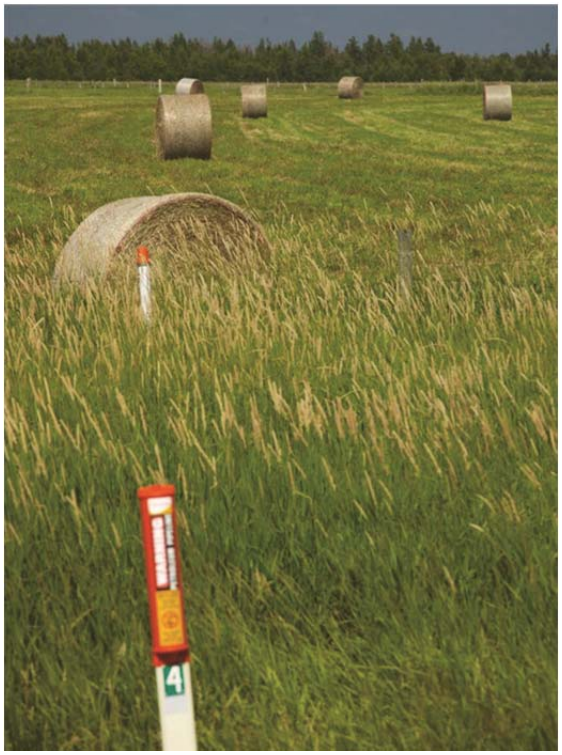

Route Permit and Partial Exemption Application for the Minnesota Public Utilities Commission

Enbridge Energy, Limited Partnership • Fond du Lac Line 4 Project

MPUC Docket No. PL9/PPL-18-752

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Minn. Rules Under Chapter 7852	**Route Permit for Crude Oil Pipeline**	
7852.2100	**General Information.**	
Subpart 1	**Cover letter**. Each application must be accompanied by a cover letter signed by an authorized representative or agent of the applicant. The cover letter must specify the type, size, and general characteristics of the pipeline for which an application is submitted.	N/A
Subpart 2	**Title page and table of contents**. Each application must contain a title page and a complete table of contents.	N/A
	Introduction.	Section 1.0
	Summary of Proposed Action.	Section 1.1
Subpart 3	**Statement of ownership**. Each application must include a statement of proposed ownership of the pipeline as of the day of filing and an affidavit authorizing the applicant to act on behalf of those planning to participate in the pipeline project.	Section 1.2
Subpart 4	**Background Information**. Each application must contain the following information:	Section 1.2
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Subpart 4B	The complete name, title, address, and telephone number of the authorized representative or agent to be contacted concerning the applicant's filing;	Section 1.2.2 Section 1.2.3
Subpart 4C	The signatures and titles of persons authorized to sign the application, and the signature of the preparer of the application if prepared by an outside representative or agent.	Section 1.2.4
	Project Overview.	
Subpart 4D	**Project Description.** A brief description of the proposed project which includes:	Section 3.0
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7852.2200	**Proposed Pipeline and Associated Facilities Description.**	
Subpart 1	**Pipeline design specifications.** The specifications for pipeline design and construction are assumed to be in compliance with all applicable state and federal rules or regulations unless determined otherwise by the state or federal agency having jurisdiction over the enforcement of such rules or regulations. For public information purposes, the anticipated pipeline design specifications must include but are not limited to:	Section 3.3.1
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Subpart 1B	Pipe type;	Section 3.3.1
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Subpart 1F	Class location and requirements, where applicable;	Section 3.3.1
Subpart 1G	Specified minimum yield strength in pounds per square inch; and	Section 3.3.1

Authority	Required Information	Section
Subpart 1H	Tensile strength in pounds per square inch.	Section 3.3.1
Subpart 2	**Operating pressure.** Operating pressure must include:	Section 3.3.2
Subpart 2A	Operating pressure (psig); and	Section 3.3.2
Subpart 2B	Maximum allowable operating pressure (psig).	Section 3.3.2
Subpart 3	**Description of associated facilities.** For public information purposes, the applicant shall provide a general description of all pertinent associated facilities on the right-of-way.	Section 3.4
Subpart 4	**Product capacity information.** The applicant shall provide information on planned minimum and maximum design capacity or throughput in the appropriate unit of measure for the types of products shipped as defined in part 7852.0100.	Section 3.5.1
Subpart 5	**Product description.** The applicant shall provide a complete listing of products the pipeline is intended to ship and a list of products the pipeline is designed to transport, if different from those intended for shipping.	Section 3.5.2
Subpart 6	**Material safety data sheet.** For each type of product that will be shipped through the pipeline, the applicant shall provide for public information purposes the material identification, ingredients, physical data, fire and explosive data, reactivity data, occupational exposure limits, health information, emergency and first aid procedures, transportation requirements, and other known regulatory controls.	Section 3.5.3, Appendix C - Safety Data Sheets
7852.2300	**Land Requirements.**	Section 3.6
	For the proposed pipeline, the applicant shall provide the following information	
Subpart A	**Typical Permanent right-of-way length, average width, and estimated acreage**	Section 3.6.1, Section 3.6.2 Appendix D - Typical Right-of-Way Configuration Drawings
Subpart B	**Typical Temporary right-of-way (workspace) length, estimated width, and estimated acreage:**	Section 3.6.1, Section 3.6.2, Appendix D - Typical Right-of-Way Configuration Drawings
Subpart C	**Estimated range of minimum trench or ditch dimensions, including bottom width, top width, depth, and cubic yards of dirt excavated:**	Section 3.6.4
Subpart D	**Minimum depth of cover for state and federal requirements; and**	Section 3.6.5
Subpart E	**Rights-of-way sharing or paralleling:** type of facility in the right-of-way, and the estimated length, width, and acreage of the right-of-way.	Section 3.6.6
7852.2400	**Project Expansion.** If the pipeline and associated facilities are designed for expansion in the future, the applicant shall provide a description of how the proposed pipeline and associated facilities may be expanded by looping, by additional compressor and pump stations, or by other available methods.	Section 3.9
7852.2500	**Right-of-Way Preparation Procedures and Construction Activity Sequence.** Each applicant shall provide a description of the general right-of-way preparation procedures and construction activity sequence anticipated for the proposed pipeline and associated facilities.	Sections 4.0

