public Appendices and a draft of Resource Report 10 which includes a summary of the alternatives considered or under consideration. The information contained in Volume I is public.

Volume II consists of Appendix 1H to draft Resource Report 1, Landowner List. Consistent with the Commission's precedent and regulations with respect to sensitive information, WBI Energy requests privileged and confidential treatment of this information, which is labeled: "CUI//PRIV – DO NOT RELEASE."

Should you have any questions or comments regarding this filing, please call the undersigned at (701) 530-1563.

Sincerely,

/s/ Lori Myerchin

Lori Myerchin
Director, Regulatory Affairs and
Transportation Services

cc: David Hanobic, FERC Environmental Project Manager

WBI ENERGY TRANSMISSION, INC.

Wahpeton Expansion Project

Resource Report 1
General Project Description

Preliminary Draft

Docket No.
PF21-4-000

October 2021

WBI ENERGY TRANSMISSION, INC.
WAHPETON EXPANSION PROJECT
RESOURCE REPORT 1—GENERAL PROJECT DESCRIPTION

Minimum Filing Requirements:	Addressed in Section:
1. Provide a detailed description and location map of the Project facilities—Title 18 of the Code of Federal Regulations (CFR) Part (§) 380.12(c)(1)	Section 1.1; Figure 1.1.2-1 and Appendix 1A; (Appendix 1B to be filed in subsequent draft of resource report)
2. Describe any non-jurisdictional facilities that would be built in association with the Project—18 CFR § 380.12(c)(2)	Section 1.7
3. Provide current original U.S. Geological Survey 7.5-minute-series topographic maps with mileposts showing the Project facilities—18 CFR § 380.12(c)(3)	Appendix 1A
4. Provide aerial images or photographs or alignment sheets based on these sources with mileposts showing the Project facilities—18 CFR § 380.12(c)(3)	Appendix 1B; construction alignment sheets (to be filed in subsequent draft of resource report)
5. Provide plot/site plans of compressor stations showing the locations of the nearest noise sensitive areas within 1 mile—18 CFR § 380.12(c)(3,4)	To be provided in a future draft of Resource Report 9
6. Describe construction and restoration methods—18 CFR § 380.12(c)(6)	Section 1.3
7. Identify the permits required for construction across surface waters—18 CFR § 380.12(c)(9)	Section 1.8 and Table 1.8-1
8. Provide the names and address of all affected landowners and certify that all affected landowners will be notified as required in § 157.6(d)—18 CFR § 380.12(c)(10)	Section 1.9; Appendix 1H (filed under separate cover as Controlled Unclassified Information/Privileged and Confidential (CUI/PRIV))
Additional Information:	
Describe all authorizations required to complete the proposed action and the status of applications for such authorizations	Section 1.8 and Table 1.8-1
Provide plot/site plans of all other aboveground facilities that are not completely within the right-of-way	Appendix 1C (filed under separate cover as Controlled Unclassified Information/Critical Energy Infrastructure Information (CUI//CEII); additional facility plot/site plans to be included in a subsequent draft of the resource report)
Provide detailed typical construction right-of-way cross-section diagrams showing information such as widths and relative locations of existing rights-of-way, new permanent right-of-way, and temporary construction right-of-way	Appendix 1D (typical right-of-way cross section diagrams to be included in a subsequent draft of the resource report)
Summarize the total acreage of land affected by construction and operation of the Project	Section 1.1.3 and Table 1.1.3-1

WBI ENERGY TRANSMISSION, INC.
WAHPETON EXPANSION PROJECT
RESOURCE REPORT 1—GENERAL PROJECT DESCRIPTION

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Appendix 1A Project Route Maps (Topographic)

Appendix 1B Project Route Maps (Aerial) **[to be provided in a later draft of this report]**

Appendix 1C Plot Plans for Aboveground Facility Sites **[to be provided in a later draft of this report and will be *filed under separate cover as Controlled Unclassified Information/Critical Energy Infrastructure Information [CUI/CEII] in Volume II]***

Appendix 1D Typical Construction Drawings

Appendix 1E Summary of Collocated Facilities **[to be provided in a later draft of this report]**

Appendix 1F Construction, Restoration, and Mitigation Plans
[These plans will be provided in a later draft of this report or the final application]
1F-1 Spill Prevention, Control, and Countermeasure Plan
1F-2 Horizontal Directional Drill / Guided Bore Drilling Fluid Monitoring and Operations Plan
1F-3 Fugitive Dust Control Plan
1F-4 Plan for Unanticipated Discovery of Historic Properties or Human Remains during Construction

Appendix 1G Summary of Agency Contacts and Copies of Agency Correspondence **[to be provided in a later draft of this report]**

Appendix 1H Landowner List *(Filed under separate cover as Controlled Unclassified Information/Privileged and Confidential [CUI/PRIV] in Volume III)*

ACRONYMS AND ABBREVIATIONS

ACM	asbestos-containing material
ATWS	additional temporary workspace
CEII	Critical Energy Infrastructure Information
Certificate	Certificate of Public Convenience and Necessity
CFR	Code of Federal Regulations
CUI	Controlled Unclassified Information
EI	environmental inspector
FERC	Federal Energy Regulatory Commission
HDD	horizontal directional drill
MDU	Montana-Dakota Utilities Co.
MP	milepost
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
PRIV	Privileged and Confidential
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
Project	Wahpeton Expansion Project
USDOT	U.S. Department of Transportation
WBI Energy	WBI Energy Transmission, Inc.

WBI ENERGY TRANSMISSION, INC.
WAHPETON EXPANSION PROJECT

1.0 RESOURCE REPORT 1—GENERAL PROJECT DESCRIPTION

WBI Energy Transmission, Inc. (WBI Energy) proposes to construct and operate the Wahpeton Expansion Project (Project). The Project will involve construction of approximately 58.7 miles of 12-inch-diameter natural gas pipeline from WBI Energy's existing Mapleton Compressor Station near Mapleton, North Dakota, to a new delivery station near Wahpeton, North Dakota. The Project will also include minor modifications at the Mapleton Compressor Station, a new delivery station near Kindred, North Dakota, new block valve settings, and new pig launcher/receiver settings. The Project may also include newly constructed farm taps along the pipeline route.

As required by Title 18 of the Code of Federal Regulations (CFR) Part 380.12, WBI Energy has prepared this Environmental Report in support of its application to the Federal Energy Regulatory Commission (FERC) for a Certificate of Public Convenience and Necessity (Certificate) under Section 7(c) of the Natural Gas Act to construct and operate the proposed facilities.

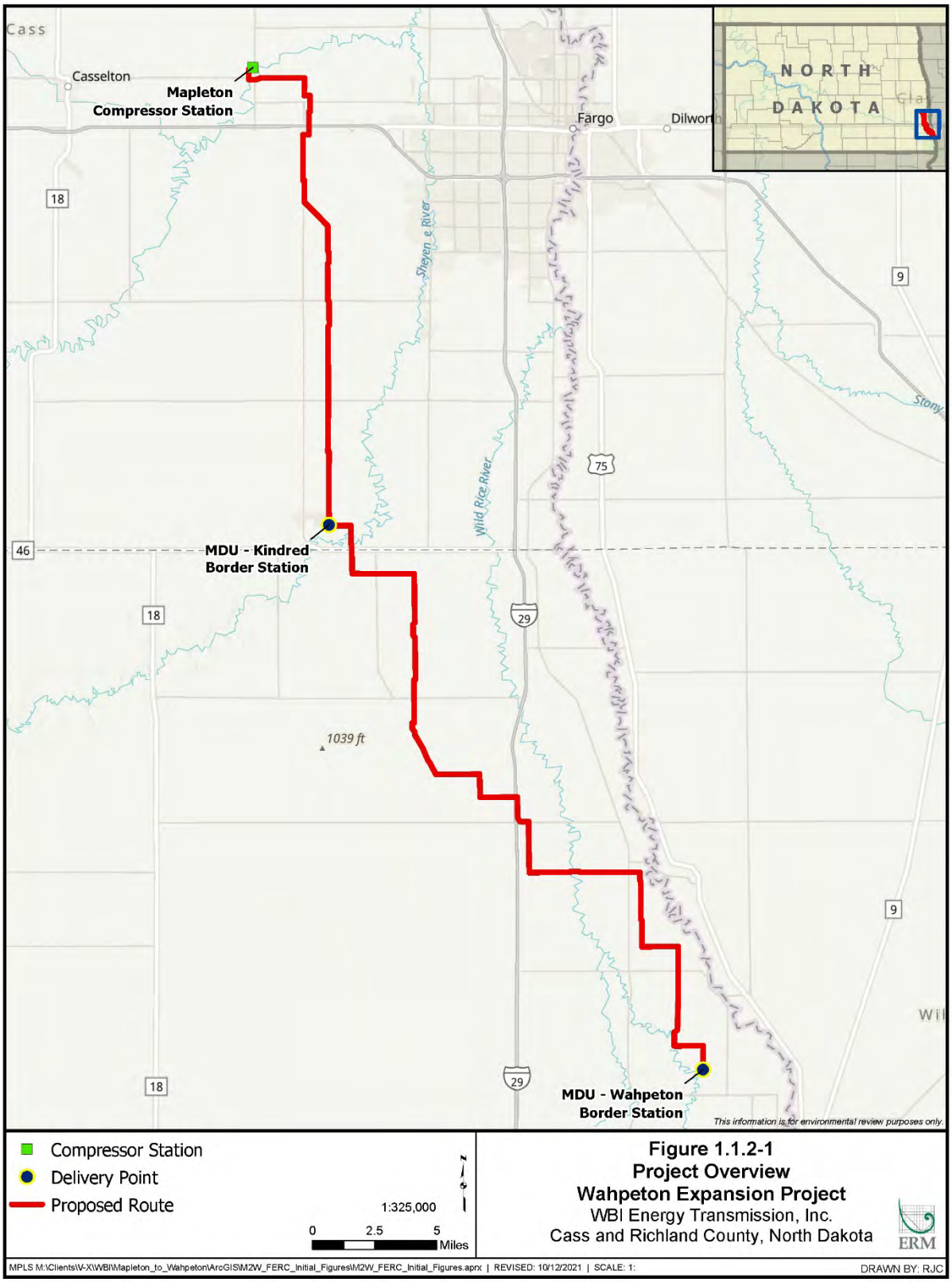
1.1 PROJECT DESCRIPTION

1.1.1 Purpose and Need

WBI Energy intends to construct, own, operate, and maintain the proposed Project to transport an additional 20.6 million cubic feet of natural gas per day to help meet a growing demand for natural gas in southeastern North Dakota. Montana-Dakota Utilities Co. (MDU), a local distribution company, has engaged WBI Energy to construct this Project to fulfill MDU's need for additional uninterrupted natural gas supply at Wahpeton, North Dakota and to extend natural gas service to the community of Kindred, North Dakota for the first time, which has been requested by city officials and residents. The target in-service date for the Project is November 2024.

1.1.2 Location and Description of Facilities

The Wahpeton Expansion Project will include the construction and operation of approximately 58.7 miles of new natural gas pipeline, minor modifications at the Mapleton Compressor Station, new meter/regulating stations near Kindred and Wahpeton (hereafter referred to as the MDU-Kindred and MDU-Wahpeton border stations), block valve settings, and pig launcher/receiver settings. The Project may also include newly constructed farms taps along the pipeline route, the locations of which have yet to be determined. The proposed Project facilities will be located in Cass and Richland Counties, North Dakota (see Figure 1.1.2-1). Topographic route maps depicting the location of the proposed pipeline route and aboveground facility sites are provided in Appendix 1A. Appendix 1B [*to be provided in a later draft of this resource report*] will contain the aerial-based construction alignment sheets for the Project, which will be provided under separate cover in a subsequent draft of this resource report. Information on existing land uses along the proposed pipeline and within the aboveground facility sites will be provided in Resource Report 8.


Cass
Casselton
Mapleton
Compressor Station
Fargo
Dilworth
NORTH
DAKOTA
18
9
Sheyenne River
Wild Rice River
Stony
75
46
MDU - Kindred
Border Station
29
1039 ft
MDU - Wahpeton
Border Station
This information is for environmental review purposes only.
Compressor Station
Delivery Point
Proposed Route
1:325,000
0 2.5 5
Miles
Figure 1.1.2-1
Project Overview
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota
ERM
MPLS M:\Clients\V-X\WBI\Mapleton_to_Wahpeton\ArcGIS\M2W_FERC_Initial_Figures\M2W_FERC_Initial_Figures.aprx | REVISED: 10/12/2021 | SCALE: 1:
DRAWN BY: RJC

1.1.2.1 Pipeline Facilities

The Project pipeline consists of approximately 58.7 miles of 12-inch-diameter natural gas pipeline. The pipeline will have a maximum allowable operating pressure of 1,440 pounds per square inch gauge. The pipeline will begin at WBI Energy's existing Mapleton Compressor Station, near Mapleton, North Dakota in Cass County (milepost [MP] 0.0) and end at the new MDU-Wahpeton Border Station, near Wahpeton, North Dakota in Richland County (MP 58.7). As indicated in Table 1.1.2-1, the first approximately 23.9 miles of the Wahpeton Expansion pipeline will be in Cass County. The remainder (approximately 34.8 miles) will be in Richland County.

TABLE 1.1.2-1

Wahpeton Expansion Project
Proposed Pipeline Facilities

Pipeline Facilities	County	Approximate Mileposts		Length (miles) [a]
		Begin	End	
New Pipeline				
Wahpeton Expansion Pipeline	Cass	0.0	23.9	23.9
	Richland	23.9	58.7	34.8
Total New Pipeline Length				**58.7**

[a] The numbers in this table have been rounded for presentation purposes; as a result, the totals may not reflect the sum of the addends.

1.1.2.2 Aboveground Facilities

In addition to the new pipeline facilities described above, the Wahpeton Expansion Project will include minor modifications at the Mapleton Compressor Station, new delivery stations (MDU-Kindred and MDU-Wahpeton border stations) near Kindred and Wahpeton, seven block valve settings, and four pig launcher/receiver settings (collocated at valve settings 1, 2, 5, and 7). The Project may also include newly constructed farm taps along the pipeline route. The proposed aboveground facilities are summarized in Table 1.1.2-2 and described in more detail below.

TABLE 1.1.2-2

Wahpeton Expansion Project
Proposed New and Modified Aboveground Facilities

Facility Type and Name	Approximate Milepost	Additional Horsepower	County	Description
Compressor Stations				
Mapleton Compressor Station (minor modifications to existing compressor station)	0.0	None	Cass	Installation of additional equipment and facilities (*specific details will be provided in a future draft of the resource report*)
Delivery Stations				
MDU-Kindred Border Station		NA	Cass	New Delivery Station
MDU-Wahpeton Border Station		NA	Richland	New Delivery Station
Other Appurtenant Facilities				
TBD (will be provided with a future draft of this resource report)				

TABLE 1.1.2-2 (Cont'd)

Wahpeton Expansion Project
Proposed New and Modified Aboveground Facilities

Facility Type and Name	Approximate Milepost	Additional Horsepower	County	Description

TBD = To be determined

Modifications to Existing Mapleton Compressor Station

WBI Energy proposes to install equipment and interconnecting piping facilities at the existing Mapleton Compressor Station. However, the specific configuration of the new facilities has yet to be determined. Depending on the final design, the fence line of the current facility may need to be expanded to accommodate these new facilities. No new or modified compression or other air emission sources will be added to the existing compressor station. [*More detailed information will be provided in a future draft of Resource Report 1*].

Delivery Stations and Other Appurtenant Facilities

WBI Energy is currently finalizing the details for the MDU-Kindred and MDU-Wahpeton border stations, block valve settings, pig launcher/receiver settings, and other appurtenant facilities. [*This information will be provided in a future draft of Resource Report 1*].

1.1.3 Land Requirements

Table 1.1.3-1 summarizes the land requirements for the Project. More detailed information regarding land requirements and use will be provided in Resource Report 8. Construction of the Project will affect approximately **[*TBD*]** acres of land, including the pipeline construction right-of-way, additional temporary workspace (ATWS), staging areas, temporary and permanent access roads, and aboveground facilities. Following construction, approximately **[*TBD*]** acres, including the temporary construction right-of-way, ATWS, staging areas, temporary access roads, and temporary workspace at aboveground facility sites, will revert to preconstruction conditions and uses. The remaining approximately **[*TBD*]** acres, including the permanent pipeline easement, permanent aboveground facility sites, and permanent access roads, will be retained for operation of the Project facilities. [*Modifications to construction acreage are in progress. Updated land requirements will be provided in a subsequent draft of this resource report.*]

TABLE 1.1.3-1

Wahpeton Expansion Project
Summary of Land Requirements [a]

Facility	County	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Pipeline Right-of-Way [b]			
Wahpeton	Cass, Richland	533.7	355.8
Subtotal		**TBD**	**TBD**
Additional Temporary Workspace			
Wahpeton	Cass, Richland	TBD	TBD
Subtotal		**TBD**	**TBD**
Staging Areas			
Staging Yard 1	Cass	TBD	0
Staging Yard 2	Richland	TBD	0
Subtotal		**TBD**	**0**
Access Roads			
Temporary access roads	Cass/Richland	TBD	TBD
Permanent access roads	Cass/Richland	TBD	TBD
Subtotal		**TBD**	**TBD**
Aboveground Facilities			
Mapleton Compressor Station	Cass	TBD	TBD
MDU border stations	Cass/Richland	TBD	3.0
Block valves [c]	TBD	0	0
Pig launchers/receivers [d]	TBD	0	0
Subtotal		**TBD**	**TBD**
PROJECT TOTAL		**TBD**	**TBD**

[a] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends.

[b] Based on a 75-foot-wide construction right-of-way for the 12-inch-diameter pipeline, and a 50-foot-wide permanent right-of-way. Includes the appurtenant facilities located within the pipeline right-of-way (i.e., block valves and cathodic protection facilities).

[c] One block valve setting will be constructed and operated within the Mapleton Compressor Station site. Six block valve settings will be constructed entirely within the permanent pipeline right-of-way. Block valve settings 2 through 6 will require approximately 2.0 acres each to construct and between 0.1 and 0.25 acre to operate depending on whether a pig launcher/receiver setting will be collocated with it. Block valve setting 7 will require 3.0 acres to construct and 0.5 acre to operate.

[d] One pig launcher/receiver setting will be constructed and operated within the Mapleton Compressor Station site. Three pig launcher/receiver settings will be collocated with block valve settings 2, 5, and 7; no additional land will be required for construction and operation of these facilities.

TBD = To be determined

1.1.3.1 Pipeline Right-of-Way

Construction of the proposed 12-inch-diameter pipeline will require a standard 75-foot-wide construction right-of-way in both uplands and wetlands. As shown in the drawings provided in Appendix 1D [*This drawing will be provided in a future draft of Resource Report 1*], the construction right-of-way typically will consist of a 50-foot-wide working side and a 25-foot-wide spoil side for the 75-foot-wide construction right-of-way. Following construction, a 50-foot-wide permanent easement (25 feet on either side of the pipeline centerline) will be retained for pipeline operations; the remainder of the construction right-of-way will be restored to pre-existing conditions. In total, construction of the pipeline right-of-way will require approximately **[*TBD*]** acres, of which approximately **[*TBD*]** acres will be retained as permanent easement. Appendix 1D provides typical pipeline construction right-of-way cross sections.

To minimize the Project footprint, WBI Energy proposes to collocate new pipeline facilities along road corridors, utilities, and property lines to the extent practicable. As shown in the summary table in Appendix 1E [*Detailed information on collocation will be provided in a future draft of Resource Report 1*], the new pipeline will be collocated (i.e., within 150 feet of the road/utility) with roads or electric transmission lines for 36.0 miles (or 61 percent) of its length, including:

- 34.1 miles (58 percent) along roads; and
- 1.9 miles (3 percent) along electric transmission lines.

1.1.3.2 Additional Temporary Workspace

ATWS outside of the 75-foot-wide construction right-of-way will be required for certain road crossings, points of intersection along the route, areas where special construction methods will be implemented (e.g., the horizontal directional drill [HDD] or guided bore method), and areas where additional space is needed for storage of stripped topsoil. In total, use of ATWS during construction will affect approximately **[*TBD*]** acres, all of which will be restored to preconstruction condition. Locations of ATWS will be depicted on the route maps provided in Appendices 1A and 1B. Appendix 1B will be provided with a future version of this resource report and will be filed under separate cover.

Unless topographic or other factors impose constraints, ATWS will be set back at least 50 feet from the edges of waterbodies and wetlands except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. [*Requests for modifications to the FERC's Upland Erosion Control, Revegetation, and Maintenance Plan or Wetland and Waterbodies Construction and Mitigation Procedures, if any, will be provided in a later darft of this resource report.*]

1.1.3.3 Staging Areas

Staging areas are still to be determined but it is anticipated that the construction contractor will require two or three staging areas for office trailers, parking, vehicle maintenance, and storage of pipe and equipment before and during construction of the Project (see Table 1.1.3-1). [*Staging areas will be depicted on the Project route maps provided as Appendices 1A and 1B in a later draft of this report.*]

As shown in Table 1.1.3-1, use of the staging areas will affect approximately [***TBD***] acres. Preparation of the staging areas will consist of topsoil segregation and minor grading and leveling. Staging areas will be restored to preconstruction condition in accordance with the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan)[1] or in a condition as specified in landowner agreements.

1.1.3.4 Temporary and Permanent Access Roads

WBI Energy will use existing public and private access roads on a temporary basis to transport personnel, equipment, vehicles, and materials to the proposed Project work areas during construction. New permanent roads will be required for access to the new MDU-Kindred and MDU-Wahpeton border stations and to each valve setting or pig launcher/receiver site. The new roads to the MDU-Kindred and MDU-Wahpeton border stations will be gravel. The new roads to the valve setting and pig launcher/receiver sites will likely be gravel and/or dirt. [*A list of roads to be used by the Project, and the modifications to roads if any, will be provided as an appendix to Resource Report 8. Locations of access roads will be depicted on the Project route maps provided as Appendices 1A and 1B in a subsequent draft of Resource Report 1.*]

Use of the temporary access roads will affect approximately **[*TBD*]** acres. If any of the temporary access roads are damaged by the Project, WBI Energy will restore the roads to pre-disturbed condition or better. As a result, the Project will have no permanent impact on these roads.

1.1.3.5 Aboveground Facilities

Modifications to Existing Mapleton Compressor Station

The proposed modifications to WBI Energy's existing Mapleton Compressor Station at MP 0.0 will be constructed on the existing compressor station property. The installation of the new facilities will affect approximately **[*TBD*]** acres. Approximately **[*TBD*]** acres of this area will be within the fenced and maintained area used for operation of the compressor station. The remainder consists of temporary workspace, which will be restored to preconstruction conditions following construction. Topsoil will be removed and segregated from areas where there will be buried pipe; this topsoil will be spread over the buried pipe during restoration of this area. A plot plan for the modifications at the compressor station is provided as Appendix 1C. [*This plot plan will be filed as part of a future draft of Resource Report 1*].

Delivery Stations and Other Appurtenant Facilities

WBI Energy is currently finalizing the details for the MDU-Kindred and MDU-Wahpeton border stations, block valve settings, pig launcher/receiver facilities, and other appurtenant facilities. The current design for the MDU-Kindred and MDU-Wahpeton border stations includes approximately 2.5 acres to construct each MDU border station. Approximately 1.5 acres of the construction workspace will be retained to operate each border station.

The first block valve setting at MP 0.0 will be constructed and operated within the Mapleton Compressor Station site. The land for the construction and operation of this facility is covered in the land requirements at the Mapleton Compressor Station described above. The other six block

[11] The FERC Plan is available online at: http://www.ferc.gov/industries/gas/enviro/guidelines.asp.

valve settings will be constructed within the pipeline right-of-way. Valve settings 2 through 6 will require approximately 2.0 acres each to construct and between 0.1 and 0.25 acre at each site to operate depending on whether a launcher/receiver facility will also be located with the valve. Valve setting 7 will require 3.0 acres to construct and 0.5 acre to operate.

The first pig launcher/receiver setting will be constructed and operated within the Mapleton Compressor Station site. The three other pig launcher/receiver settings will be collocated with valve settings 2, 5, and 7. The land required for these facilities is covered in the compressor station and block valve requirements described above.

1.2 CONSTRUCTION SCHEDULE AND WORKFORCE

WBI Energy anticipates commencement of certain preconstruction activities (e.g., establishing pipe and contractor yards) may occur in the fall of 2023, with construction of the Project beginning in April 2024, subject to the receipt of necessary permits and regulatory approvals. WBI Energy anticipates that construction of the Project facilities will be completed by October 2024 with all facilities being placed into service by November 2024.

Based on the current construction schedule, WBI Energy anticipates that construction during winter conditions will not be necessary. However, if a change in the construction schedule necessitates that construction activities occur during the winter months, WBI Energy will file a *Plan for Construction and Stabilization in Winter Conditions* (Winter Construction Plan) with FERC for review/approval prior to conducting winter construction activities. Construction activities will generally occur Monday through Saturday from 7:00 a.m. to 7:00 p.m. However, certain activities will occur up to 24 hours per day, including Sundays and potentially federal holidays. These activities will include HDD and guided bore crossings (if any are conducted), hydrostatic testing and associated activities, critical tie-ins, operation of pumps associated with a dam-and-pump crossing (if necessary), and aboveground facility commissioning. Additionally, certain unforeseen circumstances may require unplanned construction activities outside the typical work hours. These activities may include, but are not limited to, completing in-progress construction activities and wetland/waterbody crossings delayed by an unanticipated event (e.g., severe weather or constructability issues), incident response procedures/measures, and emergency equipment repairs/maintenance.

WBI Energy currently anticipates that construction of the proposed pipeline will be accomplished using one or two construction spreads with a combined peak temporary workforce of about 225 people and an average workforce of about 175 people, including inspection crews. Construction of the aboveground facilities and compressor station modifications will require a temporary workforce of about 15 additional people working for up to 7 weeks at each facility. WBI Energy is still evaluating operational staffing needs but anticipates one new hire to assist in operation and maintenance of the new facilities. Additional information regarding construction and permanent workforce requirements will be provided in Resource Report 5.

1.3 CONSTRUCTION AND RESTORATION PROCEDURES

The Project will be designed, constructed, operated, and maintained in accordance with all applicable requirements defined by U.S. Department of Transportation—Pipeline and Hazardous Materials Safety Administration regulations in 49 CFR 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*; by 18 CFR 380.15, *Siting and*

Maintenance Requirements; and by other applicable federal and state regulations, except as otherwise specified in this application or approved by the appropriate regulatory agency.

WBI Energy proposes to conduct Project activities in accordance with the 2013 versions of the FERC Plan and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures)[2].

WBI Energy will implement additional construction, restoration, and mitigation plans prepared for the Project. These will or may include the following as needed: *Spill Prevention, Control, and Countermeasures Plan*; *Horizontal Directional Drill / Guided Bore Drilling Fluid Monitoring and Operations Plan*; *Fugitive Dust Control Plan*; *and Plan for Unanticipated Discovery of Historic Properties or Human Remains during Construction*. [*Copies of these plans will be provided in a future draft of this resource report*].

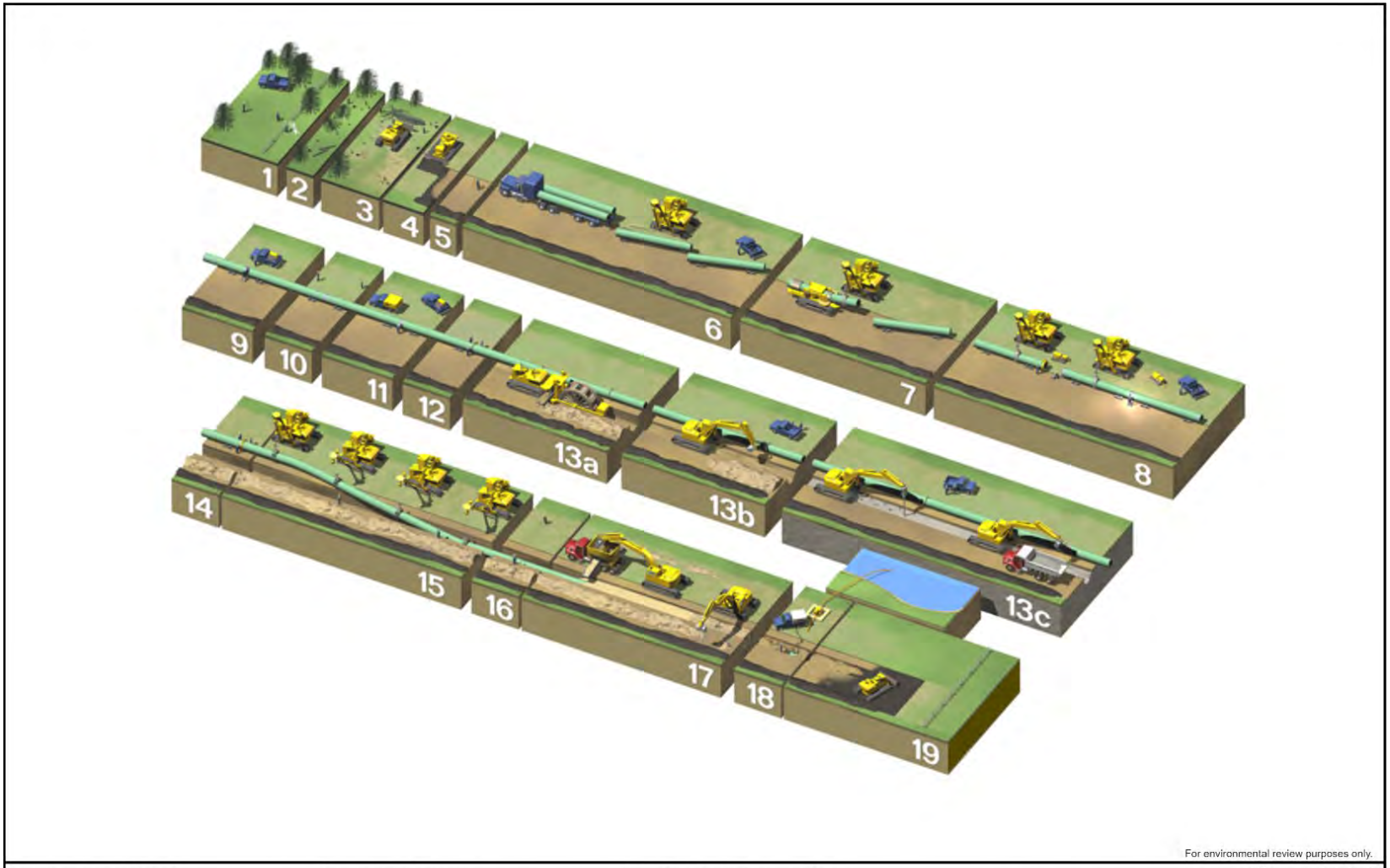
1.3.1 General Pipeline Construction Procedures

Construction of the proposed pipeline will follow industry-standard practices and procedures as described below. Conventional open-ditch construction methods will be used to install most of the proposed pipeline. In a typical scenario, construction involves a series of discrete activities conducted in a linear sequence. These include survey and staking; right-of-way clearing and grading; pipe stringing, bending, and welding; trenching; lowering-in and backfilling; hydrostatic testing; final tie-in; commissioning; and right-of-way cleanup and restoration. Figure 1.3.1-1 illustrates each of the steps in a typical construction scenario. A description of each step in the process is provided in the following sections.

1.3.1.1 Survey and Staking

Affected landowners will be notified before preconstruction survey and staking are conducted. After these notifications, WBI Energy's survey crews will stake the pipeline centerline and the limits of the construction right-of-way and ATWS areas. Additionally, the survey crew will flag the location of approved access roads. Wetland boundaries and other environmentally sensitive areas will also be marked at this time.

[2] The FERC Procedures is available online at: http://www.ferc.gov/industries/gas/enviro/guidelines.asp.



1. Survey and Staking
2. Clearing
3. Front-End Grading
4. ROW Topsoil Stripping
5. Restaking Centerline of Trench
6. Stringing Pipe
7. Field Bending Pipe
8. Line-Up, Initial Weld
9. Fill & Cap, Final Weld
10. As-Built Footage
11. X-Ray Inspection, Weld Repair
12. Coating Field Welds
13a. Trenching (wheel ditcher)
13b. Trenching (backhoe)
13c. Trenching (rock)
14. Inspection & Repair of Coating
15. Lowering Pipe into Trench
16. As-Built Survey
17. Pad, Backfill, Rough Grade
18. Hydrostatic Testing, Final Tie-in
19. Replace Topsoil, Final Clean-Up, Full Restoration

Figure 1.3.1-1
Typical Pipeline Construction Sequence
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

Environmental Resources Management
www.erm.com
ERM

1.3.1.2 Clearing and Grading

Prior to beginning ground-disturbing activities, WBI Energy's contractor will coordinate with the North Dakota One-Call system to have existing underground utilities (i.e., cables, conduits, and pipelines) identified and flagged. Once this process is complete, a clearing crew will clear the work area of vegetation and other obstacles, including trees (if necessary), stumps, logs, brush, and rocks. If tree removal is required, WBI Energy will minimize tree removal during construction to the extent feasible. Cleared vegetation and stumps will be chipped (except in wetlands), put to beneficial use such as mulch for erosion control, or hauled off-site to a commercial disposal facility. As needed, snow will be plowed to the edge of the construction right-of-way and stockpiled on the spoil side of the corridor.

Following clearing, the construction right-of-way and ATWS will be graded where necessary to provide a level work surface to allow safe passage of construction equipment and emergency vehicles. Topsoil will be segregated in accordance with the FERC Plan and Procedures. If the ground is relatively flat and does not require topsoil grading or segregation, rootstock will be left in the ground to facilitate restoration of the right-of-way. In areas disturbed by grading, and as required by the FERC Plan and Procedures, temporary erosion and sediment controls will be installed within the right-of-way to minimize erosion. These erosion and sediment controls will be inspected and maintained throughout the construction and restoration phases of the Project, as appropriate, and as required by the FERC Plan and Procedures.

1.3.1.3 Pipe Stringing, Bending, and Welding

Individual joints of pipe will be trucked to the construction right-of-way and strung along the trenchline in a single, continuous line. Individual sections of pipe will be bent, where necessary, to allow for a uniform fit with the contours at the bottom of the trench and horizontal points of intersection. Typically, a track-mounted, hydraulic pipe-bending machine will tailor the shape of the pipe to conform to the contours of the terrain. After the pipe sections are bent, they will be welded together into long sections and placed on temporary supports. Welding will be conducted in compliance with 49 CFR 192 and American Petroleum Institute Standard 1104, *Welding of Pipelines and Related Facilities*. Completed welds will be visually and non-destructively inspected, and all pipe welds will be coated in accordance with required specifications. The coating will be inspected for defects and repaired, if necessary, prior to lowering the pipe into the trench.

1.3.1.4 Trenching

Trenching, which involves excavating a ditch for the pipeline, will be conducted with rotary trenching machines, track-mounted backhoes, or other similar equipment. Trench spoil will be deposited adjacent to the trench within the construction right-of-way, and adjacent to the topsoil pile. The trench will be excavated to a depth that provides sufficient cover over the pipeline after backfilling. Typically, the trench will be excavated to a depth of about 5 feet to allow for a normal depth of cover of 4 feet over the pipeline, or any appurtenances, after construction. The width at the top of the trench will vary to allow the side slopes to be adapted to local conditions at the time of construction. If trench dewatering is required within or off the construction right-of-way, it will be conducted in a manner that will not cause erosion or result in silt-laden water flowing into any waterbody or wetland.

Based on a preliminary review of the soils present in the Project area, WBI Energy does not expect that blasting will be required to excavate the trench.

1.3.1.5 Lowering-in and Backfilling

Prior to lowering-in, the trench will be inspected to ensure it is free of rocks and other debris that could damage the pipe or its protective coating. It also will be checked for wildlife that may be trapped at the bottom of the trench. The pipe will then be lifted from the temporary supports and lowered into the trench using side-boom tractors. As necessary, trench breakers will be installed in the trench around the pipe in steeply sloped areas to prevent movement of subsurface water along the pipeline. After lowering-in, the trench will be backfilled with previously excavated materials using bladed equipment or backhoes. If the excavated material is rocky, the pipeline will be protected with a rock shield or covered with more suitable fill. Clean fill may be obtained by removing rock from the excavated soil. Topsoil will not be used to pad the pipe.

1.3.1.6 Hydrostatic Testing

After backfilling, hydrostatic testing activities will occur. The source(s) of water for hydrostatic testing has yet to be determined. It is anticipated that water for hydrostatic testing of the pipeline and aboveground facility piping will be obtained from nearby surface water sources, municipal sources, and/or a water depot.[3] The total volume of hydrostatic test water required for the Project will be about **[*TBD*]** million gallons. After the test is complete, the water will be discharged to approved, well-vegetated upland area(s) in accordance with permit conditions and FERC's Plan. Additional information on hydrostatic testing and the gallons of water to be used will be provided in Resource Report 2.

1.3.1.7 Final Tie-In and Commissioning

After hydrostatic testing, the final pipeline tie-in will be completed and commissioning will commence. Commissioning involves activities to verify that equipment is properly installed and working, controls and communications systems are functional, and the pipeline is ready for service. The pipeline will be cleaned, dried, and inspected using in-line inspection tools (pigs) to detect anomalies in the pipe that may have been introduced during construction, and prepared for service by purging the line of air and loading the line with natural gas.

1.3.1.8 Cleanup, Restoration, and Revegetation

Final cleanup will begin after backfilling and as soon as weather and site conditions permit. Every reasonable effort will be made to complete final cleanup (including final grading and installation of permanent erosion control devices) within timeframes required by permits, in accordance with landowner requests, or as required by the FERC Plan and Procedures.

During cleanup, construction debris will be collected and taken to a disposal facility. Preconstruction contours will be restored to pre-existing conditions as closely as possible. Segregated topsoil will be spread over the surface of the right-of-way and permanent erosion

[3] If WBI Energy determines that it is necessary to obtain water from surface water sources for hydrostatic testing or other Project-related purposes, it will obtain any required permits or approvals in accordance with state regulations and FERC requirements.

controls will be installed. Revegetation measures will be implemented in accordance with the FERC Plan and Procedures.

Markers showing the location of the pipeline will be installed at fence crossings, road crossings, points of intersection, and other areas as necessary to identify WBI Energy as the owner of the pipeline and convey emergency information in accordance with applicable government regulations, including USDOT safety requirements.

1.3.2 Specialized Pipeline Construction Procedures

In addition to standard pipeline construction methods, WBI Energy will use special construction techniques where warranted by site-specific conditions. These special techniques will be used when constructing across waterbodies, wetlands, roads and railroads, and agricultural areas. Each of these specialized measures is described below.