Authority	Required Information	Section
7852.2600	**Description of Preferred Route.**	
Subpart 1	**The applicant must identify the preferred route for the proposed pipeline and associated facilities, on any of the following documents which must be submitted with the application:**	
Subpart 1A	United States Geological Survey topographical maps to the scale of 1:24,000, if available;	Appendix A – A.2 Project County Maps
Subpart 1B	Minnesota Department of Transportation county highway maps; or	NA
Subpart 1C	Aerial photos or other appropriate maps of equal or greater detail in items A and B. The maps or photos may be reduced for inclusion in the application. One full-sized set shall be provided to the commission.	Appendix A – A.2 Project County Maps
Subpart 2	**Other route locations.** All other route alternatives considered by the applicant must be identified on a separate map or aerial photos or set of maps and photos or identified in correspondence or other documents evidencing consideration of the route by the applicant.	Section 5.4
Subpart 3	**Description of environment.** The applicant must provide a description of the existing environment along the preferred route.	Section 6.2.1, Section 6.3.1, Section 6.4.1, Section 6.5.1, Section 6.6.1, Section 6.7.1, Section 6.8.1, Section 6.9.1, Section 6.10.1, Section 6.11.1, Section 6.12.1.1, Section 6.12.1.2, Section 6.12.1.3, Section 6.12.1.4, Section 6.12.2.1, Section 6.12.2.2, Section 6.12.2.3, Section 6.12.2.4, Section 6.12.2.5, Section 6.12.2.7, Section 6.12.4, Section 6.13.1, Section 6.14.1, Section 6.15.1, Section 6.16.1, Section 6.17.1
7852.2700	**Environmental Impact of Preferred Route.** The applicant must also submit to the commission along with the application an analysis of the potential human and environmental impacts that may be expected from pipeline right-of-way preparation and construction practices and operation and maintenance procedures. These impacts include but are not limited to the impacts for which criteria are specified in part 7852.0700 or 7852.1900.	Section 6.0
7852.1900	**Criteria for Pipeline Route Selection**	
Subpart 1	**Scope and purpose of criteria.** The scope and purpose of this part is to specify the criteria used by the commission in determining the route of a pipeline in parts 7852.0800 to 7852.1900. The commission shall make a specific written finding with respect to each of the criteria. Any new easements or right-of-way agreements obtained from potentially affected landowners before issuance of a pipeline routing permit are obtained at the sole risk of the applicant. The fact that the agreements have been obtained shall not be considered by the commission in selecting the route.	N/A
Subpart 2	**Standard.** In determining the route of a proposed pipeline, the commission shall consider the characteristics, the potential impacts, and methods to minimize or mitigate the potential impacts of all proposed routes so that it may select a route that minimizes human and environmental impact.	N/A

Authority	Required Information	Section
Subpart 3	**Criteria**. In selecting a route for designation and issuance of a pipeline routing permit, the commission shall consider the impact on the pipeline of the following:	N/A
Subpart 3A	human settlement, existence and density of populated areas, existing and planned future land use, and management plans;	Section 6.2, Section 6.5
Subpart 3B	the natural environment, public and designated lands, including but not limited to natural areas, wildlife habitat, water, and recreational lands:	Section 6.1; Section 6.2, Section 6.5, Section 6.6, Section 6.7, Section 6.8, Section 6.9, Section 6.10, Section 6.11, Section 6.12, Section 6.13, Section 6.14, Section 6.15, Section 6.17
Subpart 3C	lands of historical, archaeological, and cultural significance	Section 6.16
Subpart 3D	economies within the route, including agricultural, commercial or industrial, forestry, recreational, and mining operations;	Section 6.2
Subpart 3E	pipeline cost and accessibility;	Section 3.7
Subpart 3F	use of existing rights-of-way and right-of-way sharing or paralleling;	Section 3.6.6
Subpart 3G	natural resources and features;	Section 6.7, Section 6.8, Section 7.9, Section 6.10, Section 6.11, Section 6.12, Section 6.13, Section 6.14, Section 6.15, Section 6.17
Subpart 3H	the extent to which human or environmental effects are subject to mitigation by regulatory control and by application of the permit conditions contained in part 7852.3400 for pipeline right-of-way preparation, construction, cleanup, and restoration practices;	Section 6.0, Section 4.0, Appendix B- Environmental Protection Plan, Appendix F - Unanticipated Discoveries Plan
Subpart 3I	cumulative potential effects of related or anticipated future pipeline construction; and	Section 3.9, Section 6.0
Subpart 3J	the relevant applicable policies, rules, and regulations of other state and federal agencies, and local government land use laws including ordinances adopted under Minnesota Statutes, section 299J.05, relating to the location, design, construction, or operation of the proposed pipeline and associated facilities.	Appendix B - Environmental Protection Plan, Appendix F - Unanticipated Discoveries Plan

Authority	Required Information	Section
7852.2800	**Right-of-Way Protection and Restoration Measures.**	
Subpart 1	**Protection.** The applicant must describe what measures will be taken to protect the right-of-way or mitigate the adverse impacts of right-of-way preparation, pipeline construction, and operation and maintenance on the human and natural environment.	Section 6.2.2, Section 6.2.3, Section 6.3.2, Section 6.3.3, Section 6.4.2, Section 6.4.3, Section 6.5.2, Section 6.5.3, Section 6.6.2, Section 6.6.3, Section 6.7.2, Section 6.7.3, Section 6.8.2, Section 6.8.3, Section 6.9.2, Section 6.9.3, Section 6.10,2, Section 6.10.3, Section 6.11.2, Section 6.11.3, Section 6.12.1.1, Section 6.12.1.2, Section 6.12.1.3, Section 6.12.1.4, Section 6.12.2.6, Section 6.12.2.7, Section 6.12.4, Section 6.13.2, Section 6.13.3, Section 6.14.2, Section 6.14.3, Section 6.15.2, Section 6.15.3, Section 6.16.2, Section 6.16.3, Section 6.17.2, Section 6.17.3, Appendix B - Environmental Protection Plan, Appendix F Unanticipated Discoveries Plan
Subpart 2	Restoration. The applicant must describe what measures will be taken to restore the right-of-way and other areas adversely affected by construction of the pipeline.	Section 4.2.9 Appendix B – Environmental Protection Plan
7852.2900	**Operation and Maintenance.** Pipeline operations and maintenance are assumed to be in compliance with all applicable state and federal rules or regulations, unless determined otherwise by the state or federal agency having jurisdiction over the enforcement of such rules or regulations. For public information purposes, the applicant must provide a general description of the anticipated operation and maintenance practices planned for the proposed pipeline.	Section 4.3
7852.3000	**List of Government Agencies and Permits.** Each application must contain a list of all the known federal, state, and local agencies or authorities and titles of the permits they issue that are required for the proposed pipeline and associated facilities.	Section 6.18

7852.3100	**Evidence o f Consideration of Alternative Routes.** If the applicant is applying for a pipeline routing permit under parts 7852.0800 to 7852.1900, the applicant shall provide a summary discussion of the environmental impact of pipeline construction along the alternative routes consistent with the requirements of parts 7852.2600 to 7852.2700 and the rationale for rejection of the routing alternatives.	Section 5.0

DEFINITIONS

Annual Capacity	The average sustainable pipeline throughput over a year. Annual capacity is calculated assuming historic average annual operating conditions. These operating conditions include scheduled and unscheduled maintenance, normal operating issues, and crude supply availability. Annual capacity of a pipeline is typically 90% of design capacity, and represents the capacity requested in this Application.
Applicant	Enbridge Energy, Limited Partnership.
Aquifer	Geologic unit (or a combination of geologic units) that is capable of yielding usable quantities of water
Condensate	A commodity having a density from 600 kg/m³ up to but not including 800 kg/m³ and a viscosity of 0.4 mm2/s up to but not including 2 mm2/s will be classified as Condensates.
Design Capacity	The theoretical capacity of the pipeline and pumping facilities, at its current or proposed design state for given types of liquids and their batch sequence. Design capacity is calculated assuming theoretically ideal operating conditions.
Easement	The agreement(s) and/or interest in privately owned land held by Enbridge by virtue of which it has the right to construct and operate together with such other rights and obligations as may be set forth in such agreement.
Enbridge	Enbridge is the term used to collectively describe the various Enbridge companies, affiliates and legal entities, some of which are defined below.
Enbridge Energy, Limited Partnership	Enbridge Energy, Limited Partnership owns and operates the liquid pipeline system known as the Enbridge "Lakehead System." Together with Enbridge Pipelines Inc. in Canada, these operationally integrated pipeline systems form the longest liquid petroleum pipeline in the world.