1.3.2.1 Waterbody Crossings

WBI may utilize a variety of waterbody crossing methods depending on permits and what method best fits the circumstances at each crossing. Potential methods may include the open cut, HDD, guided bore, flume, or dam and pump. In each case and for each method, WBI Energy will adhere to measures specified in the FERC Procedures and other plans as well as any additional requirements that may be specified in federal or state waterbody crossing permits. Pipeline depth of cover will be increased at waterbody crossings where practicable, approximately 15 feet at canal and ditch crossings, and approximately 25 feet at the Sheyenne, Maple, and Wild Rice River crossings.

A complete list of the waterbodies along the pipeline route, and the construction method proposed for each crossing, will be provided in Resource Report 2.

Open-Cut Method

Crossings of some flowing waterbodies may be accomplished using the open-cut method. In these cases, backhoe-type excavators operating from the banks of the waterbody will be used to open a trench while flow is maintained across the channel. Spoil excavated from the trench will be placed on the bank above the high water mark for use as backfill. A prefabricated segment of pipeline will then be placed into the trench using side-boom tractors. Concrete coating or set-on weights will be utilized, as necessary, to provide negative buoyancy for the pipeline. Once the trench is backfilled, the banks will be restored as near as practicable to preconstruction contours and stabilized. Stabilization measures will include seeding, installation of erosion control blankets, or installation of riprap materials, as appropriate. Excavated material not required for backfill will be removed and disposed of at upland disposal sites.

Throughout the construction process, WBI Energy will follow the FERC Procedures and other site-specific plans to avoid or minimize impacts on water quality. Construction activities will be scheduled so that the trench is not excavated across the waterbody until immediately prior to pipe laying activities. The duration of in-stream construction activities (excluding blasting, if required) will be limited to 24 hours across minor waterbodies (those 10 feet in width or less) and 48 hours across intermediate waterbodies (those between 10 and 100 feet in width). Excavated spoil will be stockpiled at least 10 feet from the edge of the waterbody, and appropriate erosion control devices will be installed in the field.

HDD and Guided Bore Methods

The HDD and guided bore methods are processes that avoid direct impacts on sensitive environmental features, allowing for trenchless construction across an area by drilling a hole below the depth of a conventional lay and then pulling a prefabricated section of pipe through the hole. Both methods follow similar processes. The primary differences between the methods are the length of the bore, size of the drill rig, and potentially the ATWS needed to accomplish the drill, which are shorter and smaller for a guided bore. WBI Energy is still determining where (at which waterbodies) the HDD and guided bore methods would be used. The following describes the process and steps that would be used where these crossing methods are employed.

For HDD/guided bore crossings, one common method to steer the drill head is to hand-lay electric-grid guide wires along the pipeline centerline to create an electromagnetic sensor grid that will help the operator control the drill head. In thickly vegetated areas, a small pathway approximately 2 to 3 feet wide may be cut using hand tools to lay the electric-grid guide wires, resulting in minimal ground and vegetation disturbance. No large trees would be cut as part of this process. Other steering techniques may be employed pending the selection of the drilling contractors.

To begin each crossing, a drill rig would be placed on the entry side of the HDD/guided bore and a small pilot hole would be drilled along a predetermined path beneath the waterbody. Electromagnetic sensors located on the tip of the drill bit would allow the operator to follow the sensor grid along the prescribed path. Once the pilot hole is completed, the sensor grid would be removed and the hole would be enlarged through a process called reaming. A reaming tool would be installed at one end of the drill string on the exit side of the pilot hole, and then pushed or drawn back to the drill rig to enlarge the hole. Several passes with progressively larger reaming tools may be required to enlarge the hole to a sufficient diameter to accommodate the pipeline. During this process, drilling fluid, or mud, consisting of in-situ material and water (and possibly bentonite clay) would be circulated through the hole to remove drill cuttings and maintain the integrity of the hole. Once the reaming process is complete, a prefabricated segment of pipe would be attached to the drill string on the exit side of the crossing, and pulled back through the hole toward the drill rig. The pipe segment may be hydrostatically tested prior to its installation, and once installed, connected on either side of the crossing to adjoining sections of pipe. The pipe segment would be hydrostatically tested with the remainder of the pipeline system.

Although the HDD and guided bore methods typically avoid impacts on water quality by precluding disturbance of the waterbody bed and banks, an unintended release of drilling mud (referred to as an inadvertent return) could occur if drilling fluids escape the drill hole and are forced through the subsurface substrate to the ground surface. In order to minimize potential impacts of inadvertent releases of drilling fluids, WBI Energy would implement the measures identified in a *Horizontal Directional Drill / Guided Bore Drilling Fluid Monitoring and Operations Plan*. This plan would describe procedures to be used to monitor, contain, and clean up any potential releases of drilling fluid. It would also identify contingency measures to be implemented in the event that an HDD or guided bore is unsuccessful. [*A copy of the plan will be provided in a later draft of this report.*]

Flume Method

The flume method consists of installing one or more flumes in the stream bead and the use of temporary upstream and downstream dams to isolate the stream flow and convey it across

the construction work area. The dams are typically constructed of sandbags and plastic sheeting. This method allows for trenching activities to occur under relatively dry conditions beneath the flume pipes, avoiding disruption to water flow.

Dam-and-Pump Method

The dam-and-pump method involves the installation of temporary upstream and downstream dams to isolate the crossing area from the rest of the waterbody and the use of one or more pumps and hoses to transport stream flow around the construction work area. The dams are typically constructed of sandbags and plastic sheeting. This method, like the flume method allows for trenching activities to occur under relatively dry conditions while avoiding disruption to water flow.

1.3.2.2 Wetland Crossings

Construction across wetlands will be conducted in accordance with the FERC Procedures, site-specific modifications to the FERC Procedures requested by WBI Energy and approved by the FERC, and any additional requirements specified in federal or state water crossing permits. Typical methods for construction across wetlands are described below. A list of wetland crossings along the pipeline route will be provided in Resource Report 2.

Wetland boundaries will be delineated and marked in the field prior to construction activities. Temporary erosion control devices will be installed as necessary after initial disturbance of wetlands or adjacent upland areas to prevent sediment flow into wetlands. These devices will be maintained until revegetation of wetlands is complete. Trench plugs will be installed as necessary to maintain wetland hydrology. Construction equipment operating in wetland areas will be limited to that needed to clear the right-of-way, dig the trench, install the pipeline, backfill the trench, and restore the right-of-way.

The top 12 inches of topsoil will be stripped from the area directly over the trenchline (except in standing water or in saturated conditions) and stockpiled separately from the subsoil. The segregated topsoil will be restored to its original location following installation of the pipe and backfilling of the trench in accordance with the FERC Procedures. Materials such as timber mats placed in wetlands during construction will be removed during rough grading and final cleanup, and the preconstruction contours of the wetland will be restored. Permanent erosion control measures will then be installed in accordance with the FERC Procedures, and disturbed areas within wetlands will be temporarily stabilized with a cover species such as annual ryegrass as soon as weather conditions permit. Wetland areas will then be allowed to return to preconstruction conditions using the original seed stock contained in the conserved topsoil layer.

The specific crossing procedures used to install the pipeline across wetlands will depend on the level of soil stability and saturation encountered during construction. Construction across unsaturated wetlands that can support the weight of equipment will be conducted in a manner similar to the upland construction procedures described above. In areas that are proposed for conventional open trench construction, but where soil conditions may not support the weight of equipment, timber mats will be used to minimize disturbance to wetland hydrology and maintain soil structure.

The pull method of construction may be used in inundated or saturated conditions where wetland soils and hydrology cannot support conventional pipe laying equipment, or in areas that

have significant quantities of water that would allow for the pipe to be floated through the open ditch. With this method, construction and excavation equipment will work from temporary work surfaces and a prefabricated pipeline segment will be pulled or floated into position, or carried into place, then sunk with buoyancy control devices and placed in the trench.

1.3.2.3 Road and Railroad Crossings

Construction across paved roads, highways, and railroads will be conducted in accordance with the FERC Plan and requirements identified in road and railroad crossing permits or approvals. Additional cover will be provided at road, railroad, and waterbody crossings. At roads, the top of the pipe will be approximately 6 feet below the bottom of the road ditch. At railroads, the top of the pipe will be approximately 12 feet below the base of the rail. Most paved roads, highways, and railroads will be crossed by guided boring beneath the roadbed or railroad (see the typical construction drawings provided in Appendix 1D). Boring will consist of the following: 1) excavating a pit on each side of the road or railroad; 2) placing boring equipment within the pits; 3) boring a hole under the roadbed or railroad that is greater than or equal to the diameter of the pipe; and 4) pulling a section of pipe through the hole. For long crossings, sections may be welded into a pipe string before being pulled through the bore hole. Typically, there is little or no disruption to traffic at road, highway, or railroad crossings during boring operations.

Unpaved roads, two-tracks, trails, and driveways, as well as roads in areas with a high water table, will be crossed using the open-cut method and then restored to preconstruction condition. Most open-cut road crossings will be completed and the road restored in a few days. WBI Energy will maintain one lane of access or establish alternative access or detours at these locations.

Crossings of roads and railroads will be uncased unless a casing is required by the appropriate regulatory authority with jurisdiction over the crossing. For all road and railroad crossings, the pipeline has been designed in accordance with USDOT regulations at 49 CFR 192, the American Society of Mechanical Engineers' code (B31.8) for gas transmission and distribution piping systems, and the American Petroleum Institute's Recommended Practice 1102 for steel pipelines crossing railroads and highways. Uncased crossings are preferred over cased crossings due to the increased potential for problems with installation, the cathodic protection system, and corrosion on cased crossings. A list of road and railroad crossings along the pipeline route will be included in Resource Report 8.

1.3.2.4 Agricultural Areas

In active croplands, pastures, rangeland, or hayfields, topsoil will be stripped and segregated in accordance with the FERC Plan. Topsoil typically will be stripped over the trench plus spoil storage area. Following pipeline installation, the subsoil will be returned to the ditch and the topsoil replaced in the area from which it was stripped. As necessary, the working side of the right-of-way will be de-compacted prior to final grading and restoration.

WBI Energy's preliminary assessment indicated that drain tiles are prevalent along the pipeline route. WBI Energy will consult with landowners in agricultural areas prior to construction in an effort to identify any known drain tile locations. Known drain tiles will be noted on the alignment sheets and survey crews will mark the drain tile locations with highly visible flagging at each right-of-way edge and the centerline of the pipe, where applicable. In general, one of two methods will be employed for the pipeline to be constructed across drain tiles to mitigate impacts,

including: 1) cutting and replacing drain tile where the pipeline will be installed beneath the existing drain tile elevation; and 2) installation of a site-specific drain tile header system where the pipeline will be installed at or near the same elevation as the existing drain tile elevation. Previously undocumented drain tile discovered during grading or trenching will also be flagged at each right-of-way edge. Survey data will be collected at the location of broken tile. If a damaged drain tile is flowing at the time of discovery, temporary repairs and screen installation will be completed prior to the end of the workday. If a damaged drain tile is not flowing at the time of discovery, the drain tile will be screened and temporarily repaired within 24 hours. Temporary repairs may be removed to accommodate pipe lowering and backfilling.

Permanent drain tile repairs will be made by a qualified drain tile specialist, the landowner, or a landowner's representative. In general, if drain tiles are damaged during construction, they will be scoped or snaked to determine the extent of the damage and the necessary repairs. The existing drain tile will be inspected within the entire width of the right-of-way. Damaged, broken, or cracked drain tiles will be replaced with new tiles. The quality, size, and flow of replacement tiles will equal or exceed that of the damaged tile. The drain tile will be permanently repaired so that its original gradient and alignment are restored. Replacement tiles will be supported with a perforated corrugated steel pipe, or similar system. Repairs will be inspected prior to backfilling the trench area. A table summarizing the existing drain tile systems crossed by the Project that WBI Energy has identified to date will be included in Resource Report 8.

If livestock fences (including electric fences) need to be cut to access the construction right-of-way, WBI Energy will brace and secure the fencing prior to construction, and will repair the fences to preconstruction condition or better during the restoration phase of the Project. If it is determined that livestock grazing occurs in areas crossed by the proposed right-of-way, WBI Energy will work with landowners either to remove livestock to alternate fields during construction or maintain adequate fencing in grazing areas. If cattle are present during construction, WBI Energy will install temporary fencing around the right-of-way in areas where the pipe trench is left open overnight if requested by landowner. WBI Energy additionally will negotiate with landowners regarding a potential grazing deferment to allow vegetation to establish within the right-of-way after construction is complete.

WBI has not identified any irrigation systems along the pipeline route and therefore does not anticipate the need for any specialized construction methods to cross these systems.

1.3.2.5 Side Slopes

The land crossed by the Project is flat and no side-sloping terrain has been identified. Therefore, WBI Energy does not anticipate the need for side-slope construction methods.

1.3.2.6 Residential Construction

The Project does not cross any residential areas or pass within 50 feet of a residence. The closest residence is approximately 400 feet from the proposed workspace. WBI Energy is working with landowners to determine the location of other potentially sensitive residential resources, but given the distance of residences from the route, it is also unlikely that there are any wells near the pipeline. In the event that changes in the Project design require construction in residential areas or within 50 feet of a residence, WBI Energy will comply with FERC regulations and file the necessary information for these crossings.

1.3.3 Aboveground Facility Construction Procedures

1.3.3.1 Compressor Station Modifications, Delivery Stations

Construction of the proposed aboveground facilities will include a standard sequence of events. Construction will begin with clearing (including snow plowing, as necessary) and grading of the sites to establish level grades for the facilities. Subsequent construction activities will include preparing foundations, installing underground piping, erecting and installing buildings, installing aboveground piping and equipment, testing the piping, testing the control equipment, cleaning up the work area, and graveling access roads and parking areas. Once construction is complete, areas within the fence line but outside the new facilities will be covered with gravel or maintained in an herbaceous state. Each station site will be fenced for security. Safety and control devices will be installed and tested prior to operation. The pig launcher/receivers will be located within the footprints of the Mapleton Compressor Station, and valve setting sites.

None of the facilities to be installed or modified have known asbestos-containing material (ACM). Per Chapter 33.1-15-13 of the North Dakota Administrative Code, prior to any demolition/renovation of Project facilities, a thorough asbestos inspection will be conducted by an inspector certified in North Dakota to identify all ACM. If ACM is identified, notification of asbestos removal activities will be submitted to the North Dakota Department of Environmental Quality, Asbestos Control Program, for all demolition activities involving ACM and any renovation activity that requires removal or disturbance of 160 square feet or more of regulated ACM on facility components or 260 linear feet or more of regulated ACM on pipes. All ACM will be removed by individuals trained and certified to handle ACM in accordance with applicable requirements. ACM will be transported off Project facilities in accordance with applicable regulations and disposed at a facility permitted to manage asbestos waste.

1.3.3.2 Block Valves

Construction of block valve settings will include excavating, installing underground piping and aboveground valve assembly, testing the control equipment, backfill and grading, cleaning up the work area, and graveling the finished site area. The block valve setting construction will be concurrent with the construction of the pipeline, with installation of the block valve setting occurring before or after hydrostatic testing of the pipeline. At each site, the permanent facility will be stabilized with gravel, the perimeter will be fenced, and any disturbed area outside the fenced enclosure will be seeded with appropriate vegetation species.

1.4 ENVIRONMENTAL COMPLIANCE, TRAINING, AND INSPECTION

WBI Energy is committed to constructing and operating the Project in a manner that will minimize environmental impacts and comply with applicable permits and approvals, the FERC Plan and Procedures, and other environmental plans or requirements described in this resource report. WBI Energy will train company and contractor personnel to familiarize them with environmental plans and other conditions, and provide environmental inspectors (EIs) to monitor compliance during construction. WBI Energy will be responsible for implementation of environmental requirements during construction of all Project facilities.

1.4.1 Environmental Compliance

WBI Energy will incorporate relevant environmental requirements and Project-specific environmental mitigation plans into the construction bid documents for the Project. Additionally, WBI Energy will review these requirements with prospective contractors in a pre-bid meeting. These steps notwithstanding, the contractor selected for the Project will be required to comply with all relevant requirements regardless of whether they were described in bid documents or discussed at the meeting. During construction, if the contractor does not comply with environmental requirements, WBI Energy will direct the contractor to comply and may take other corrective actions as necessary, including issuing stop-work orders, until the contractor is in compliance.

1.4.2 Environmental Training

Prior to construction, WBI Energy will conduct environmental training for company and contractor supervisory personnel. The training program will focus on the FERC Plan and Procedures; Project-specific Certificate and permit conditions; and Project-specific construction, restoration, and mitigation plans. In addition, WBI Energy will provide large-group training sessions before work crews begin construction. Periodic follow-up training for groups of newly assigned personnel will be provided as necessary by the EIs.

1.4.3 Environmental Inspection

WBI Energy will assign a minimum of one EI per spread to the Project, with additional inspectors assigned as necessary, to monitor environmental compliance. WBI Energy's EIs will have peer status with other inspectors and will report directly to the WBI Energy environmental personnel. The EIs' responsibilities will be as specified in the FERC Plan, and will include, but not be limited to, the following: 1) monitoring the contractor's compliance with environmental measures required by the Certificate, other permits or approvals, the FERC Plan and Procedures, and any other plans described in this resource report; 2) taking corrective actions, including issuing stop-activity orders; 3) documenting compliance with environmental requirements; and 4) preparing status reports for submittal to FERC's environmental staff. The EIs will also act as liaisons between WBI Energy and representatives of environmental regulatory agencies that may visit the Project during construction.

1.5 OPERATIONS AND MAINTENANCE

WBI Energy will operate and maintain the new pipeline and aboveground facilities in accordance with all applicable federal and state requirements, including the minimum federal safety standards identified in 49 CFR 192 *Transportation of Natural and Other Gas by Pipeline*. Operation and maintenance of the facilities will be performed by or at the direction of WBI Energy.

The pipeline will be inspected periodically on foot, all-terrain vehicle, or other vehicle as required by applicable regulatory requirements to identify potential concerns that may affect the safety and operation of the pipeline. Pipeline markers and signs will be inspected and maintained or replaced, as necessary, to ensure that pipeline locations are clearly identified. Field personnel will advise the appropriate operations personnel of new construction along or near the pipeline system. Line patrol of highway crossings will be completed as required by the USDOT. If pipeline patrols or vegetation maintenance identify areas on the right-of-way where erosion is occurring,

WBI Energy will repair existing erosion control devices or install additional devices as necessary to stabilize the area and prevent future erosion.

In order to maintain accessibility of the right-of-way and to accommodate pipeline integrity surveys, vegetation along the pipeline right-of-way outside of croplands will be cleared periodically, and as necessary, in accordance with the FERC Plan and Procedures. Active cropland will be allowed to revert to preconstruction use for the full width of the right-of-way. In non-cultivated uplands, the entire 50-foot-wide permanent easement will be maintained in an herbaceous state. In wetlands, the FERC Procedures allows for a 10-foot-wide corridor centered over the pipeline to be permanently maintained in an herbaceous state, and trees greater than 15 feet in height within 15 feet of the pipeline may be cut and removed from the right-of-way. Where necessary and when required, WBI Energy typically will use mechanical mowing or cutting along its right-of-way for normal vegetation maintenance.

WBI Energy will adhere to the operations and maintenance procedures described in the FERC Plan and Procedures, subject to any modifications approved by FERC, in the vicinity of waterbodies, wetlands, and upland areas. Further, operation and maintenance procedures, including record keeping, will be performed in accordance with USDOT requirements. Operation and maintenance of block valves will be performed in accordance with information provided by the valve manufacturers.

In addition to the pipeline, WBI Energy personnel also will perform regular operation and maintenance activities on equipment at the proposed aboveground facilities. These activities will include calibration, inspection, and scheduled and routine maintenance. Operational testing will be performed on safety equipment to ensure proper functioning, and problems will be corrected.

1.6 FUTURE EXPANSION AND ABANDONMENT PLANS

No additional future plans, beyond those described in this resource report, are currently anticipated for the Wahpeton Expansion Project. If future market demands warrant an expansion of the Project, WBI Energy will file an application with FERC as appropriate. WBI Energy has no future plans for abandonment of the pipeline or aboveground facilities, and will file an appropriate application with FERC if and when facilities are to be abandoned.

1.7 NON-JURISDICTIONAL FACILITIES

MDU will construct and operate pressure regulation facilities at both the MDU-Kindred and MDU-Wahpeton border stations. Commercial electric service and communications will also be required at these facilities and at the actuated valves and pig launcher/receiver sites. MDU will also need to expand their existing distribution in Wahpeton to connect with the new WBI Energy delivery point and construct a new distribution system in Kindred, North Dakota as this community currently does not have natural gas service. MDU expects to begin construction of these non-jurisdictional facilities in the spring of 2024 and to be completed by the fall of 2024. No additional information is available at this time.

1.8 PERMITS AND APPROVALS

WBI Energy will obtain the necessary permits, clearances, and licenses for Project construction and operation by the time required prior to construction. Table 1.8-1 lists the federal

and state environmental permits and approvals required to construct and operate the Wahpeton Expansion Project, along with the status of each permit or approval. In each case, WBI Energy will initiate the permitting or approval process through agency contacts and consultations. Copies of agency correspondence and any approvals received by WBI Energy prior to submittal of the application will be appended to the appropriate resource reports in the filed application. A summary of agency contacts to date is provided in Appendix 1G [*to be provided in a later draft of this resource report*].

TABLE 1.8-1

Wahpeton Expansion Project
Environmental Permits, Approvals, and Consultations

Agency	Permit/Approval/Consultation	Anticipated Submittal Date	Anticipated Approval Date
Federal			
FERC	Certificate under Section 7(c) of the Natural Gas Act	May 2022	July 2023
U.S. Army Corps of Engineers—Omaha District and U.S. Army Corp of Engineers—St. Paul District	Issuance of a Section 404 permit for discharges of dredged or fill material into waters of the United States, including jurisdictional wetlands Issuance of a Section 408 permit for projects that impact (i.e., modify of occupy) any U.S. Army Corps of Engineers-constructed public works projects that include dams, basins, levees, channels, navigational channels, or other local flood protection works Clearance to work on any U.S. Army Corps of Engineers-controlled property	May 2022	September 2022
U.S. Fish and Wildlife Service—Region 6—North Dakota Field Office and U.S. Fish and Wildlife Service Valley City and Tewaukon Wetland Management District	Informal consultations for impacts on federally listed threatened and endangered species and critical habitat under Section 7 of the Endangered Species Act, the Migratory Bird Treaty Act, the Bald and Gold Eagle Protection Act, and the Fish and Wildlife Coordination Act; consultation for impacts on federal conservation easements for grasslands and wetlands	May 2022	August 2022
U.S. Department of Agriculture, Natural Resources Conservation Service—North Dakota	Consultations regarding erosion and sedimentation controls and seed mixes, and Agricultural Conservation Easement Program	May 2022	August 2022
North Dakota			
North Dakota Department of Environmental Quality, Division of Air Quality	Permits to Construct an Air Contaminant Source—if required	April 2023	August 2023

TABLE 1.8-1 (cont'd)

Wahpeton Expansion Project
Environmental Permits, Approvals, and Consultations

Agency	Permit/Approval/Consultation	Anticipated Submittal Date	Anticipated Approval Date
North Dakota Department of Environmental Quality, Division of Water Quality	General Permit for Construction Stormwater Discharge under the National Pollutant Discharge Elimination System	February 2024	April 2024
	General Permit for Construction Dewatering and Discharge of Hydrostatic Test Water under the National Pollutant Discharge Elimination System	February 2024	April 2024
	Water Quality Certificate under Section 401 of the Clean Water Act	May 2022	August 2023
North Dakota State Water Commission	Navigable Water Crossing Permit under North Dakota Century Code Chapter 61-33 (Sovereign Lands)	April 2023	August 2023
	Temporary Water Permit—Water appropriation permit for withdrawals associated with hydrostatic test water and drilling mud		
North Dakota Department of Game and Fish	Consultation for impacts on fisheries and wildlife	May 2022	June 2022
North Dakota Parks and Recreation Department	Consultation under the North Dakota Natural Heritage Program	May 2022	July 2023
State Historical Society of North Dakota	Consultation for impacts on historic properties under Section 106 of the National Historic Preservation Act	May 2022	July 2023
North Dakota Department of Transportation	Utility Crossing permits for state highway ROW	April 2023	August 2023
Local and County			
Cass and Richland Counties	County Road, Section Line, and Legal Drain Crossing Permits	April 2023	August 2023
BNSF Railway Company	Railroad Crossing Permits	April 2023	August 2023
Red River Valley and Western Railroad	Railroad Crossing Permits	April 2023	August 2023

ROW = right-of-way

1.9 AFFECTED LANDOWNERS AND OTHER STAKEHOLDERS

The names and addresses of affected landowners as specified in 18 CFR 157.6(d) are listed in Appendix 1H, which has been filed under separate cover as privileged information. WBI Energy has notified each of the landowners identified on the list of the proposed Project. As required by Section 157.6(d), WBI Energy will make a good faith effort to again notify each affected landowner once FERC issues a notice of WBI Energy's application.

1.10 CUMULATIVE IMPACTS

Cumulative impacts represent the incremental accumulation of past, present, and reasonably foreseeable future actions on the environment (40 CFR 1508.7). Cumulative impacts may result when a single action continuously impacts the environment, multiple projects impact

the same resource over a period of time, or direct impacts on one resource result in indirect impacts on a different resource. Although the individual impacts of each separate project might not be significant, the additive or synergistic impacts of multiple projects could be significant.

In accordance with the requirements of the National Environmental Policy Act, the cumulative impacts of the proposed Project and the other projects or actions in the region are considered for each resource and provided in the respective resource reports. Table 1.10-1 summarizes the resource-specific geographic boundaries considered in this analysis and the justification for each. Actions occurring outside these geographical boundaries were not evaluated because their potential to contribute to a cumulative impact diminishes with increasing distance from the Project. [*Information regarding other past, present, and future projects and actions in the Project area with the potential to contribute to cumulative impacts will be filed as part of a future draft of Resource Report 1.*]

TABLE 1.10-1

Wahpeton Expansion Project
Resource-Specific Geographic Regions for Cumulative Impact Assessment

Environmental Resource	Geographic Scope for Cumulative Impacts	Justification for Geographic Scope
Groundwater, Surface Water, and Wetlands	HUC-12 subwatershed	Impacts on groundwater and surface water resources could reasonably extend throughout an HUC-12 subwatershed (i.e., a detailed hydrologic unit that can accept surface water directly from upstream drainage areas, and indirectly from associated surface areas such as remnant, noncontributing, and diversions to form a drainage area with single or multiple outlet points), as could the related impacts on aquatic resources and fisheries.
Vegetation and Wildlife	HUC-12 subwatershed	Consideration of impacts within an HUC-12 sub-watershed sufficiently accounts for impacts on vegetation, wildlife, and threatened and endangered species that would be directly affected by construction activities and for indirect impacts such as changes in habitat availability and displacement of transient species.
Cultural Resources	Overlapping impacts within the Area of Potential Effect	The Area of Potential Effect for direct effects (physical) includes areas subject to ground disturbance, while the Area of Potential Effect for indirect effects (visual or audible) includes aboveground ancillary facilities or other Project elements that are visible from historic properties in which the setting contributes to their National Register of Historic Places eligibility.
Socioeconomics	Affected counties	Affected counties would experience the greatest impacts associated with employment, housing, public services, transportation, traffic, property values, economy and taxes, and environmental justice.
Soils and Surficial Geology	Construction workspaces	Impacts on soils and surficial geology would be highly localized and would not be expected to extend beyond the area of direct disturbance associated with the Project.
Land Use, Recreation, and Special Interest Areas	1.0-mile radius from the Project	Impacts on general land uses would be restricted to the construction workspaces and the immediate surrounding vicinity; therefore, the geographic scope for land use and recreation is 1.0 mile from the Project.
Visual Resources	Viewshed	Assessing the impact based on the viewshed (i.e., the distance that the tallest feature at the planned facility would be visible from neighboring communities) allows for the impact to be considered with any other feature that could have an effect on visual resources.
Noise—Construction	0.25 mile—daytime only construction 0.5 mile—nighttime and 24-hour construction	Areas in the immediate proximity of construction activities (within 0.25 mile during daytime construction and 0.5 mile during nighttime and 24-hour construction) would have the potential to be affected by construction noise.

TABLE 1.10-1
(cont'd)

Wahpeton Expansion Project
Resource-Specific Geographic Regions for Cumulative Impact Assessment

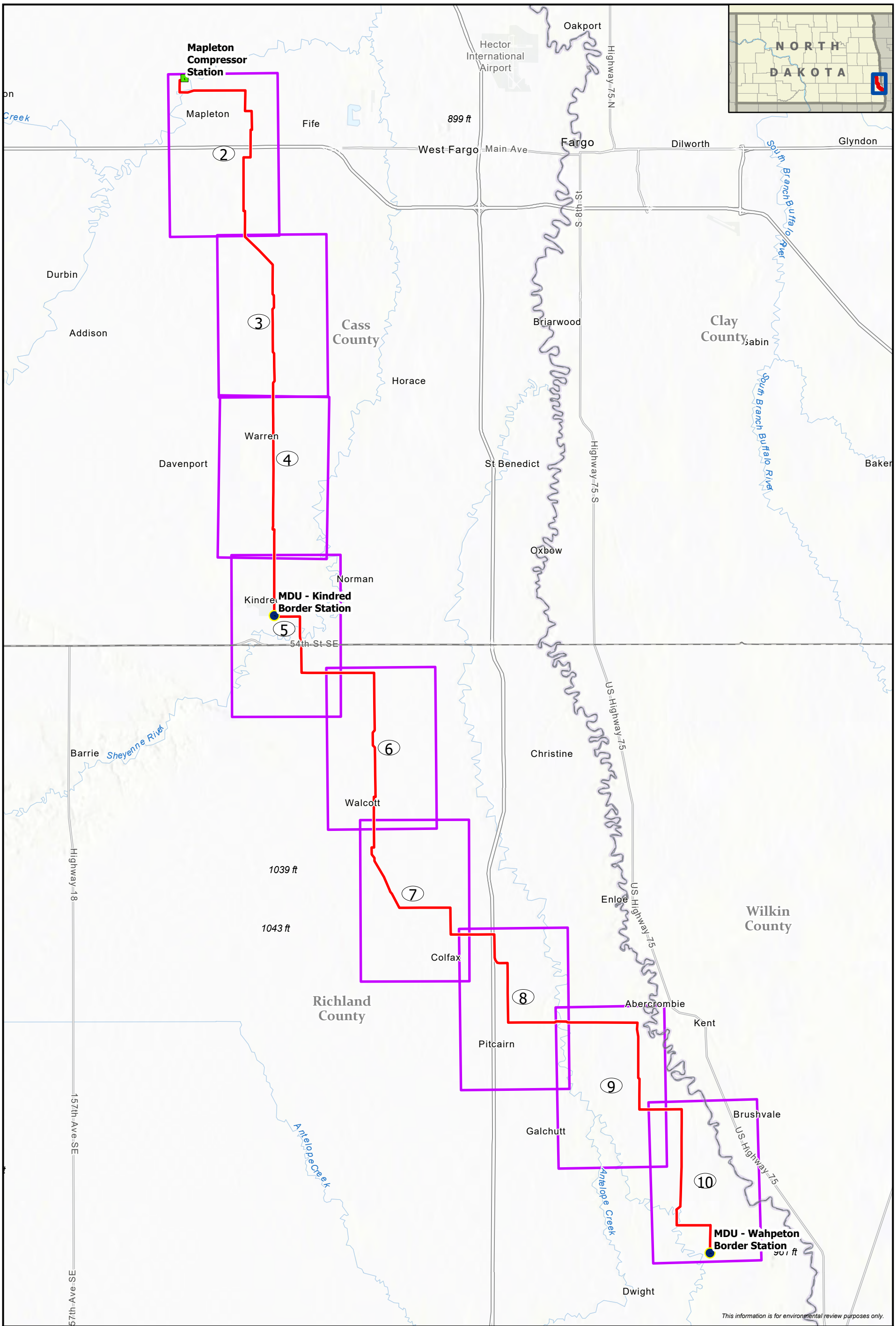
Environmental Resource	Geographic Scope for Cumulative Impacts	Justification for Geographic Scope
Noise—Operation	0.5 mile—permanent aboveground facilities	Noise from the Project's permanent border station facilities is not anticipated to have an impact beyond 0.5 mile.
Air Quality—Construction	0.25 mile of construction footprint	Air emissions during construction would be limited to vehicle and construction equipment emissions and dust, and would be localized to the Project construction sites.
Air Quality—Operation	NA	No additional combustion equipment is proposed to be installed. The valve actuators at the border stations, block valve, and pig launcher/receiver sites are the only anticipated source of fugitive emissions associated with the Project.

HUC = Hydrologic Unit Code

WAHPETON EXPANSION PROJECT

Resource Report 1

APPENDIX 1A
Project Route Maps (Topographic)



Page 1 of 10

Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

ERM

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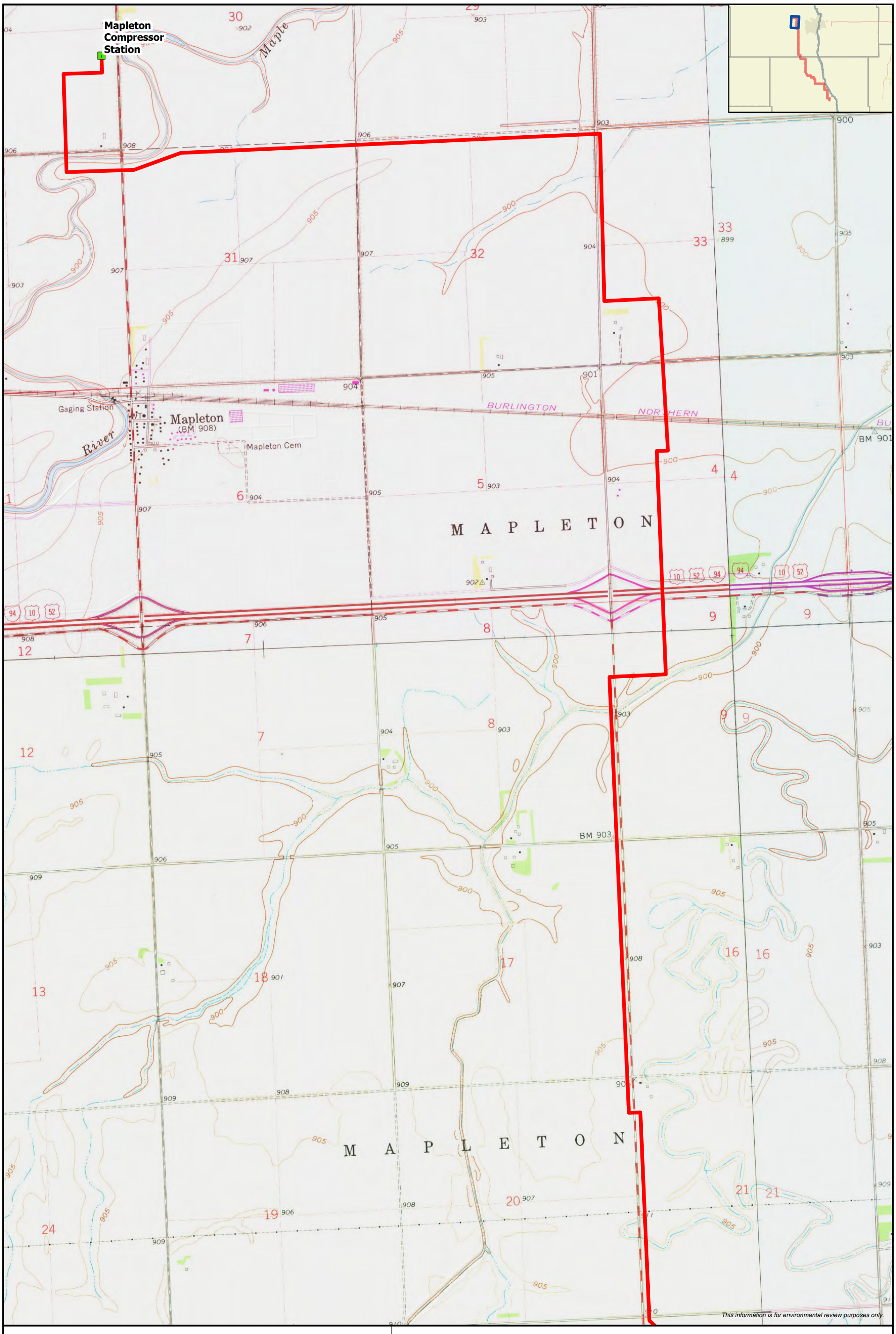

Proposed Route

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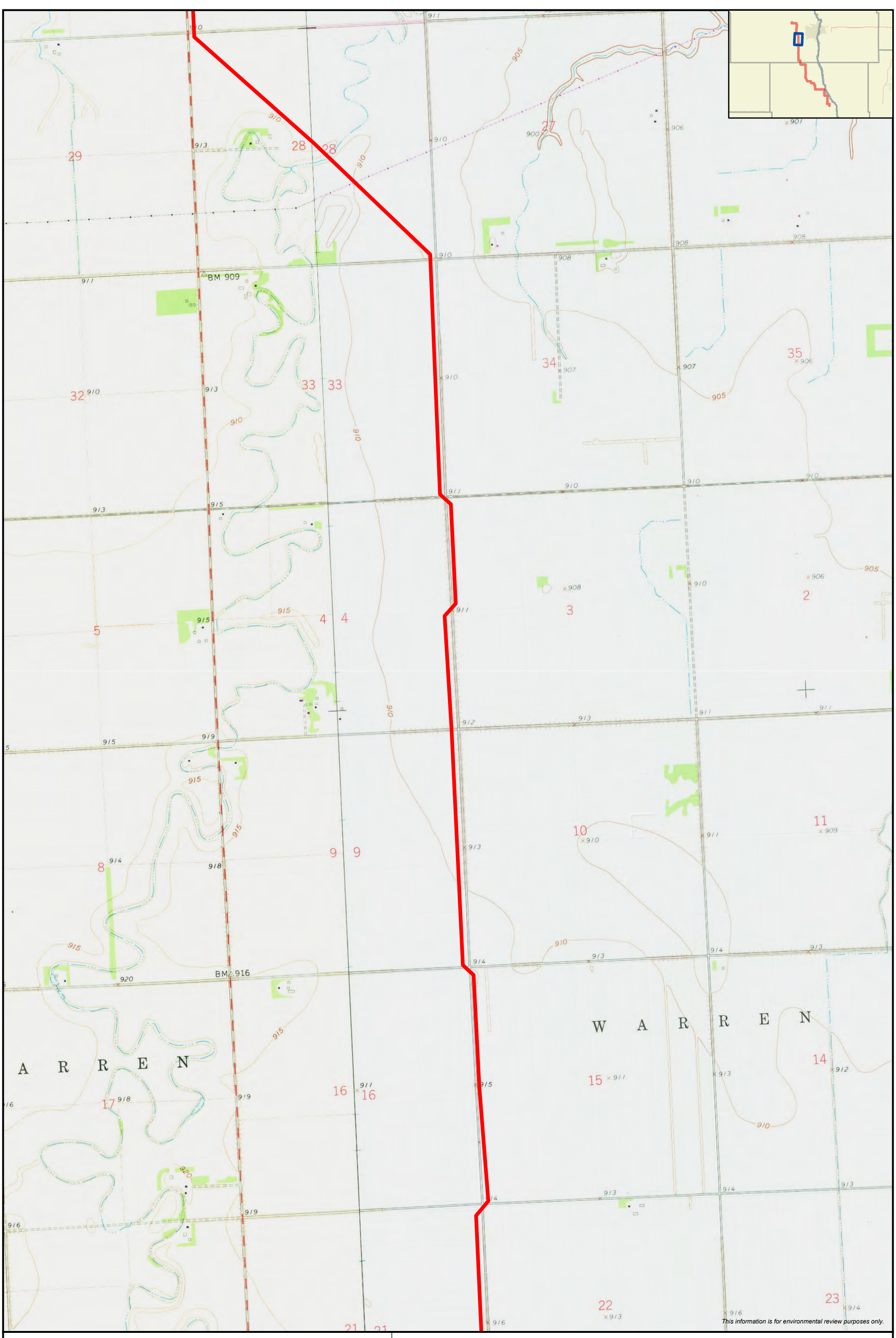
Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