DEFINITIONS

Enbridge Mainline Corridor	A pipeline corridor in Northern Minnesota where up to six pipelines are located and which cross the Fond du Lac Band Reservation.
Enbridge Mainline System	A term used to described the U.S. and Canadian portion of a major liquid pipeline systems owned by Enbridge Energy, Limited Partnership and Enbridge Pipelines Inc., respectively.
Enbridge Energy Partners, L.P.	Enbridge is a wholly owned subsidiary of Enbridge Energy Partners, L.P. (Enbridge Partners) which is a Delaware limited partnership headquartered at 5400 Westheimer Court, Houston, 77056 (ph. 713-627-5400); www.enbridgepartners.com.
Environmental Justice	Environmental justice refers to the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, and often relate to larger concentrations or minority and low-income communities concentrated in small geographic areas within a larger area.
Heavy Crude	A commodity having a density from 904 kg/m^3 to 940 kg/m^3 inclusive and a viscosity from 100 to 350 mm^2/s. As defined in the Enbridge Energy, Limited Partnership local tariff applying to crude petroleum and natural gas liquids.
Initial Annual Capacity	Average sustainable rate: average barrels per day over a year (90% of design capacity).
Initial Design Capacity	Theoretical capacity.
Light Crude	A commodity having a density from 600 kg/m^3 up to but not including 876kg/m^3 and a viscosity from 0.4 mm^2/s up to but not including 20 mm^2/s. Ad defined in the Enbridge Energy, Limited Partnership local tariff applying to crude petroleum and natural gas liquids.
Line 3 Replacement Project	A crude oil pipeline project owned by Enbridge Energy, Limited Partnership to be constructed under a certificate of need and route permit issued by the MPUC in Docket Nos. PL-9/CN-14-916 and PPL-15-137.

DEFINITIONS

Medium Crude	A commodity having a density from 876kg/m³ up to but not including 904kg/m³ and a viscosity from 20 mm²/s up to but not including 100mm²/s. As defined in the Enbridge Energy, Limited Partnership local tariff applying to crude petroleum and natural gas liquids.
Natural Gas Liquids (NGL)	A commodity having a maximum absolute vapor pressure of 1,250 kilopascals at 37.8°C and a density of up to but not including 600 kilograms per cubic meter (kg/m³) and a viscosity of up to but not including 0.4 square millimeters per second (mm²/s) will be classified as Natural Gas Liquids.
Person	An individual or entity, including any partnership, corporation, association, joint stock company, trust, joint venture, limited liability company, unincorporated organization, or governmental entity (or any department, agency, or political subdivision thereof).
Right-of-Way	The land included in permanent and temporary Easements that Enbridge possess for the purpose of construction and operation.
Routing Permits	Routing permits issued by the MPUC.
Shipper	A customer, who transports volumes on the common carrier pipeline system, including crude oil producers, refiners, and/or marketers.
Ultimate Annual Capacity	Maximum economic expansion capacity of individual pipeline that is sustainable average daily rate per day over a year.
Ultimate Capacity	Maximum economic expansion capacity of individual line. Additional pumping horsepower required over current design to meet this capacity.

ACRONYMS AND ABBREVIATIONS

A

AMA	Aquatic Management Area	ANSI	American National Standards Institute
ATWS	Additional Temporary Workspace		

B

BGEPA	Bald and Golden Eagle Protection Act	BMPs	Best Management Practice
BSA	Bank Service Area	BWSR	Minnesota Board of Water and Soil Resources

C

C.F.R.	Code of Federal Regulations	CO	Carbon Monoxide
CO_2	Carbon Dioxide	CWI	County Well Index
CWA	Clean Water Act		

D

dBA	decibels on the A-weighted Scale		

E

ECDs	Erosion Control Devices	EEP	Enbridge Energy Partners, L.P.

ACRONYMS AND ABBREVIATIONS

E

EIs	Environmental Inspector	EO	Element Occurrences
EPA or USEPA	Environmental Protection Agency	EPP	Environmental Protection Plan
ERM	Environmental Resources Management, Inc.	ESA	Endangered Species Act

F

Fond du Lac Band	Fond du Lac Band of Lake Superior Chippewa	Fond du Lac Band HIA	Fond du Lac Band of Lake Superior Chippewa Health Impact Assessment
Fond du Lac Band RMD	Fond du Lac Band of Lake Superior Chippewa Resource Management Division		

G

GHG	Greenhouse Gases	GIS	Geographic Information System
GPS	global positioning system		

I

IVP	Intelligent Valve Placement

K

Kbpd	Thousand Barrels Per Day

ACRONYMS AND ABBREVIATIONS

L

LFDL	Fond du Lac Band of Lake Superior	LRR	Land Resource Region

M

MAOP	Maximum Allowable Operating Pressure	MBS	Minnesota Biological Survey
MDH	Minnesota Department of Health	MP	Milepost
MPCA	Minnesota Pollution Control Agency	MLCCS	Minnesota Land Cover Classification System
MLRA	Major Land Resource Areas	MNDNR	Minnesota Department of Natural Resources
MNDOT	Minnesota Department of Transportation	MPUC or MNPUC	Minnesota Public Utilities Commission

N

NAGPRA	Native American Graves Protection and Repatriation Act of 1990	NHIS	Minnesota Natural Heritage Information System
NHPA	National Historic Preservation Act of 1966	NLEB	Northern Long-eared Bat
NOx	nitrogen oxides	NPC	Native Plant Community

ACRONYMS AND ABBREVIATIONS

N

NPS	Nominal Pipe Size	NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service	NRI	National Rivers Inventory
NWI	National Wetland Inventory		

O

O_3	Ozone	ORVW	Outstanding Resource Value Waters

P

Pb	Lead	PEM	Palustrine Emergent Wetlands
PFO	Palustrine Forested	PHMSA	Pipeline and Hazardous Materials Safety Administration
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter	PM_{10}	particulate matter less than 10 microns in diameter
Project	Fond du Lac Line 4 Project	psig	Pounds Per Square Inch Gauge
PSS	Palustrine Scrub-Shrub Wetlands	PUB	Palustrine Unconsolidated Bottom Wetlands
PVC	polyvinyl chloride	PWI	Public Water Inventory