ERM



Proposed Route

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Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

ERM

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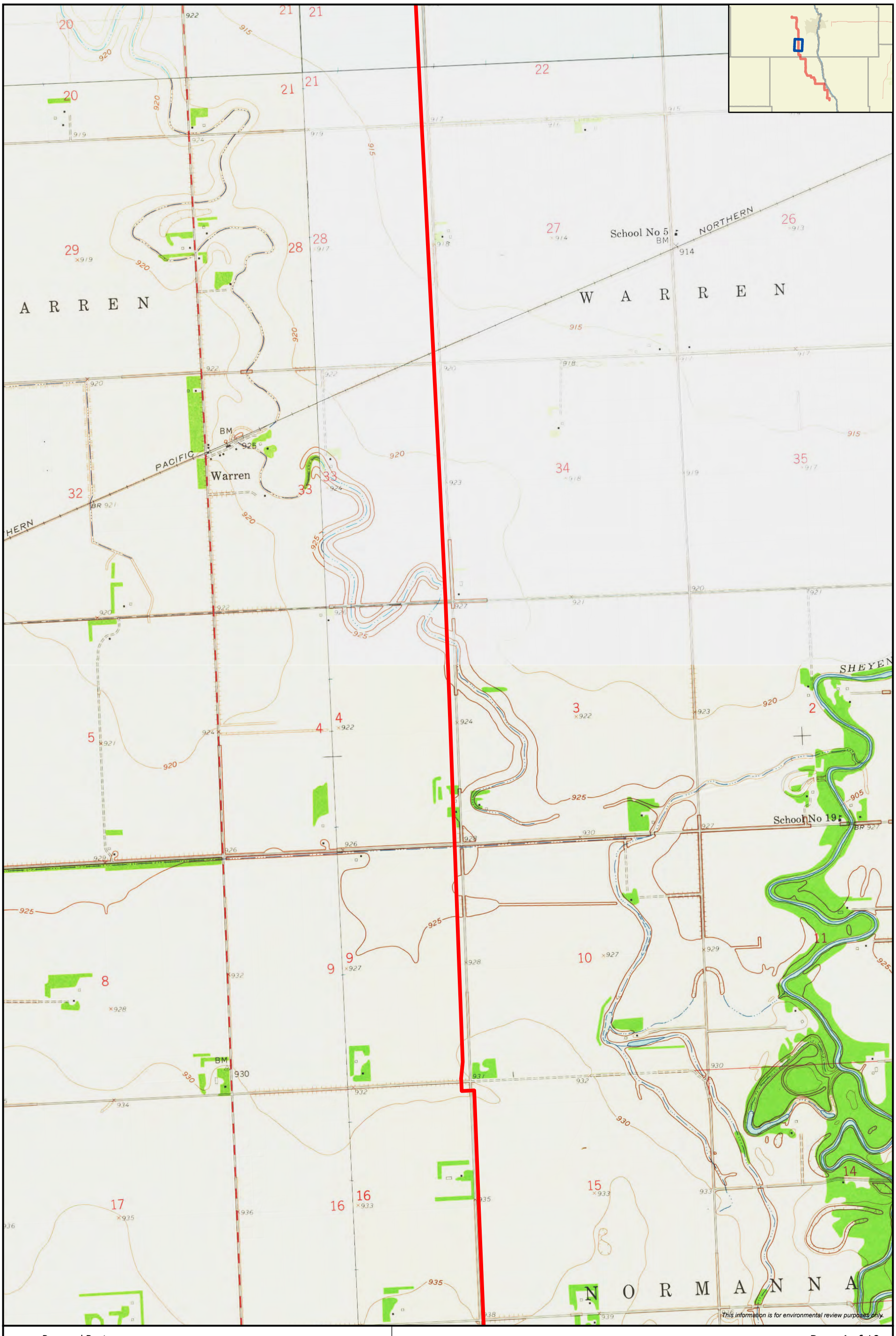
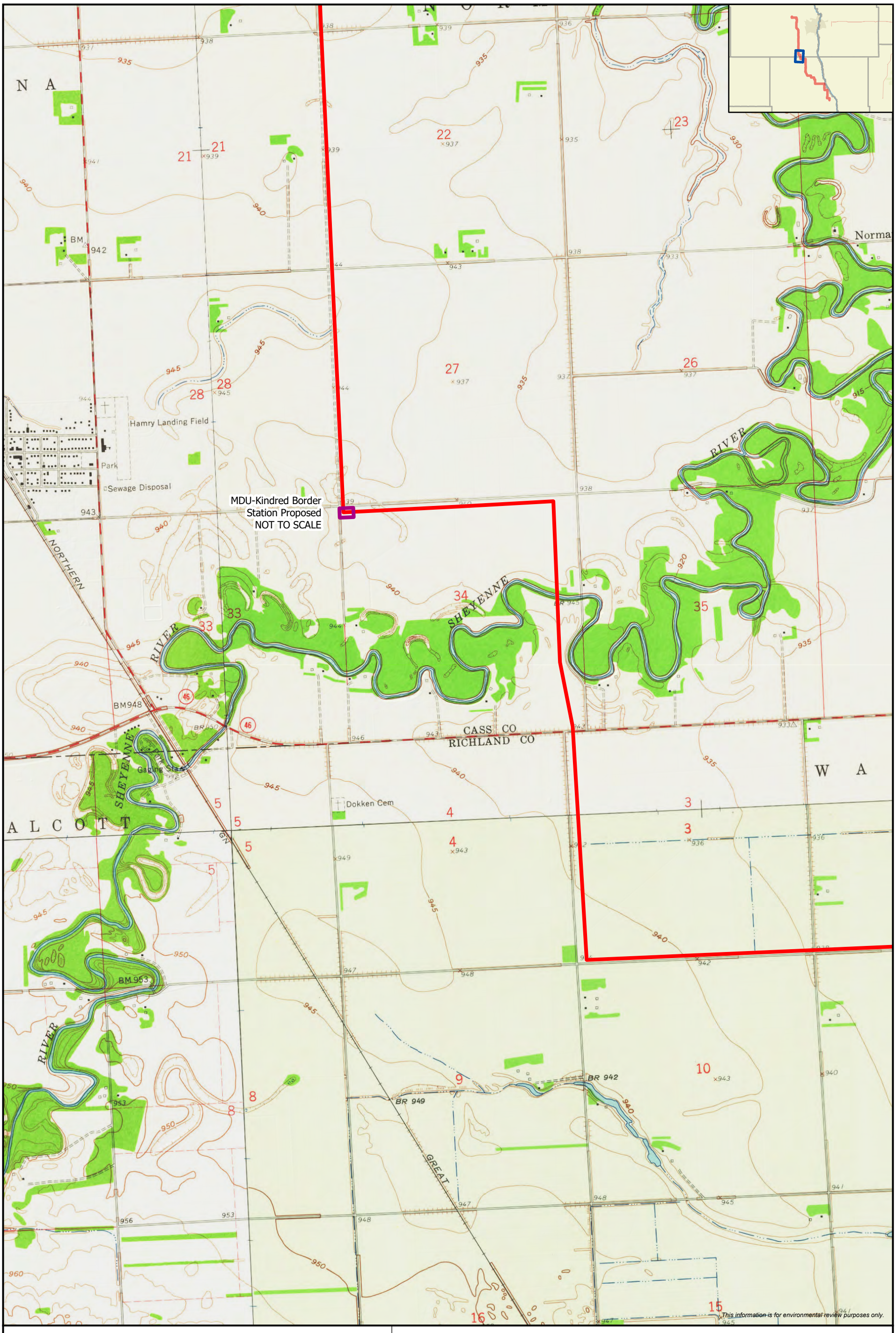


Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota



Proposed Route

Proposed Border Station

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Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

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Proposed Route

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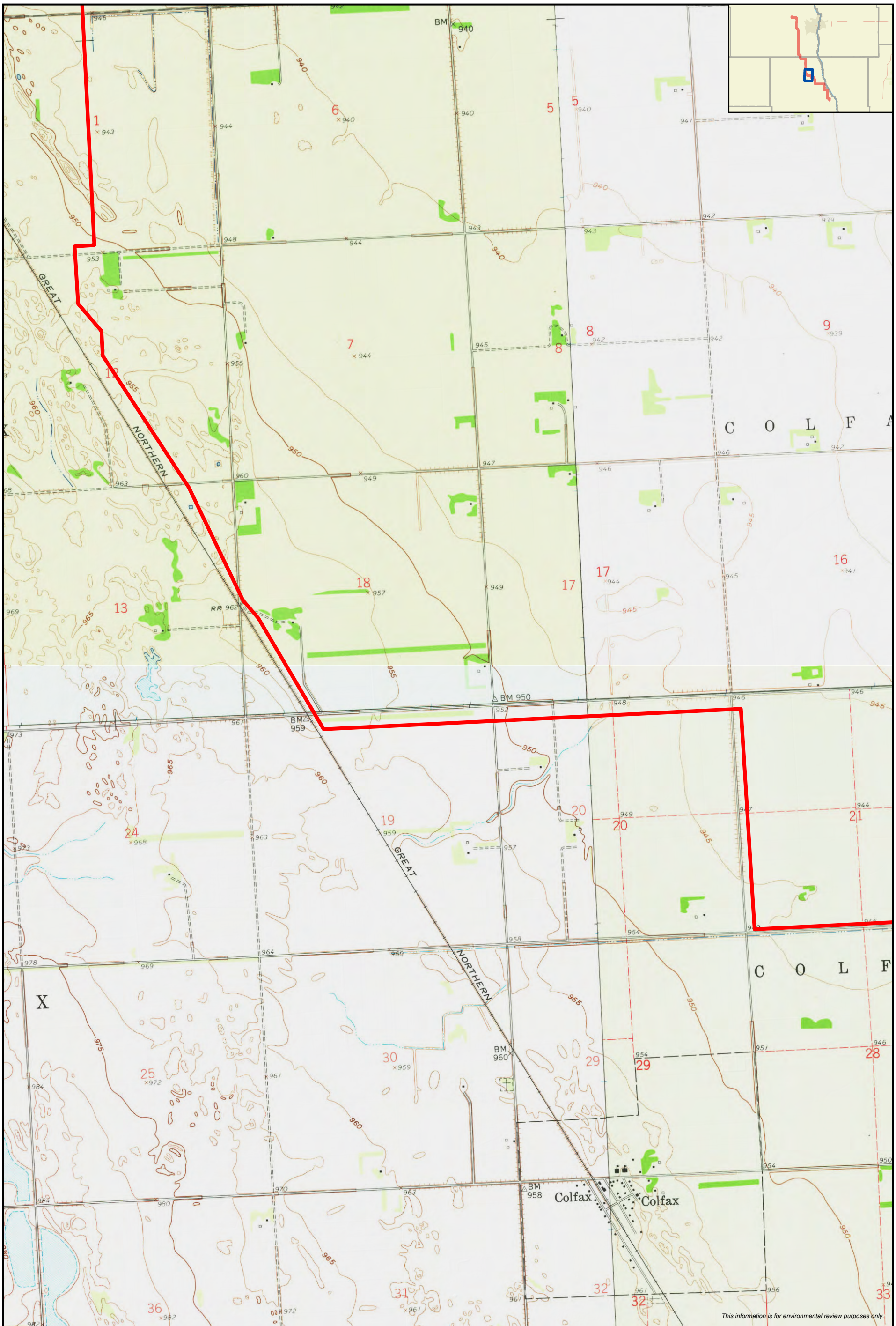
Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

ERM



Proposed Route

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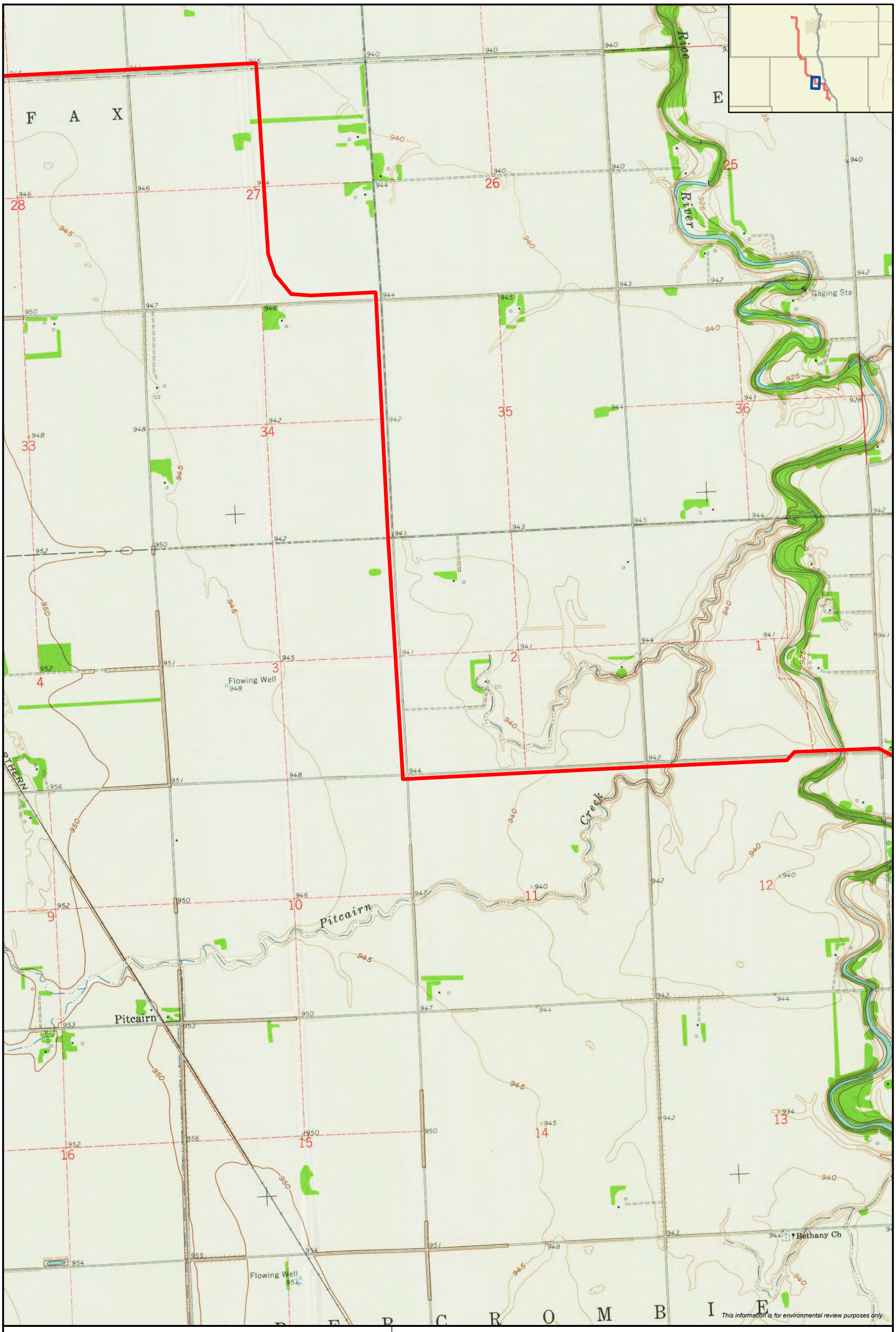
Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

ERM



Proposed Route

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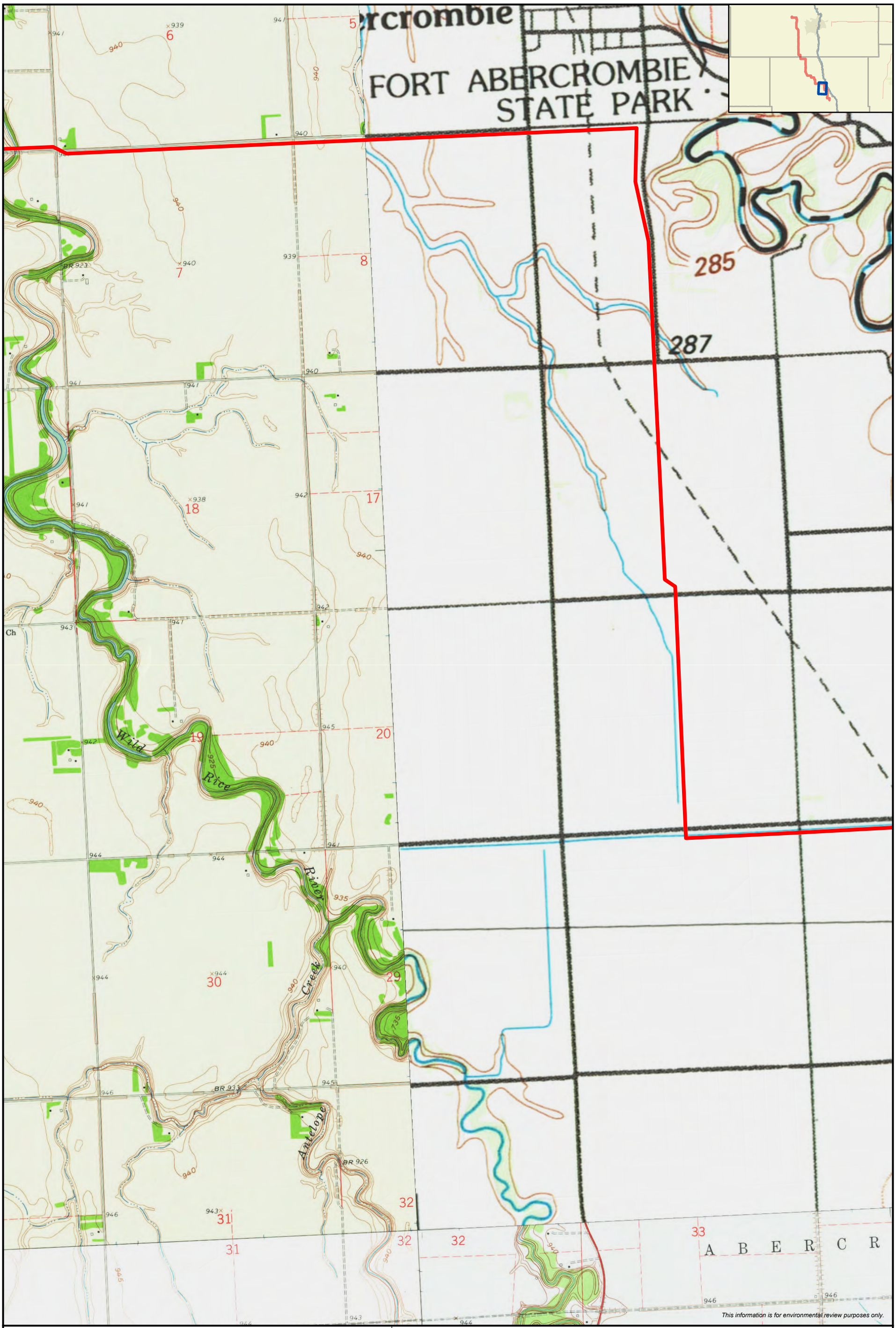
Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota



Proposed Route

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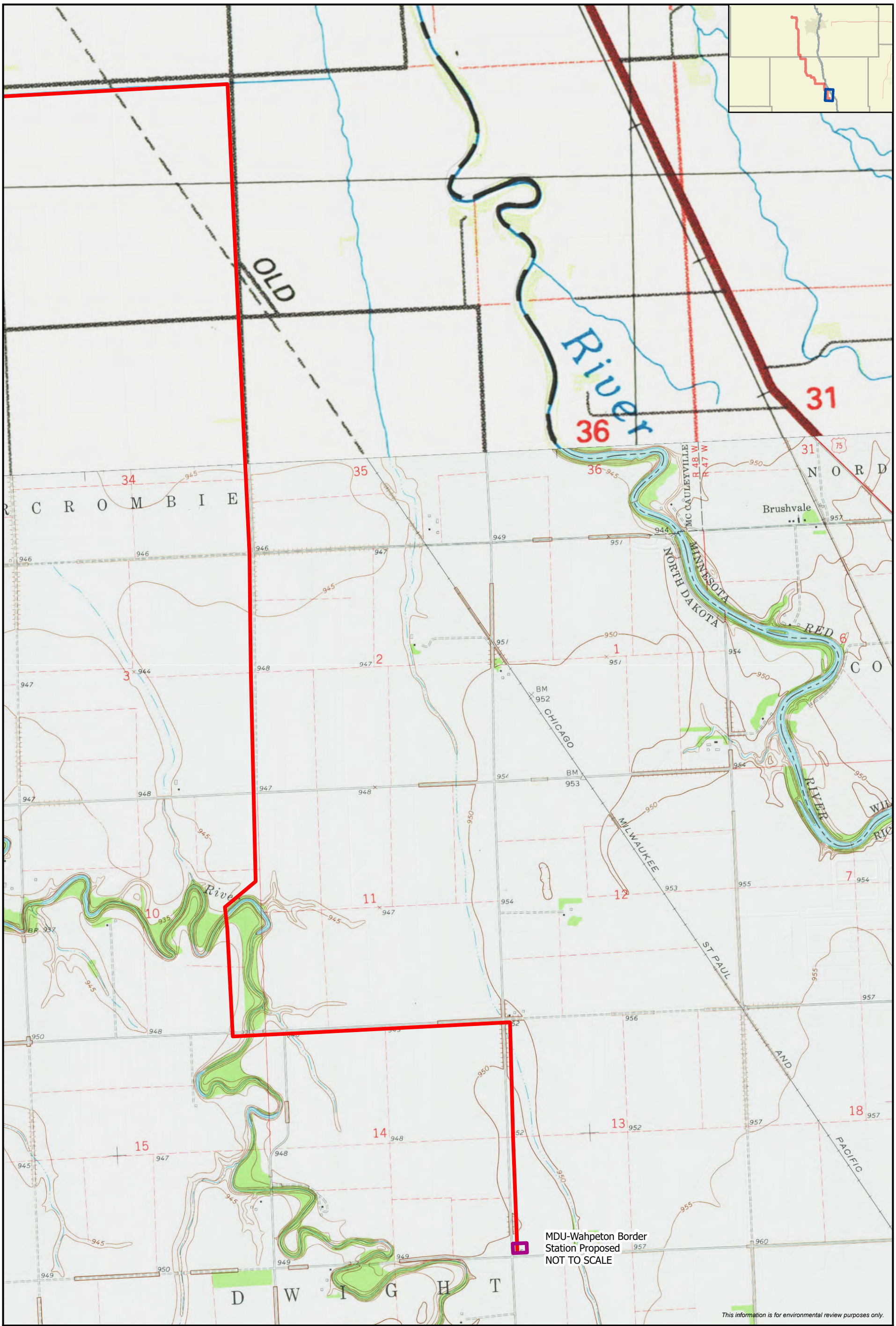
Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

ERM



Proposed Route

Proposed Border Station

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Appendix 1A
Project Route Map
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

ERM

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WAHPETON EXPANSION PROJECT

Resource Report 1

APPENDIX 1B
Project Route Maps (Aerial)

To be provided in a later draft of Resource Report 1 or the final application

WAHPETON EXPANSION PROJECT

Resource Report 1

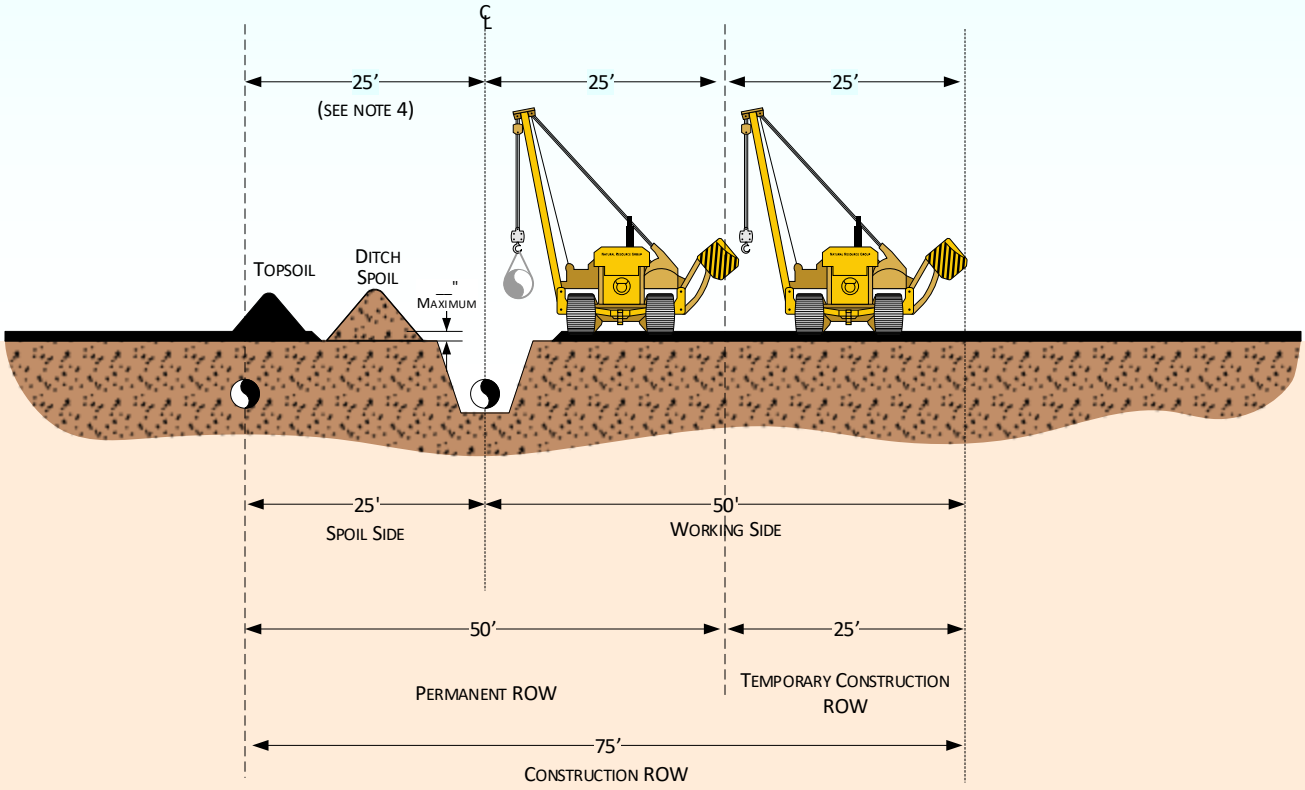
APPENDIX 1C
Plot Plans for Aboveground Facility Sites (filed under separate cover in Volume II as Controlled Unclassified Information/ Critical Energy Infrastructure Information [CUI/CEII])

To be provided in a later draft of Resource Report 1 or the final application

WAHPETON EXPANSION PROJECT

Resource Report 1

APPENDIX 1D
Typical Construction Drawings



PROFILE

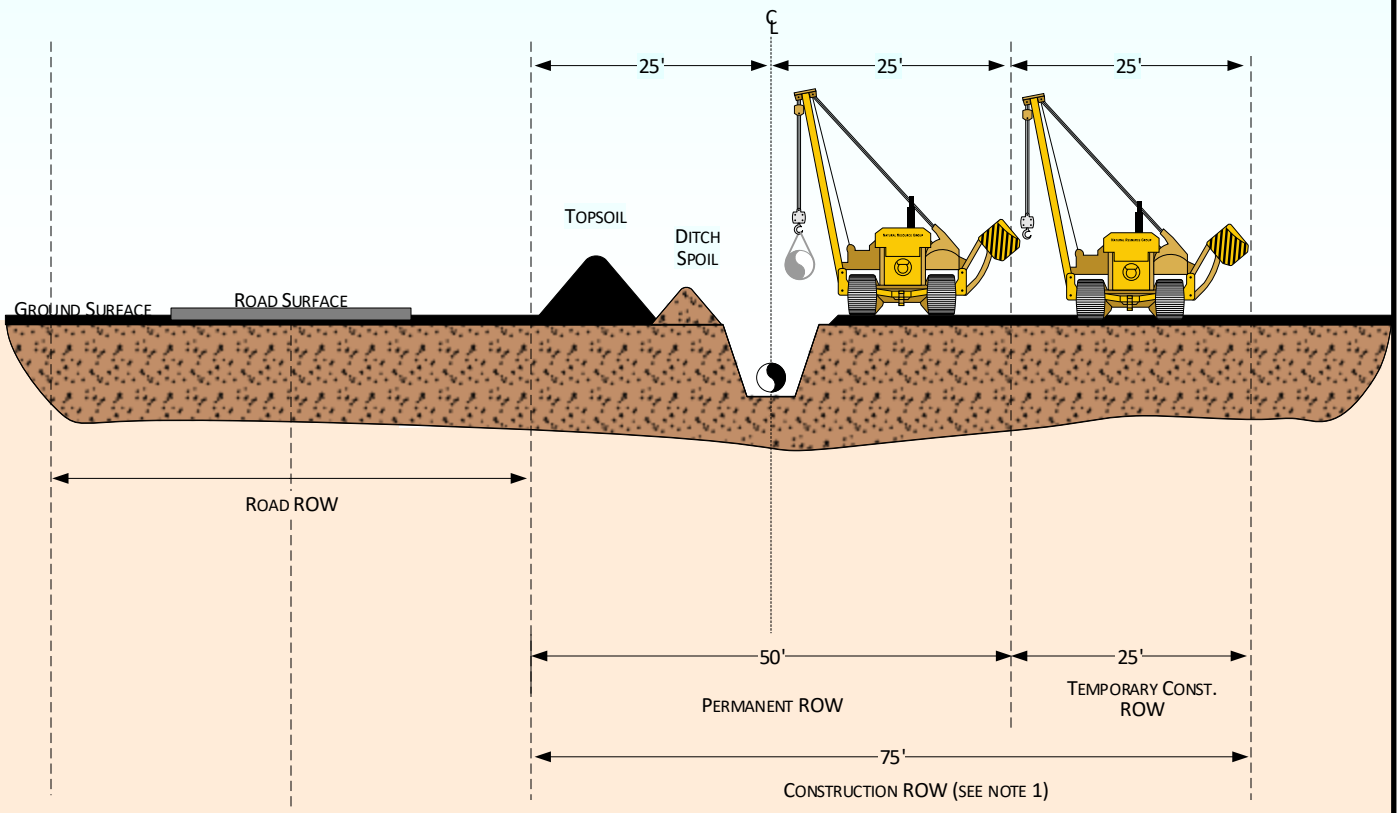
NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE. THE PERMANENT RIGHT-OF-WAY WILL BE 25' WIDE. 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 INSPECTOR.

Figure 1
Construction of Pipeline Right-of-Way
Wahpeton Expansion Project
WBI Energy Transmission, Inc.

ERM

MPLS: \M2W\Typicals	ROW_Existing_ROW_Profile.vsd	Scale: NTS	Revised: 10/15/2021	Drawn By: RJC



PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE. THE PERMANENT RIGHT-OF-WAY WILL BE 50' WIDE AND WILL NOT OVERLAP THE EXISTING ROAD PERMANENT EASEMENT. 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 INSPECTOR.

Figure 2
Construction Right-of-Way Adjacent to Road
Wahpeton Expansion Project
WBI Energy Transmission, Inc.

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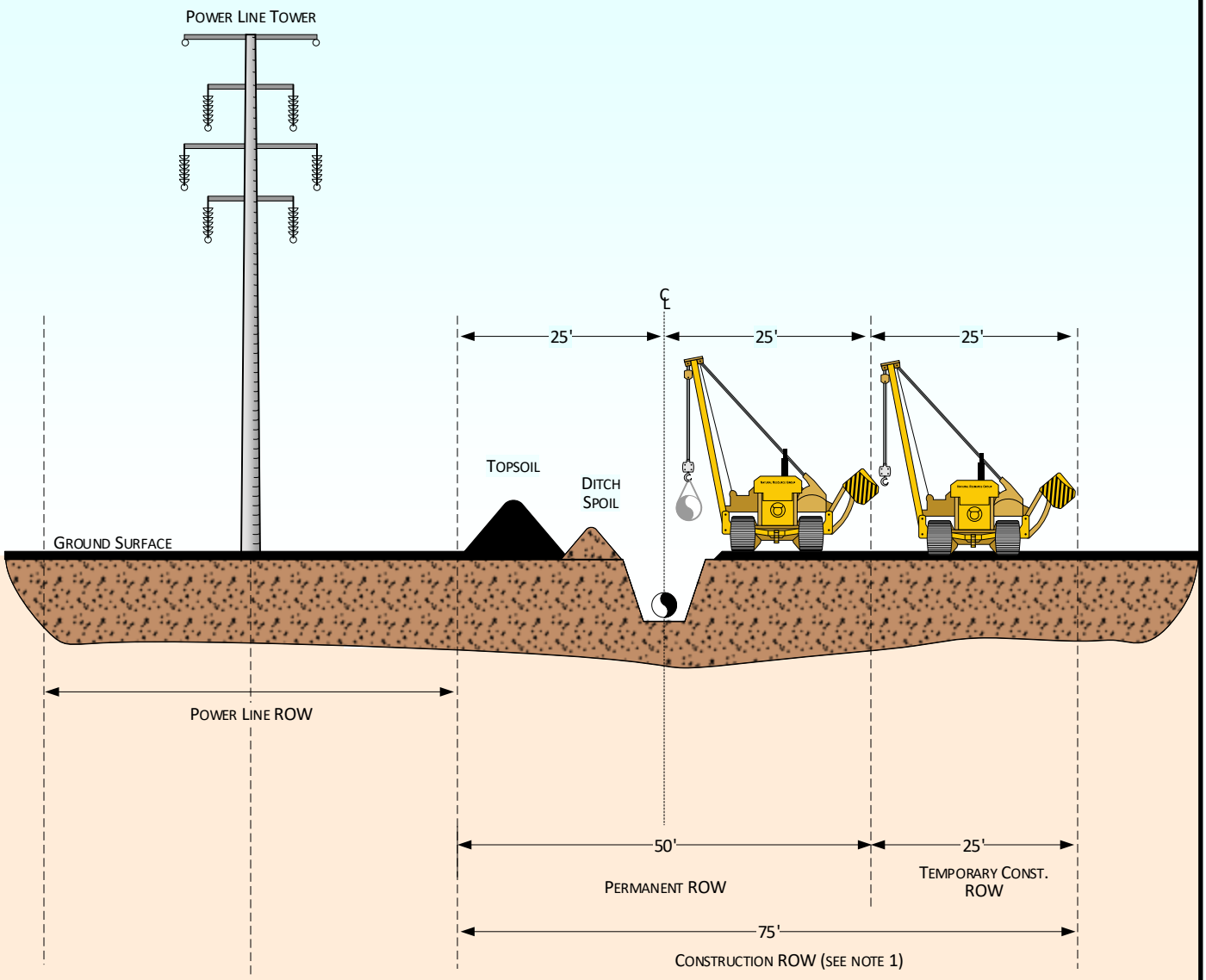

PROFILE

NOTES:

1. CONSTRUCTION RIGHT-OF-WAY WILL TYPICALLY BE 75' WIDE. THE PERMANENT RIGHT-OF-WAY WILL BE 50' WIDE AND WILL NOT OVERLAP EXISTING POWER LINE PERMANENT EASEMENT. 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 INSPECTOR.

Figure 3
Construction Right-of-Way Adjacent to Power Line
Wahpeton Expansion Project
WBI Energy Transmission, Inc.

MPLS: \M2W\Typicals	ROW_Adjacent_Powerline_Profile.vsd	Scale: NTS	Revised: 10/15/2021	Drawn By: GIS

WAHPETON EXPANSION PROJECT

Resource Report 1

APPENDIX 1E
SUMMARY OF COLLOCATED FACILITIES

To be provided in a later draft of this report

WAHPETON EXPANSION PROJECT

Resource Report 1

APPENDIX 1F
Construction, Restoration, and Mitigation Plans

To be provided in a later draft of Resource Report 1 or the final application

WAHPETON EXPANSION PROJECT

Resource Report 1

APPENDIX 1G
Summary of Agency Contacts and Copies of Agency Correspondence

To be provided in a later draft of Resource Report 1

WAHPETON EXPANSION PROJECT

Resource Report 1

APPENDIX 1H
Landowner List
(Filed under separate cover in Volume III as Controlled Unclassified Information/ Privileged and Confidential [CUI/PRIV])

WBI ENERGY TRANSMISSION, INC.

Wahpeton Expansion Project

Resource Report 10
Alternatives

Preliminary Draft

Docket No.
PF21-4-000

October 2021

WBI ENERGY TRANSMISSION, INC.
WAHPETON EXPANSION PROJECT
RESOURCE REPORT 10—ALTERNATIVES

Minimum Filing Requirements:	Addressed in Section:
Address the "no action" alternative—18 CFR §380.12(l)(1) Discuss the costs and benefits associated with the alternative	Section 10.1
For large projects, address the effect of energy conservation or energy alternatives to the Project—18 CFR §380.12(l)(1)	Sections 10.2 and 10.3
Identify system alternatives considered during the identification of the Project and provide the rationale for rejecting each alternative—18 CFR §380.12(l)(1)	Section 10.4 and 10.5
Identify major and minor route alternatives considered to avoid impact on sensitive environmental areas (e.g., wetlands, parks, or residences) and provide sufficient comparative data to justify the selection of the proposed route—18 CFR §380.12(l)(2)(ii)	Section 10.6
Identify alternative sites considered for the location of major new aboveground facilities and provide sufficient comparative data to justify the selection of the proposed site—18 CFR §380.12(l)(2)(ii)	Section 10.7

WBI ENERGY TRANSMISSION, INC.
WAHPETON EXPANSION PROJECT
RESOURCE REPORT 10—ALTERNATIVES

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

EIA	U.S. Energy Information Administration
Great Lakes	Great Lakes Gas Transmission
MDU	Montana-Dakota Utilities Co.
Northern Border	Northern Border Pipeline Company
Project	Wahpeton Expansion Project
Viking	Viking Gas Transmission Company
WBI Energy	WBI Energy Transmission, Inc.

WBI ENERGY TRANSMISSION, INC.
WAHPETON EXPANSION PROJECT

10.0 RESOURCE REPORT 10—ALTERNATIVES

Resource Report 10 describes alternatives that WBI Energy Transmission, Inc. (WBI Energy) has evaluated to determine whether they would be reasonable and environmentally preferable to the proposed Wahpeton Expansion Project (Project). Alternatives considered include the no-action alternative, alternative energy sources and energy conservation, system alternatives, facility alternatives, route alternatives and variations, and aboveground facility site alternatives. Route variations to address localized issues along the proposed route may be identified as a result of ongoing environmental and civil field surveys, engineering design work, agency consultations, landowner communications, and other stakeholder input. *Route variations identified as a result of these activities will be incorporated into the final version of Resource Report 10 to be filed with WBI Energy's application.*

To be considered preferable to the proposed Project, an alternative must provide a significant environmental advantage over the Project; meet the objectives and timeframes of the Project; and be technically and economically feasible and practicable. As discussed in Resource Report 1, the primary objective of the Project is to transport an additional 20.6 million cubic feet of natural gas per day by November 2024 to help meet a growing demand for natural gas in southeastern North Dakota, and more specifically to provide Montana-Dakota Utilities Co. (MDU), a local distribution company, additional uninterrupted natural gas supply at Wahpeton, North Dakota and to extend natural gas service to the community of Kindred, North Dakota for the first time as requested by city officials and residents.

10.1 NO-ACTION ALTERNATIVE

Under the no-action alternative, the Project would not be built, and the environmental impacts associated with construction and operation of the proposed facilities would not occur. By not constructing the Project, however, WBI Energy would be unable to satisfy the request for firm natural gas transportation service to Wahpeton and Kindred and for which WBI Energy has received a signed precedent agreement. Under the no-action alternative, other natural gas pipeline companies could propose to construct similar, new facilities to meet the demand for the transportation of the contracted volume of natural gas. Such actions would likely result in impacts similar to or greater than the proposed Project, and might not meet the Project's objectives within the proposed timeframe. Therefore, the no-action alternative is not practical and provides no advantage over the proposed Project.

10.2 ALTERNATIVE ENERGY SOURCES

The use of alternative energy sources, such as solar, wind, geothermal, or biofuels are not reasonable options because they do not meet the objectives of the Project. As described in Resource Report 1, WBI Energy proposes to transport an additional 20.6 million cubic feet of natural gas per day to help meet a growing demand for natural gas in southeastern North Dakota. More specifically, MDU, a local distribution company, has engaged WBI Energy to construct this Project to fulfill its need for additional uninterrupted natural gas supply at Wahpeton and to extend natural gas service to the community of Kindred for the first time, which has been requested by city officials and residents. Alternative energy sources would not meet these Project objectives.

10.3 ENERGY CONSERVATION

Energy conservation could help alleviate some of the nation's growing demand for energy. State and federal energy conservation measures most likely will continue to play an increasing role in slowing the growth of energy demand in the country. However, it is unlikely that these measures will offset the regional demand for new natural gas supply. The U.S. Energy Information Administration (EIA) indicates in their 2021 Annual Energy Outlook that even with the enacted energy efficiency policies and increases in energy prices, total primary energy consumption, including fuels used for electricity generation, is projected to grow on average by 0.5 percent per year from 2020 to 2050 (EIA, 2021). Natural gas consumption is expected to increase by a similar amount (i.e., on average, 0.5 percent per year). To meet this demand, along with the increased demand in the export of natural gas, the EIA predicts that total domestic production of natural gas in the United States will grow from about 32 trillion cubic feet in 2021 to about 43 trillion cubic feet by 2050 (EIA, 2021). The anticipated growth in natural gas demand is driven primarily by its increased use for electric power generation and industrial applications.

Reduction in the need for additional energy is the preferred option wherever possible. Conservation of energy reduces the demand for limited existing reserves. Although energy conservation measures will be important elements in addressing future energy demands, it is unlikely that they will be able to offset the anticipated demand in the foreseeable future. Thus, energy conservation alone is not a viable alternative to the Project as it does not preclude the already identified need for natural gas infrastructure projects like that proposed by WBI Energy.

10.4 SYSTEM ALTERNATIVES

System alternatives would make use of other existing, modified, or proposed pipeline systems to meet the objectives of the Project. Use of a system alternative would make it unnecessary to construct all or part of the proposed Project, though some modifications or additions to the existing or proposed systems may be required. Such modifications or additions would result in environmental impacts; however, the impacts could be less than, similar to, or greater than those associated with construction of the proposed Project.

North Dakota and the adjacent states have a broad network of high-pressure, high-volume, natural gas pipelines. Of these, WBI Energy identified four existing systems that potentially could meet the objectives of the Project: the Alliance Pipeline, Viking Gas Transmission Company (Viking), Northern Border Pipeline Company (Northern Border), and Great Lakes Gas Transmission (Great Lakes) (see Figure 10.4-1). Each of these existing systems is described below, followed by a discussion of the potential for these pipelines to serve as system alternatives to the proposed Project. WBI Energy is not aware of any proposed pipeline systems in southeastern North Dakota that could meet the objectives of the Project.

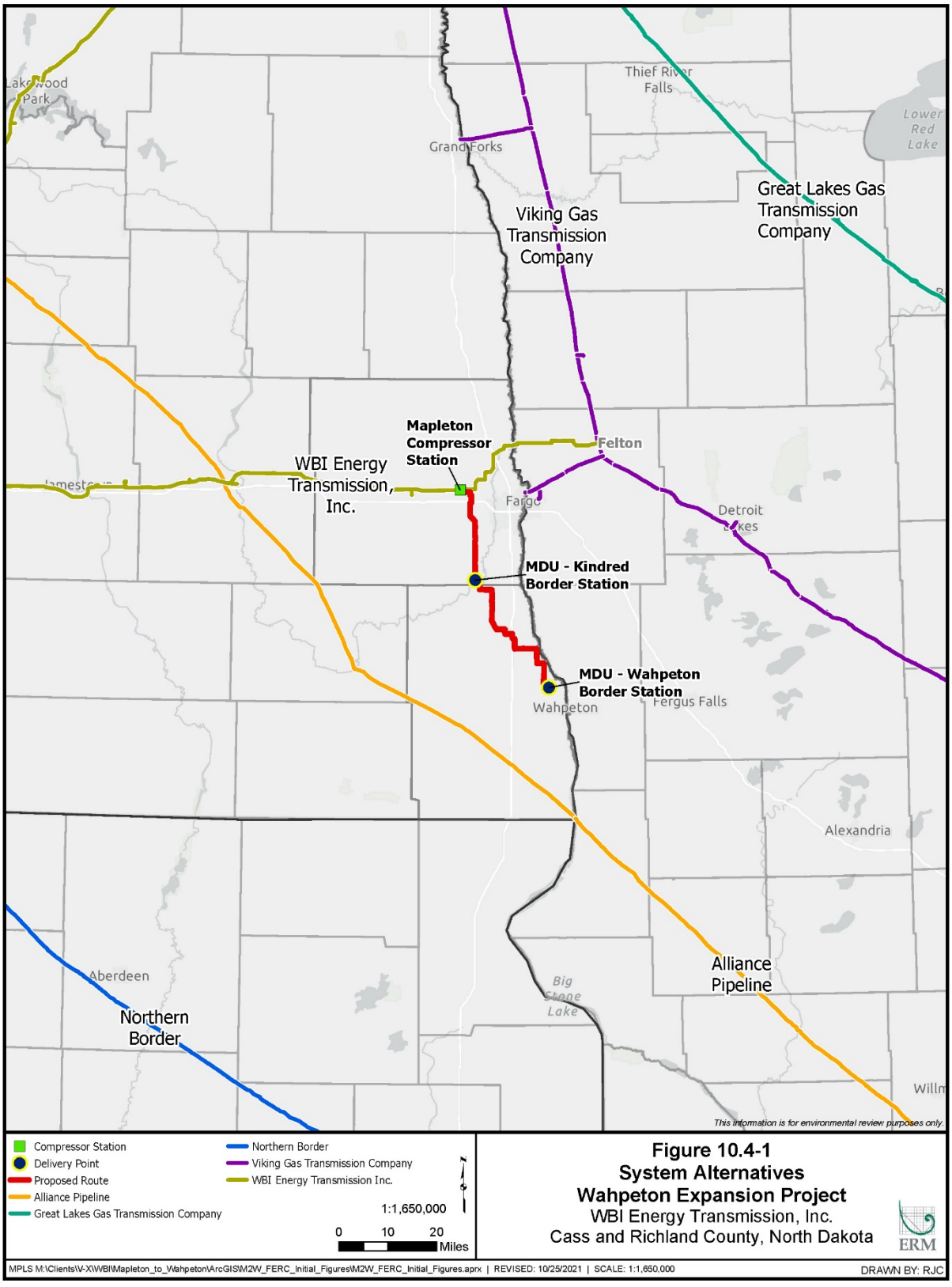

Figure 10.4-1
System Alternatives
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

10.4.1 Alliance Pipeline System Alternative

According to its website, the Alliance Pipeline system consists of 2,391 miles of integrated Canadian and U.S. natural gas transmission pipelines, delivering liquids-rich natural gas from the Western Canadian Sedimentary Basin and the Williston Basin to the Chicago market hub. The U.S. portion of the system consists of approximately 887 miles of 36-inch-diameter pipeline with a maximum operating pressure of 1,935 pounds per square inch. The system has been in commercial service since December 2000 and delivers an average of 1.6 billion standard cubic feet of natural gas per day to the Chicago market.

At its nearest point, the Alliance Pipeline is approximately 17.1 miles southwest of Wahpeton. The closest existing MDU interconnect with Alliance is near Fairmont, North Dakota, approximately 23 miles south of Wahpeton. To service both Wahpeton and Kindred, Alliance or MDU would need to construct a new pipeline from the south up to Wahpeton and then northwest to Kindred. Given that it would likely follow road and property lines similar to the proposed Wahpeton Expansion Pipeline, as opposed to proceeding in a straight line route, WBI Energy estimates that Alliance would need to construct approximately 23 miles of pipeline between the Alliance Pipeline and Wahpeton, and from there, approximately 36.7 miles of pipeline (following the same route as the proposed Project) to serve the town of Kindred. This pipeline would likely require construction right-of-way widths similar to WBI Energy's proposed 75-foot width for its 12-inch-diameter pipeline. Preliminary evaluations indicate land use along the Alliance Pipeline system alternative is similar to the proposed Project route. Thus, the resource impacts of the Alliance Pipeline system alternative would be comparable to the proposed Project route and would consist primarily of agricultural impacts. Given these similarities, the Alliance Pipeline system alternative would not offer any significant environmental advantage.

WBI Energy's understanding of the Alliance Pipeline system is that it currently has available capacity, and as such would not require any additional facilities other than the new pipeline described above. However, the Alliance Pipeline gas stream contains liquids that are currently processed at the Aux Sable processing complex in Illinois, making Alliance Pipeline commercially less attractive than the proposed Project. In order to ensure acceptable gas quality for Project customers, a gas processing facility would need to be constructed to remove liquids from the gas stream. Liquids extracted from the gas stream would be reinjected into Alliance. Any liquids that are unable to be separated out and reinjected into Alliance would need to be purchased from Aux Sable at the appropriate market value for each component. The processing and/or reimbursement of natural gas liquids from the gas stream would increase the cost. For this reason (higher cost to the customers) and because it would not offer any significant environmental advantage, this alternative was considered less preferable than the proposed Project.

10.4.2 Viking Gas Transmission Company System Alternative

Viking is owned and operated by ONEOK, Inc. According to Viking's website, the Viking interstate pipeline system connects with major pipeline systems (TransCanada Energy, Northern Natural Gas Company, Great Lakes, and ANR Pipeline Company), allowing it to service strategic markets in North Dakota, Minnesota, and Wisconsin. WBI Energy currently interconnects with Viking's mainline system near Felton, Minnesota. Viking also has a lateral that services Fargo. This lateral is closer to the Project area than Viking's mainline but WBI Energy understands it is

at or near capacity and has a lower maximum average operating pressure than the mainline, which make it incapable to providing the proposed Project gas volumes without expansion.

As an alternative to the proposed Project, Viking or MDU could potentially install a new pipeline from Viking's mainline system south of Felton, Minnesota (possibly in the Hawley, Minnesota area) to Wahpeton. The majority of this alternative would be constructed in Minnesota on the east side of the Red River. Like the proposed Project, this alternative would likely consist of a similarly sized pipeline and no additional compression would be required. WBI Energy estimates Viking/MDU would need to construct approximately 60 miles of new pipeline to deliver natural gas to Wahpeton. Approximately 36.7 miles of additional pipeline would also need to be installed between Wahpeton and the town of Kindred. Given that this alternative would increase the amount of pipeline required by approximately 61 percent, the costs as well as the environmental impacts of this alternative would be greater than the proposed Project. For these reasons, this alternative was considered less preferable than the proposed Project and was not selected.

Another potential system alternative would be for MDU to replace its existing Great Plains Natural Gas Company pipeline with a new natural gas pipeline from MDU's existing interconnect with the Viking transmission system at Vergas, Minnesota to Breckenridge, Minnesota, and then extend this pipeline to Wahpeton, which is on the opposite side of the Red River from Breckenridge. This alternative would require approximately 66 miles of new pipeline to service Wahpeton. From Wahpeton, MDU would need to construct another 36.7 miles of new pipeline to service Kindred. With over 100 miles of new pipeline, this alternative would substantially increase the length and costs of the pipeline compared to the proposed Project. It would also increase impacts on impact wetlands and waterbodies, which are numerous between Vergas and Fergus Falls. For these reasons, this alternative was considered less preferable than the proposed Project.

10.4.3 Northern Border System Alternative

Northern Border is a major natural gas transportation system that links the Midwestern United States with reserves in the Western Canadian Sedimentary Basin as well as transporting natural gas produced in the Williston and Powder River Basins in the United States. Currently, WBI Energy has five interconnects with Northern Border in northwestern and central North Dakota.

The closest the North Border pipeline comes to the proposed Project is in the vicinity of Aberdeen, South Dakota. The Northern Border system alternative would require approximately 132 miles of new 8-inch-diameter pipeline to transport the requested capacity of natural gas from Northern Border to Wahpeton. From there, additional pipeline would be needed to deliver natural gas to Kindred. Not only would this substantially increase the length of the pipeline (more than doubling its length), but the route between Aberdeen and Wahpeton would cross substantially more wetlands and waterbodies than the proposed route. Due to the increased environmental impacts and increased costs required to connect to Northern Border, this alternative is less environmentally preferable than the proposed route.

10.4.4 Great Lakes System Alternative

Great Lakes' system is a 2,115-mile-long system that delivers Canadian natural gas between Western Canada's natural gas basins and population centers in Minnesota, Wisconsin, Michigan, and Eastern Canada. The closest the Great Lakes pipeline comes to the proposed Project is in the vicinity of Clearbrook, Minnesota. The Great Lakes system alternative would likely require 100 or more miles of new pipeline to transport the requested capacity of natural gas from Great Lakes pipeline to Kindred (the closer of the two Wahpeton Expansion Project delivery locations). From there, it would require additional pipeline to deliver gas to Wahpeton. Not only would this substantially increase the length of the pipeline (roughly doubling the pipeline length), but the route between Clearbrook and Kindred would cross substantially more wetlands and waterbodies than the proposed route, including the Red River. Due to the increased environmental impacts and costs required to connect the Great Lakes pipeline, this alternative is less environmentally preferable than the proposed route.

10.5 FACILITY ALTERNATIVES

Facility alternatives are those alternatives that consider modifications to the proposed Project facilities including varying diameter pipelines, increased compression, and the reduction of proposed pipeline facilities. WBI Energy identified one potential facility system alternative. An analysis of this alternative is provided below.

10.5.1 Eight-Inch-Diameter Pipeline Facility System Alternative

WBI Energy considered the potential to construct a new 8-inch-diameter pipeline instead of a 12-inch-diameter pipeline between the Mapleton Compressor Station and Wahpeton. Like the proposed Project, this alternative would transport gas from the west via WBI Energy's existing system and from the east via its existing interconnect with Viking near Felton, Minnesota to the Mapleton Compressor Station. From there, transportation would be routed to the proposed delivery points at Kindred and Wahpeton. This alternative would utilize the same right-of-way, require the same length of pipeline, and would have the same pipeline impacts as the proposed Project pipeline. However, WBI Energy's evaluation estimated that this alternative would also require the installation of a new 300-horsepower compressor unit at the existing Mapleton Compressor Station. This new compressor unit would increase fuel use, Project costs, and emissions, resulting in greater environmental impact than the proposed Project. For these reasons it was not selected.

10.6 ROUTE ALTERNATIVES AND ROUTE VARIATIONS

The goal of the proposed route selection analysis was to identify a Project alignment that represents a minimal and acceptable level of environmental impact coupled with attainment of the Project goals. WBI Energy considered several factors in developing the pipeline route including:

- Overall pipeline length with the objective of minimizing the amount of new pipe and therefore the amount of land disturbance between WBI Energy's existing pipeline and the MDU delivery locations;

- Landowner and other stakeholder input regarding where the pipeline would have the least impact on properties (input from landowners was taken into account during permission to survey discussions and landowner meetings held in September 2021);

- The presence of public and tribal lands with the objective of avoiding these lands;

- The presence and configuration of environmental resources and topography including wetlands, waterbodies, and other feature crossings (e.g., roads and railroads) with the objective of avoiding sensitive features where possible, and where avoidance is not possible, designing each crossing to minimize impact on the resource or feature (e.g., crossing waterbodies perpendicularly to the extent possible);

- Proximity to cities, towns, residences, schools, and recreational areas with the objective of avoiding these resources and locating the pipeline away from these resources to the extent practicable;

- Land uses with the objective of minimizing farming impacts by keeping the pipeline on the edge of fields and section lines, avoiding diagonal crossings of fields to the extent possible, and minimizing impacts on drain tile systems;

- Presence of existing corridors with the objective of maximizing collocation with existing corridors, which in the Project area consists primarily of road corridors;

- Planned public works projects with the objective of avoiding conflicts with these projects, including the nearby proposed Fargo–Moorhead Diversion project;[1] and

- Field review of the Project areas to confirm information obtained by other methods and to identify any issues that may not have previously been considered.