ACRONYMS AND ABBREVIATIONS

R

RBC	Reservation Business Committee	RMD	Resource Management Division

S

SHPO	State Historic Preservation Office	SNA	Scientific and Natural Area
SO_2	Sulfur Dioxide	SOBS	Sites of Biodiversity Significance
SSURGO	Soil Survey Geographic Database		

T

TCP	traditional cultural properties	THPO	Tribal Historic Preservation Office
TSS	Total Suspended Solids		

U

USFWS	U.S. Fish & Wildlife Service	USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture	USGS	U.S. Geological Survey
USNPS	United States National Park Service		

ACRONYMS AND ABBREVIATIONS

V

VOC	Volatile Organic Compounds

W

WCA	Wetland Conservation Act	WMA	Wildlife Management Area
WPMO	Fond du Lac Wetlands Protection and Management Ordinance		

1.0 Introduction

Enbridge Energy, Limited Partnership (Enbridge or Applicant) hereby respectfully submits this Application for a Pipeline Route Permit and Partial Exemption for the Fond du Lac Line 4 Project (the Project) on the Fond du Lac Band of Lake Superior Chippewa (Fond du Lac Band) Reservation. The Project will relocate approximately 10 miles of the existing Line 4 pipeline from the center to the outer edge of the existing Enbridge Mainline Corridor within the Fond du Lac Band Reservation.

The Project addresses specific concerns raised by the Fond du Lac Band related to an above-grade segment of existing Line 4 pipe installed through the Fond du Lac Band Reservation in the 1970s. Fond du Lac Band has raised concerns that the above-grade Fond du Lac Band Line 4 segment creates a barrier to the natural water flow across the Reservation and, in some areas, impedes land access for the Band members to gather medicinal plants and other culturally important resources. After thoroughly investigating those concerns and potential alternatives, Enbridge and Fond du Lac Band agreed to relocate and bury the new proposed Line 4 segment within the Reservation adjacent to the current Enbridge Mainline Corridor. Once the Project is complete and the new relocated Line 4 segment is in service, the existing above-grade Line 4 segment will be deactivated and removed. Removal of the existing segment of Line 4 in the Fond du Lac Band Reservation will provide a positive impact on humans and the environment. The positive impacts include, removing the physical barrier and enhancing access to Band members who traverse this area and removing the hydrologic barriers to surface flow, allowing future environmental remediation of Fond du Lac Band lands.

1.1 Summary of Proposed Action

1.1.1 Pipeline

The proposed Project includes relocating approximately 10 miles of the existing 48-inch diameter Line 4 pipeline with approximately 10 miles of 36-inch diameter pipeline in the Right-of-Way adjacent to the existing Enbridge Mainline Corridor. The Project will be located in portions of St. Louis and Carlton Counties within the boundaries of the Fond du Lac Band Reservation. The Project will parallel the existing Enbridge Mainline Corridor for 100 percent of the proposed Preferred Route.

The segment of the existing Line 4 pipeline which will be relocated will be removed after the Project has received regulatory approvals and is constructed, tested, and placed into service.

A copy of the Project Overview Map is also enclosed as Appendix A of this Application.

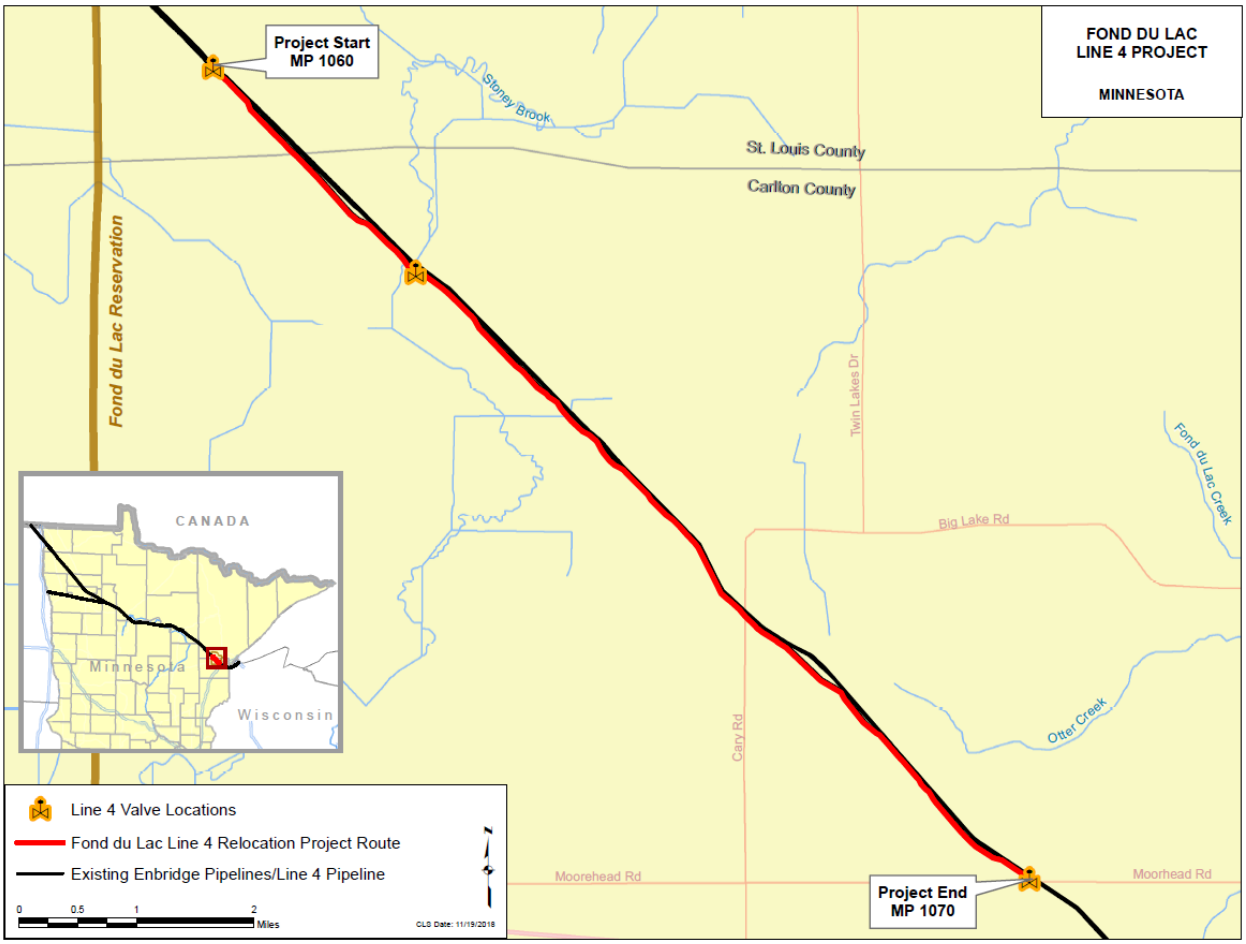


Figure 1.1-1 Project Overview Map

1.1.2 Associated Facilities

The Project's associated facilities include mainline valves, access roads, and cathodic protection equipment. Because the proposed Project will relocate a segment of the existing Line 4 pipeline between two existing mainline valve locations, no new pump stations are proposed as part of the Project. The Project will involve the following valve site work: the removal of an existing mainline valve at the existing milepost (MP) 1060 valve site; the installation of a new mainline valve at MP 1062; and the removal and replacement of an existing mainline valve at MP 1070 (see Figure 1.1.2-1). The valve work at these locations is required to place the valves in the right location for operational needs of the Enbridge Mainline System and to isolate segments of the pipeline near environmental features identified by the Fond du Lac Band.

Ten temporary access roads and two new operational access roads for the valve sites are proposed along existing trails and roads where public roads do not provide adequate access to the Right-of-Way for construction. These temporary access roads are also planned to be used during the construction of the Line 3 Replacement Project. Enbridge will restore the temporary access roads after construction of the Project and the Line 3 Replacement Project is complete.

Further, new cathodic protection test stations will be installed along the Project. A cathodic protection test station is a wire or cable attached to an underground metallic structure (i.e., Line 4 pipeline) that is encased in a polyvinyl chloride (PVC) pipe that extends 3 to 4 feet above-grade with a cap.

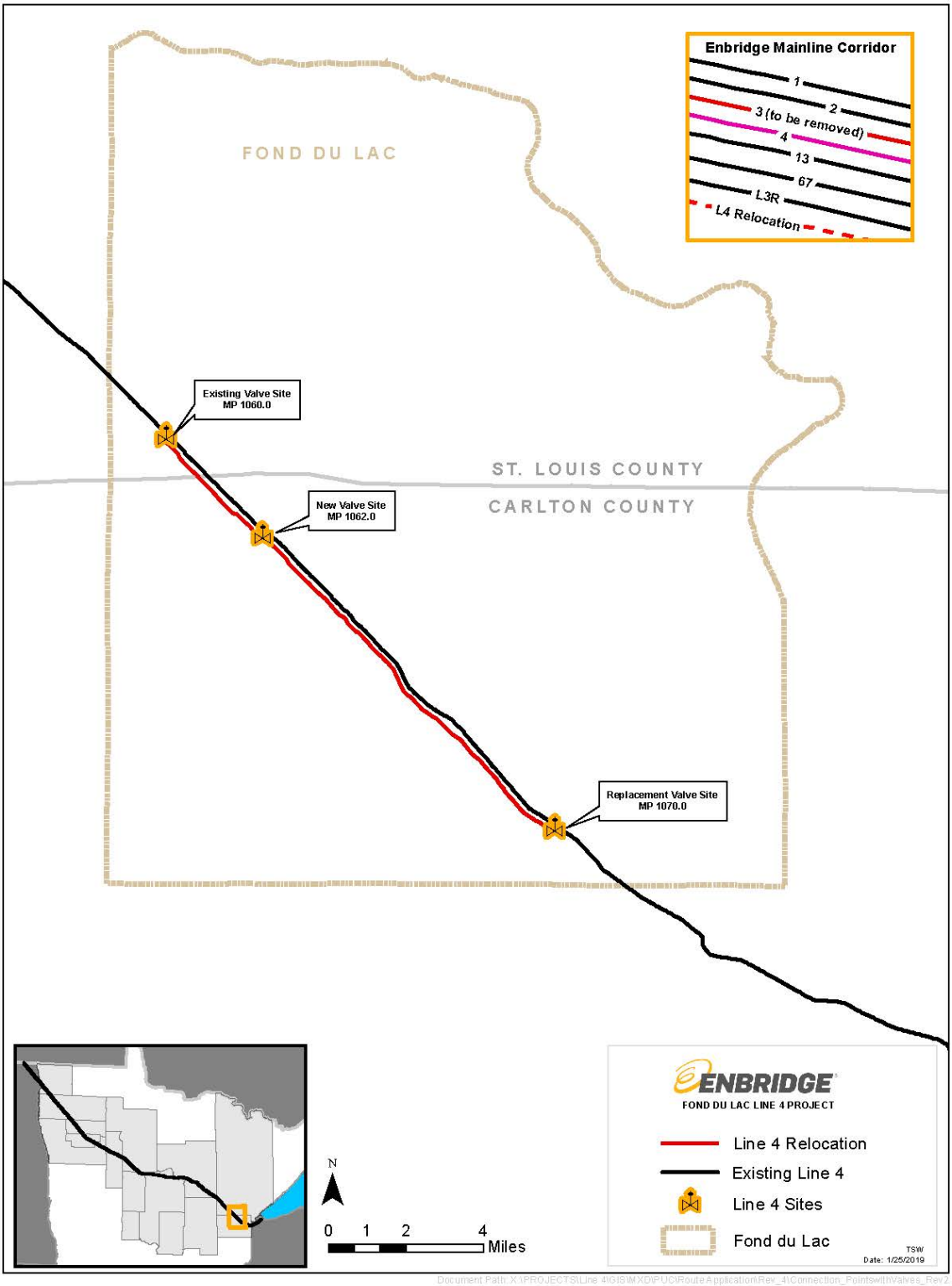


Figure 1.1.2-1 Valve Location Map

1.2 Statement of Ownership

Enbridge Energy, Limited Partnership (Enbridge) is a Delaware limited partnership authorized to do business in the State of Minnesota. Enbridge is a wholly owned subsidiary of Enbridge Energy Partners, L.P. (Enbridge Partners) which is a Delaware limited partnership headquartered at 5400 Westheimer Court, Houston, 77056 (ph. 713-627-5400); www.enbridgepartners.com.

1.2.1 Applicant's Name and Contact Information

Enbridge is the Applicant and will own and operate the Project. The Applicant's contact information is provided below:

Enbridge Energy, Limited Partnership
5400 Westheimer Court
Houston, Texas 77056
(713) 627-5400

1.2.2 Authorized Representative's Name and Contact Information

Listed below are the authorized representatives and their respective contact information for the Applicant.

Christina K. Brusven	Haley Waller Pitts
Fredrikson & Byron P.A.	Fredrikson & Byron P.A.
200 South Sixth Street	200 South Sixth Street
Suite 4000	Suite 4000
Minneapolis, Minnesota 55402	Minneapolis, Minnesota 55402
(612) 492-7000	(612) 492-7000
cbrusven@fredlaw.com	hwallerpitts@fredlaw.com

1.2.3 Contact Regarding Filing

The name, title, address, and telephone number for each contact person of the Applicant are as follows:

James Watts	Jason Risdall
Managing Legal Counsel	Supervisor Regulatory Affairs
26 E. Superior Street	26 E. Superior Street
Duluth, Minnesota 55802	Duluth, Minnesota 55802
218-464-5706	218-522-4705
James.Watts@enbridge.com	Jason.Risdall@enbridge.com

1.2.4 Applicant's Signatories and Preparer

The Application was prepared by Enbridge. The following individual is authorized to sign the Application on behalf of Enbridge:

/s/ James Watts
James Watts
Managing Legal Counsel
Enbridge Energy, Limited Partnership
By Enbridge Pipelines (Lakehead) L.L.C.