10.6.1 Route Alternatives

WBI Energy's application of the shortest length criterion resulted in an initial route that was more direct than the currently proposed route, running, more or less, diagonally from the Mapleton Compressor Station to the MDU-Wahpeton border station. WBI Energy's subsequent application of other criteria resulted in route changes that eliminated two sections of the initial route. These two sections, which were eliminated, are hereafter referred to as Route Alternatives 1 and 2. WBI Energy also evaluated a third route alternative (referred hereafter as Route Alternative 3) on the

[1] The U.S. Army Corps of Engineers, St. Paul District, is working in partnership with the cities of Fargo, North Dakota; West Fargo, North Dakota; Moorhead, Minnesota; and the Fargo–Moorhead Diversion Authority to complete this flood risk management project (U.S. Army Corps of Engineers, 2015). The project is intended to provide flood risk reduction for the more than 230,000 people and 70 square miles of infrastructure in the communities of Fargo, Moorhead, West Fargo, Horace, and Harwood. It includes building a 30-mile-long diversion channel in North Dakota with upstream staging, a 20-mile-long southern embankment, 19 highway bridges, four railroad bridges, three gated structures, two aqueduct structures, several drop structures, and an open culvert structure (U.S. Army Corps of Engineers, 2020). It is the first U.S. Army Corps of Engineers project to use a public-private partnership. Non-federal construction of the diversion channel using a public-private partnership is expected to begin in spring 2022 (U.S. Army Corps of Engineers, 2015).

southern end of the proposed route in Richland County that largely follows an existing railroad corridor. These three route alternatives are depicted on Figure 10.6.1, and a comparative analysis of the alternatives is provided below.

10.6.1.1 Route Alternative 1

As shown in Figure 10.6-1, Route Alternative 1 begins at the Mapleton Compressor Station and proceeds due west for a short distance before turning south on the west side of Mapleton. From there, it proceeds south and crosses the Maple River and Interstate 94. After crossing the interstate, the alternative proceeds southeast until it rejoins the proposed route near 40th Street SE. As discussed above, this alternative was part of the initial route. It was eliminated in favor of the proposed route following discussions with landowners and city officials that expressed concerns about the Alternative 1 alignment, which crosses a golf course on the west side of Mapleton, and crosses several fields in a diagonal manner.

Table 10.6-1 provides an environmental comparison of the alternative to the corresponding segment of the proposed route. As indicated in Table 10.6-1, the alternative is similar to the proposed route with respect to waterbody crossings and land uses but it is about a mile shorter. The alternative also crosses 3.5 fewer acres of wetlands and is collocated with existing utility rights-of-way for over 30 percent of the route. However, as previously mentioned, it crosses a golf course and cuts diagonally across a number of agricultural fields. For these reasons and because it is less preferable to landowners and city officials, it was rejected in favor of the proposed route.

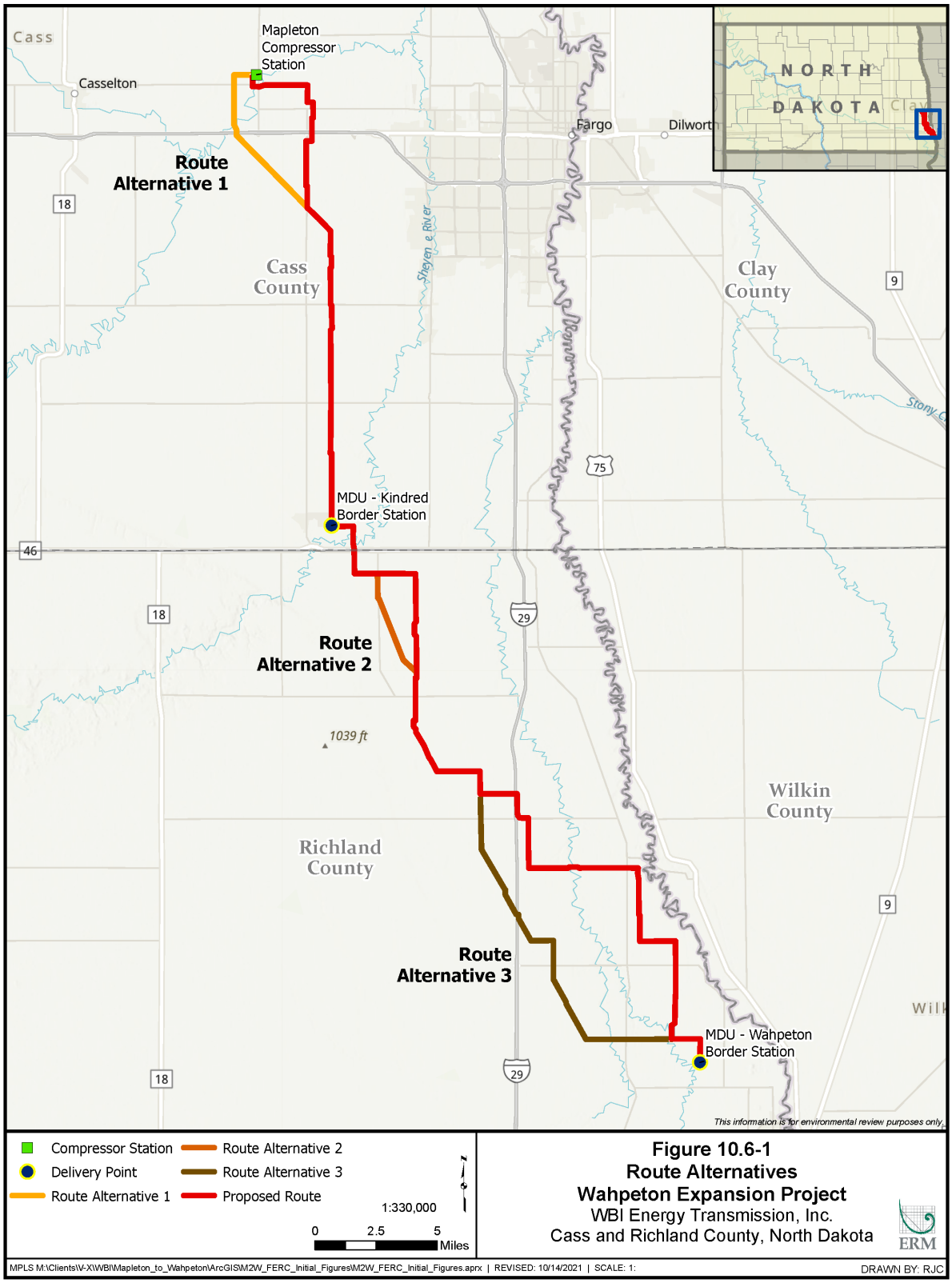

Figure 10.6-1
Route Alternatives
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

TABLE 10.6-1

Wahpeton Expansion Project
Comparison of Route Alternatives and Corresponding Segment of Proposed Route

Criteria	Alternative	Proposed Route
Alternative 1		
Length (miles)	7.5	8.5
Percent collocated	31.2	0.0
National Hydrography Dataset (NHD) waterbody crossings (number)	7	6
National Wetland Inventory (NWI) Wetlands affected (acres)	0.2	3.7
Residences within 50 feet of the centerline	0	0
Alternative 2		
Length (miles)	4.7	5.6
Percent collocated	51.6	62.2
NHD waterbody crossings (number)	1	8
Wetland affected (acres)	0.6	0.4
Residences within 50 feet of the centerline	0	0
Alternative 3		
Length (miles)	15.4	18.0
Percent collocated	89.3	13.9
NHD waterbody crossings (number)	9	9
Wetlands affected (acres)	7.8	1.2
Residences within 50 feet of the centerline	0	0

Sources:
U.S. Geological Survey. 2021. National Hydrography Dataset.
U.S. Fish and Wildlife Service. 2021. National Wetland Inventory.

10.6.1.1 Route Alternative 2

As shown on Figure 10.6-1, Route Alternative 2 begins south of the MDU-Kindred Border Station at the intersection of County Road 26 and 55th Street SE and proceeds due south for about 1 mile. From there, the alternative proceeds due east for a short distance and crosses County Road 26. It then continues in a southeasterly direction for about 3.8 miles until it rejoins the proposed route about 1 mile east of the city of Walcott, North Dakota. As discussed above, this alternative was part of the initial route. This alternative is similar to the proposed route with respect to land uses and acres of wetlands crossed. Table 10.6-1 indicates that this alternative would reduce waterbody crossings, but the significance of this difference is negligible given that all but one of the eight waterbodies crossed by the proposed route are actually manmade canals associated with farming activities, and not natural waterbodies. The alternative is 0.9 mile shorter than the proposed route, but is less collocated with existing utility and road rights-of-ways, and cuts diagonally across multiple farm fields. For these reasons, and to accommodate landowner

preferences to follow section lines and edges of fields, Route Alternative 2 was considered less preferable than the proposed route and was rejected.

10.6.1.2 Route Alternative 3

As shown on Figure 10.6-1, Route Alternative 3 begins east of Colfax, North Dakota, near the intersection of 170th Avenue SE and County Road 4. The alternative proceeds due south for 1.8 miles and then turns southeast to collocate with the Red River Valley and Western Railroad. The alternative follows the railroad to the southeast for about 3 miles, then turns due east for a short distance to cross Interstate 29 perpendicularly. After crossing the interstate, it returns to the railroad and follows it for another mile. At 70th Street SE, the pipeline turns to the east for 0.9 mile and then south for 1.7 miles to avoid a neighborhood. The alternative then returns to the railroad and follows it in a southeasterly direction for another 2.8 miles before turning east and rejoining the proposed route near the intersection of 74th Street and 178th Avenue SE, about 2 miles from the MDU-Wahpeton Border Station. The alternative route takes a more direct (diagonal) route and is about 3 miles shorter than the proposed route. It is also collocated for a greater percentage of its length than the proposed route. As indicated in Table 10.6-1, both the alternative and proposed route are similar with respect to land uses and waterbodies crossed, and there are no residences located within 50 feet of either route. However, the alternative would have more than 7 acres of wetland impacts, which is more than six times the amount of wetland impacts as the proposed route. For this reason and because landowners were unreceptive, Route Alternative 3 was ultimately rejected in favor of the proposed route.

10.6.2 Route Variations

WBI Energy's application of routing criteria described above also resulted in the evaluation of a number of minor route variations that primarily follow roads and section lines and avoid diagonal crossings of agricultural fields, roads, railroads, and waterbodies. These route variations are listed in Table 10.6-2. As indicated in the table, many of these variations were requested by landowners and most have been incorporated into the proposed route although some were rejected and others were superseded by subsequent variations in the same location.

TABLE 10.6-2

Wahpeton Expansion Project
Route Variations Adopted or Rejected

Variation Number	Date	Variation Description	Adopted or Rejected
Variation 1	4/20/2021	This variation revised the route in multiple locations after conducting field reviews. Modifications were adopted to address environmental concerns and improve river crossing locations, to minimize impacts on other utilities, and drain tile fields.	Adopted into the proposed route. Some areas are still part of the currently proposed route; some were superseded by subsequent variations.
Variation 2	5/19/2021	This variation was considered to avoid crossing fields diagonally in an area northeast of Walcott.	While this variation was adopted, much of the variation was superseded by subsequent variations.

TABLE 10.6-2 (cont'd)

Wahpeton Expansion Project
Route Variations Adopted or Rejected

Variation Number	Date	Variation Description	Adopted or Rejected
Variation 3	5/19/2021	This route variation was considered to address a potential alternate location for the MDU-Kindred Border Station.	Ultimately rejected at the request of the landowner.
Variation 4	6/18/2021	This variation involved revisions following the first round of field survey, primarily to square the route up to tract/section lines and improve crossing of manmade and environmental features in Cass County.	Adopted into the proposed route. While the majority of this variation is reflected in the currently proposed route, some modifications were superseded by subsequent variations.
Variation 5	7/1/2021	This variation involved revisions primarily in two areas east and south of Walcott all the way to I-29 and again in the last 2 to 3 miles of the route, including changing the point of ending—all as a result of landowner preferences.	Adopted into the proposed route. While the majority of this variation is reflected in the currently proposed route, some modifications were superseded by subsequent variations.
Variation 6	7/10/2021	This variation involved minor revisions in Cass County between 42nd and 43rd Street SE to avoid clipping a tract with the construction right-of-way.	Adopted into the currently proposed route.
Variation 7	7/22/2021	This variation involved a slight centerline offset to avoid a landowner.	Adopted into an interim route, but ultimately eliminated when Variation 9 was implemented.
Variation 8	8/6/2021	Revisions in two locations: in the area crossing I-29 to route across more receptive landowners and approximately 3 miles southeast of the I-29 crossing to route across a landowner following the section lines to minimize impact to cultivated fields.	Adopted into the currently proposed route. About half of this variation was superseded by Variation 9.
Variation 9	8/11/2021	This variation involved revisions to accommodate landowner preferences to minimize cultivated field disturbance in the areas just west and east of the I-29 crossing.	Adopted but some areas of this variation have been superseded by subsequent variations.
Variation 10	8/12/2021	This variation involved a minor centerline offset just southeast of Walcott to avoid existing farm buildings and roads.	Adopted into currently proposed route.
Variation 11	8/24/2021	This variation involved revisions incorporating route variations for the southern half of the line based on discussions with the affected landowners.	Adopted but nearly all of this variation has been superseded by subsequent variations.
Variation 12	8/26/2021	This variation involved a revision on the first tract encountered in Richland County to accommodate a landowner preference.	Incorporated into the currently proposed route.
Variation 13	9/29/2021	This variation involved revisions to serve potential town/landowner taps and route the pipeline across receptive landowner properties.	Adopted into the currently proposed route.

TABLE 10.6-2 (cont'd)

Wahpeton Expansion Project
Route Variations Adopted or Rejected

Variation Number	Date	Variation Description	Adopted or Rejected
Variation 14	9/30/2021	This variation involved a revision to avoid a foreign line and also parallel said line as requested by the landowners.	Adopted into the currently proposed route.
Variation 15	10/4/2021	This variation involved several minor revisions to improve point of intersection deflections, offsets from section lines, and to avoid a tract at the crossing of the Wild Rice River.	Adopted into the currently proposed route.

Apart from the routes that were analyzed as part of the system alternatives discussed in Section 10.4 and the route alternatives discussed in Section 10.6.1, route variations are still in the process of being created and reviewed as landowner negotiations and civil, environmental, and cultural resource surveys are ongoing. The route will continue to be refined based on the criteria mentioned above. A comparative analysis of these route alternatives and route variations will be provided in a future draft of this resource report.

10.7 DELIVERY STATION ALTERNATIVES

10.7.1 MDU-Kindred Border Station Alternative

WBI Energy is in ongoing discussions with the customer and affected landowners to determine the best location for the MDU-Kindred Border Station that meets the landowner and customer needs. The proposed MDU-Kindred Border Station site is on agricultural land at the intersection of 166th Avenue SE and 53rd Street SE. WBI Energy identified an alternative station location that is approximately 0.2 mile east of the proposed site. This alternative site is also on agricultural land and is owned by the same landowner as the proposed site. The two sites are essentially identical from an environmental perspective, but the landowner has expressed a preference for the proposed site.

10.7.2 MDU-Wahpeton Border Station Alternative

WBI Energy is in ongoing discussions with the customer and affected landowners to determine the best location for the delivery point that meets the landowner and customer needs. The current proposed MDU-Wahpeton Border Station site is on agricultural land near the intersection of 75th Street SE and 179th Avenue SE. WBI identified an alternative station location about 1 mile south of the proposed site near the intersection of 76th Street SE and 179th Avenue SE. The customer has indicated preference for this alternative site; however, the location is wooded and is in close proximity to a residence, and for these reasons WBI Energy prefers the proposed site.

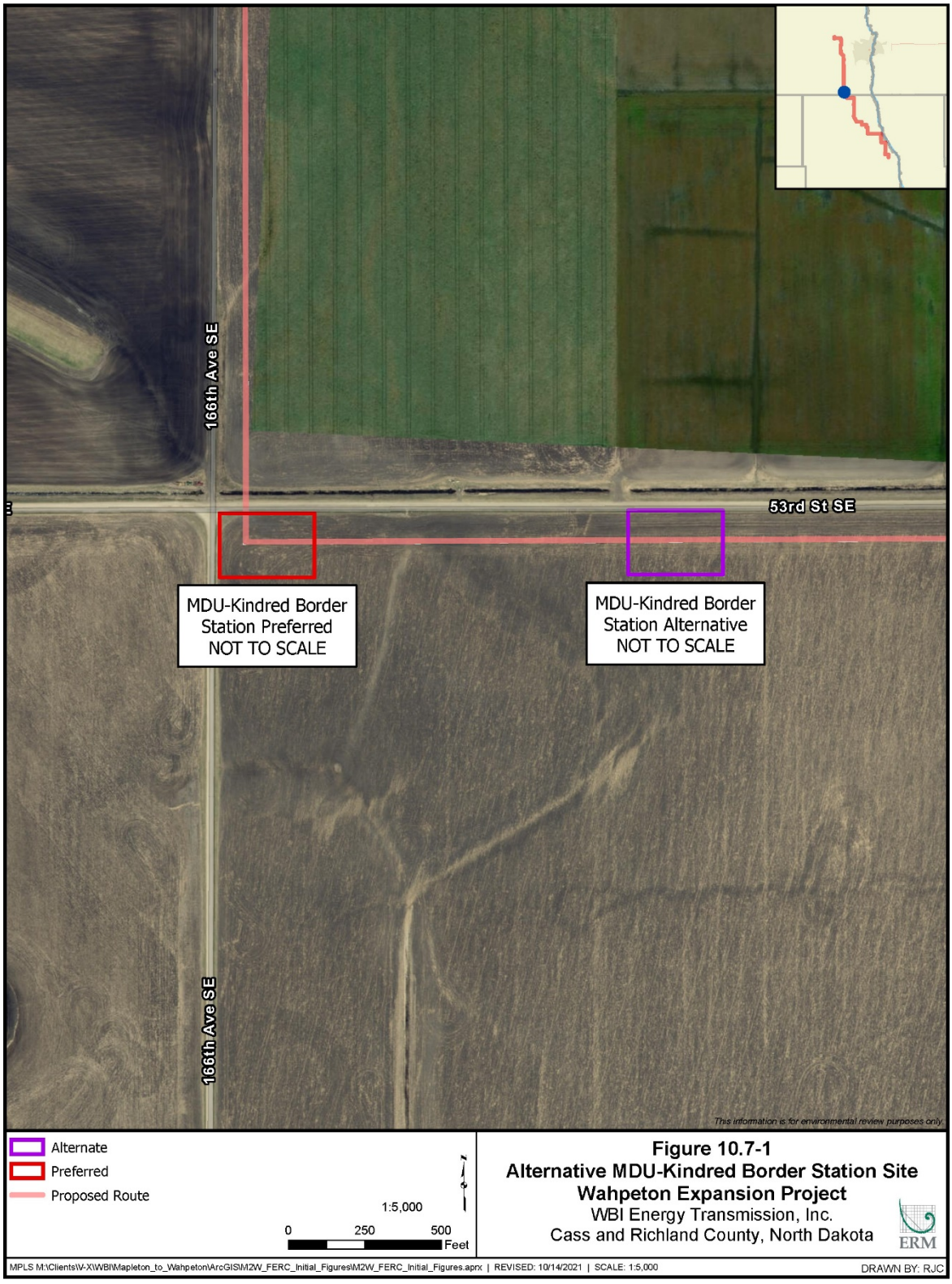
166th Ave SE
53rd St SE
MDU-Kindred Border Station Preferred NOT TO SCALE
MDU-Kindred Border Station Alternative NOT TO SCALE
166th Ave SE
This information is for environmental review purposes only.
Alternate
Preferred
Proposed Route
1:5,000
0
250
500
Feet
Figure 10.7-1
Alternative MDU-Kindred Border Station Site
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota
ERM
MPLS M:\Clients\V-X\WBI\Mapleton_to_Wahpeton\ArcGIS\M2W_FERC_Initial_Figures\M2W_FERC_Initial_Figures.aprx | REVISED: 10/14/2021 | SCALE: 1:5,000
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Figure 10.7-2
Alternative MDU-Wahpeton Border Station Site
Wahpeton Expansion Project
WBI Energy Transmission, Inc.
Cass and Richland County, North Dakota

10.8 REFERENCES

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