1.2.5 Other Outreach Tools

Enbridge has established the following outreach tools to allow interested parties the opportunity to obtain information about and submit questions/comments regarding the Project:

- E-mail: EnbridgeinMN@enbridge.com
- Toll-Free Number: 1-855-788-7812

Enbridge monitors these outreach tools in order to respond to questions in a timely manner.

1.3 Minnesota Public Utilities Commission (MPUC) Permit Process

Pipeline Routing Permit and Partial Exemption

Minnesota Statutes Section 216G.02 requires that the MPUC issue a pipeline Routing Permit for certain pipelines, including the Project, prior to construction. Enbridge is submitting this Application for a Route Permit under the partial exemption of pipeline route selection procedures (Minnesota Rules Chapter 7852.0700). The Route Permit application and associated filings can be viewed at the MPUC's website at: https://edockets.state.mnus/efiling/ under MPUC Docket No. PL9/PPL-18-752.

The flowchart in Figure 1.3-1 outlines the MPUC Partial Exemption process:

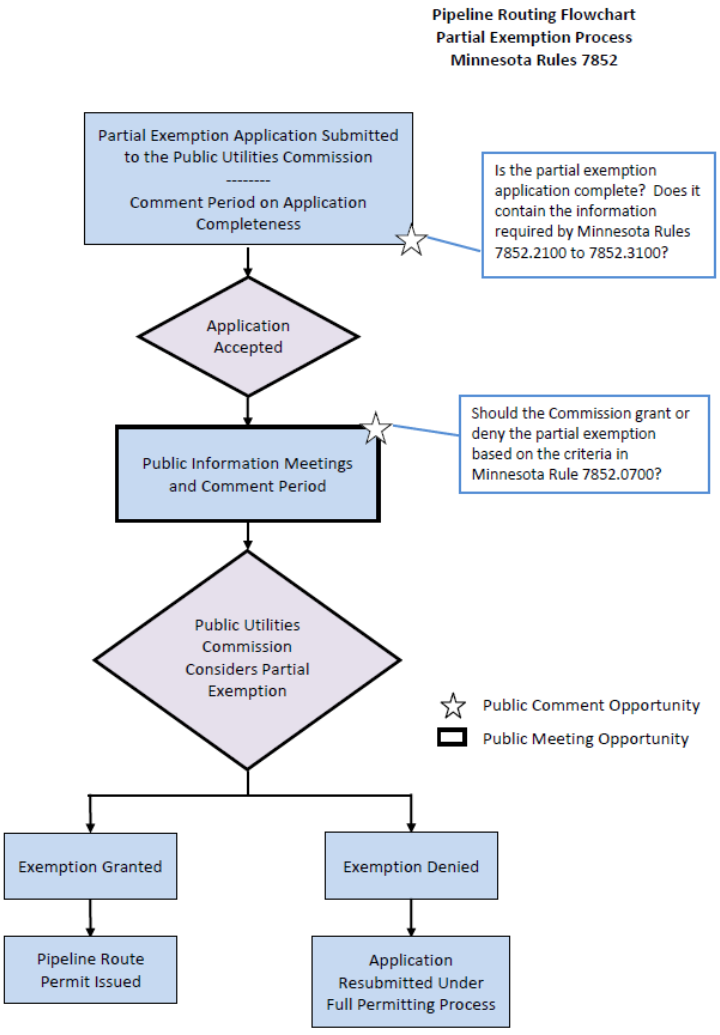


Figure 1.3-1 MPUC Partial Exemption Process

2.0 PURPOSE AND NEED

Enbridge is proposing this Project to address specific concerns raised by the Fond du Lac Band related to an above-grade segment of Line 4 installed through the Fond du Lac Band Reservation in the 1970s. Fond du Lac Band has raised concerns that the above-grade Fond du Lac Band Line 4 segment creates a barrier to the natural water flow across the Reservation and, in some areas, impedes land access for the Band members to gather medicinal plants and other culturally important resources. After thoroughly investigating those concerns and potential alternatives, Enbridge and Fond du Lac Band agreed to relocate and bury approximately 10 miles of a new proposed Line 4 segment adjacent to the existing Enbridge Mainline Corridor on the Fond du Lac Band Reservation. Once the Project is complete and the new relocated Line 4 segment is in service, the existing above-grade Line 4 segment will be deactivated and removed.

Originally, existing Line 4 was constructed above-grade in certain wetlands and heavily saturated soils using mound construction, whereby the pipeline is installed on the surface of the land and covered with soil. Due to the pipeline's location above-grade, hydrology is being affected within multiple wetland areas on the Reservation. In addition, over the years, soil erosion on portions of the above-grade pipe within the Reservation has led to pipeline exposures. By relocating this Line 4 segment and then subsequently removing the existing pipe, the Project will accomplish four goals:

1. The Project will protect the Line 4 pipeline against third-party damage.
2. After planned removal of this segment of existing Line 4, the Project enables planned future restoration of impacted wetlands by removing the hydrologic barrier to the surface flow to allow future environmental remediation of Fond du Lac Band lands.
3. After planned removal of this segment, the Project will improve land accessibility for the Fond du Lac Band Community, enabling use of this area for the Community to actively practice traditional activities and provide access for timber management.
4. After planned removal of this segment, the Project will eliminate exposed Line 4 pipe segments within Fond du Lac Band Reservation by relocating the existing, above-grade, 48-inch-diameter pipeline with a buried, 36-inch diameter pipeline.

Fond du Lac Band believes that the Project will benefit its Community by meeting each of these goals; Enbridge agrees.

3.0 Project Description

3.1 Background Information

3.1.1 History of Line 4

The existing Line 4 is a 36-to-48-inch outside diameter, approximately 1,100 mile long pipeline that extends from Edmonton, Alberta, Canada to Superior, Wisconsin. Construction of Line 4 began in the 1970s as 48-inch parallel loops to the existing Line 3 pipeline. In the 1990s, 36-inch diameter pipe was installed to connect the 48-inch loops until a continuous line was completed.

The existing Line 4 on the Fond du Lac Band Reservation was constructed with 48-inch pipe and installed above-grade using mound construction techniques, whereby the pipeline is installed on the surface of the land and covered with soil that is removed from areas immediately adjacent to the pipeline. The other Enbridge pipelines on the Fond du Lac Band Reservation (Line 1, Line 2, Line 3, Line 13, and Line 67) were installed below grade.

Line 4 has transported heavy, medium, and light crude oil at various capacity levels over its operating history. Line 4 has and continues to play an important and integral role in delivering crude oil to (i) Minnesota Pipeline Company's interconnecting facilities at Clearbrook, for ultimate delivery to Minnesota refineries, and (ii) the Superior Terminal, for ultimate delivery to other refineries in the United States and Canada.

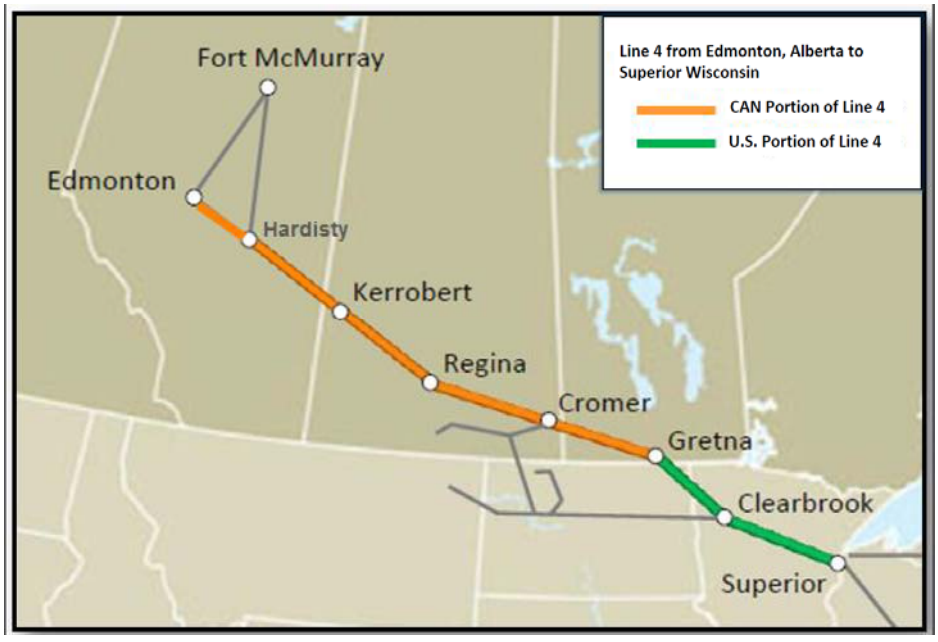


Figure 3.1-1 Overview Map of Line 4

3.2 General Location

The Project is located within the Fond du Lac Band Reservation in portions of Arrowhead Township in St. Louis County, and Progress and Perch Lake Townships in Carlton County, in northeastern Minnesota. Figure 3.2-1 shows the general location of the pipeline.

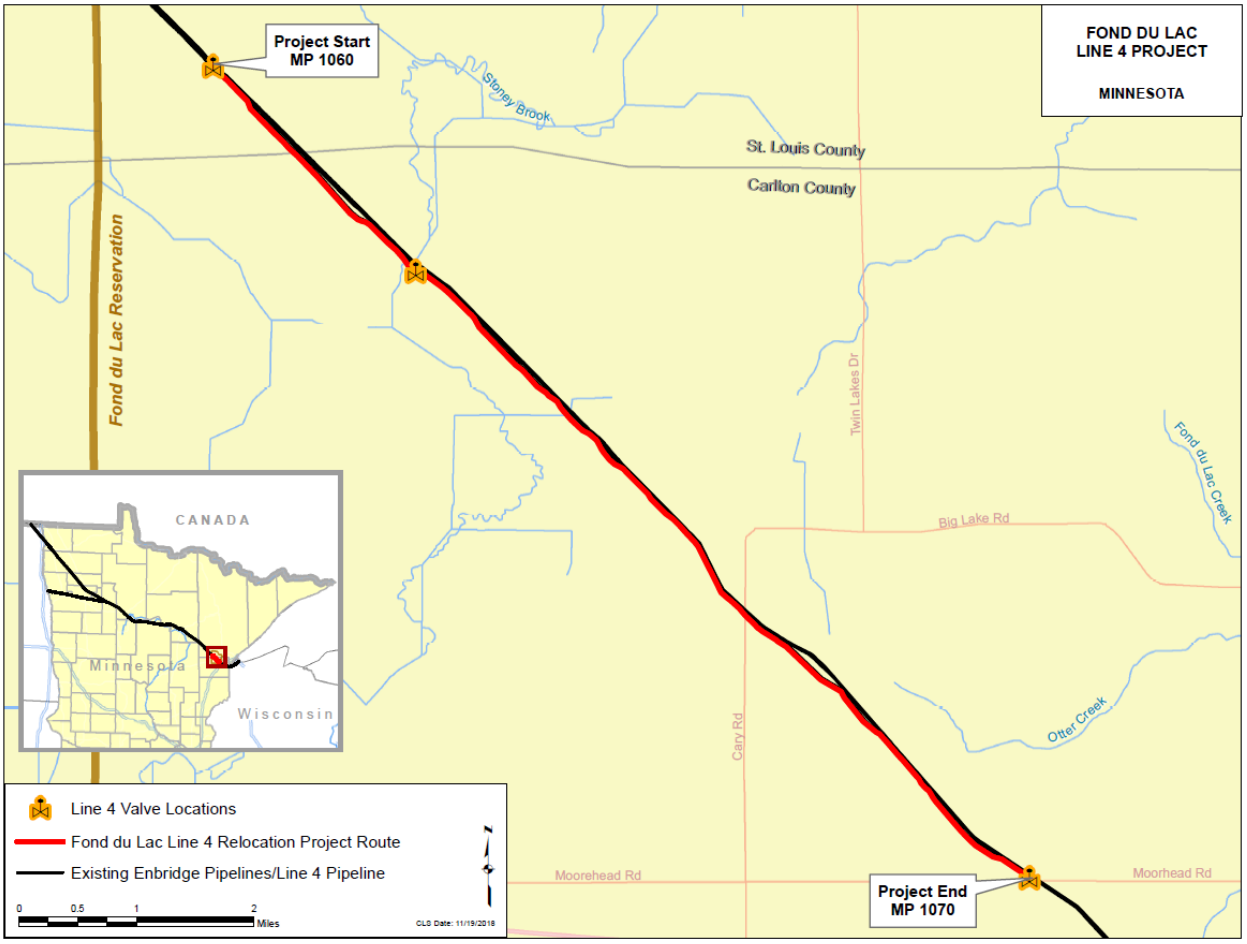


Figure 3.2-1 Project Overview Map

3.3 Proposed Project

Enbridge proposes to relocate an approximately 10-mile segment of the existing Line 4 pipeline with approximately 10 miles of new 36-inch diameter pipeline, parallel to the Line 3 Replacement pipeline as illustrated in Figures 3.2-1. After the 10-mile segment of pipe is relocated, the Line 4 pipe will be re-connected to the existing Enbridge Mainline System at the valve locations (MP 1060 & MP 1070) through mechanical excavation underneath the active pipelines (Line 3R, Line 67, and Line 13). The existing 10-mile segment of above-grade Line 4 pipe that will be relocated will be permanently deactivated following completion of the Project. Details regarding design specifications of the pipeline and associated above-ground facilities are provided below.

3.3.1 Pipeline Design Specifications

Table 3.3.1-1 summarizes the design parameters of the pipe required for the Project. The pipeline design specification outlined in the table below will be designed and constructed with all applicable state and federal rules or regulations.

The wall thickness of these sections will vary between 0.515-inch and 0.600-inch, and length of the pipe sections will be determined on a site-specific basis based on detailed engineering for the final route. The increased wall thickness designed at these crossings is primarily implemented to account for the additional stress caused by exterior loads and additional stress encountered during installation. A minimum wall thickness requirement for pressure containment is calculated for the entire mainline to satisfy the desired Maximum Allowable Operation Pressure (MAOP), thereby ensuring the entire mainline can withstand normal operating pressure at designed wall thickness. In addition, short lengths of heavier-wall pipe will be utilized at roads and water crossings.

The determination of an appropriate pipeline wall thickness is governed by design criteria in the Code of Federal Regulations (C.F.R.), which incorporates numerous factors, one such being the pipe design factor, which is a safety factor provided in C.F.R. § 195.106(a). Another such factor, the longitudinal seam factor, is a factor that takes into consideration the method by which the longitudinal weld was completed and can be found in C.F.R. § 195.106(e). The specified minimum yield strength as provided in the table means the amount of stress required to induce permanent deformation of the steel as prescribed by the specification that the pipe was manufactured to. Finally, the tensile strength is the maximum stress that the steel can withstand while being stretched or pulled before breaking.

Table 3.3.1-1 Fond du Lac Band Line 4 Project Pipe Specifications	
Explanation	**Specification**
Pipe Size (Diameter)	36-inch outside diameter (NPS 36)
Pipe Type (Grade)	X70 carbon steel pipe manufactured according to American Petroleum Institute (API) Specifications 5L PS2
Pipe Wall Thickness	
Nominal	0.515 inch
Road Bore	0.600 inch
Cased Railroad	N/A
Uncased Railroad	N/A
Horizontal Directional Drill (HDD)	N/A
Estimated Length	10 miles
Pipe Design Factor	0.72
Longitudinal Seam Factor	1.00
Class Location and Requirements	Not applicable (applies to natural gas pipelines)
Coating, mainline	14 mils Epoxy Bonding
Coating, trenchless	40 mils Epoxy Bonding ABR
Specified Minimum Yield Strength (psi)	70,000 psi
Tensile Strength (psi)	82,000 psi

3.3.2 Operating Pressure

The operating pressure of the Project will be up to 1,156 pounds per square inch gauge (psig). The maximum operating pressure of the relocated segment of Line 4, based on Barlow's formula, which is a calculation used to show the relationship between internal pressure, allowable stress, nominal thickness, and diameter, could be 1,440 psig.

3.4 Associated Facilities

The Project's associated facilities include mainline valves, access roads, and cathodic protection equipment. Because the proposed Project will relocate a segment of the existing Line 4 pipeline between two existing mainline valve locations, no new pump stations are proposed as part of the Project. The Project will involve the following valve site work: the removal of an existing mainline valve at the existing MP 1060 valve site; the installation of a new mainline valve at MP 1062; and the removal and replacement of an existing mainline valve at MP 1070.

Ten new temporary access roads and two new operational access roads for the valve sites are proposed to facilitate Project construction in coordination with the Line 3 Replacement Project. The proposed access roads will be located along existing trails and roads that lead to the Right-of-Way in areas where public roads do not provide adequate access for construction.

The Project will receive cathodic protection by tying into Enbridge's existing impressed current systems. All cathodic protection connections including test station leads, bonding cables and rectifier cables on the existing Line 4 will be reconnected on the relocated segment. New cathodic protection test stations will be installed along the Project. A cathodic protection test station is a wire or cable attached to an underground metallic structure (i.e., Line 4 pipeline) that is encased in a PVC pipe that extends 3 to 4 feet above-grade with a cap.

3.4.1 Valve Placement

Enbridge conducted an Intelligent Valve Placement (IVP) analysis for the Project's Preferred Route to ensure that the current and intended valve placement complies with federal law and the operational needs of the Enbridge Mainline System.

The valves to be installed will be 36-inch American National Standards Institute (ANSI) 600 weld end by weld end, full port, rising stem gate valves. These valves will be manufactured in accordance with industry standard, American Petroleum Institute Standard 6D "American Petroleum Institute Specification for Steel, Gate, Plug, Ball, and Check Valves for Pipeline Service." Table 3.4.1-1 below summarizes the current design parameters of the valves.

Table 3.4.1-1
Valve Design Parameters

Design Parameter	Specification
Diameter	36-inch outside diameter (NPS 36)
American National Standards Institute Rating	ANSI Class 600
Maximum Operating Pressure	1440 psig

3.4.2 Other Third-Party Ancillary Facilities

The new mainline valves are motor-actuated and a new electrical service including the installation of an electrical service meter will be required to remotely operate the valves.

3.5 General Design and Operational Specifications

The Project will be designed and constructed in accordance with federal pipeline safety regulations, specifically 49 C.F.R. Parts 194 and 195 and any applicable national technical standards, including American Society of Mechanical Engineers B31.4.

Line 4 is currently a dual diameter line with sections of 36-inch and 48-inch pipe in operation. The Project is being proposed with 36-inch pipe, rather than 48-inch pipe, for several reasons:

1. Hydraulic models indicate the ability to maintain the rated flow capacity with the 36-inch diameter pipe using pressures within the limits of the MAOP of the adjacent sections of Line 4;
2. By using 36-inch pipe, the Project will be able to leverage similar construction equipment, materials, and installation techniques as those being used on the adjacent Line 3 Replacement Project.
3. As an additional benefit to constructing with a 36-inch pipe, spare parts can be pooled together for the operation of the relocated Line 4 section with the other Enbridge pipelines of the same diameter. These include the sections of Line 4 that are currently 36-inches in diameter, the adjacent Line 3 Replacement pipeline, and the recent Alberta Clipper pipeline.
4. Line 4 already requires the use of dual diameter inspection tools, using 36-inch diameter pipe for this segment will have no effect on Enbridge's ability to inspect the pipeline.

3.5.1 Product Capacity Information

The Project's design and annual capacity information assumes that predominantly heavy crude oil will be transported on the Line 4 pipeline with the Fond du Lac Band segment relocation being placed in-service.

There are multiple variables that determine the capacity of a pipeline. First, liquid pipelines are generally designed at a specified capacity for a known liquid; so a change in fluid characteristics (e.g., density and viscosity) of the transported liquids will affect the capacity of the pipeline. Additionally, liquids are also batched, meaning that different liquids, or grades of crude oil, are shipped at different times, generally in a repeatable sequence. Therefore, both the fluid characteristics and batch sequence will affect the capacity of the pipeline.

Two definitions are used to describe pipeline capacity: Design Capacity and Annual Capacity.

Design Capacity: The average capacity of the pipeline and pumping facilities, at its current or proposed design state for given types of liquids and their batch sequence. Design capacity is calculated assuming ideal operating conditions. Design capacity for the entire existing Line 4 pipeline is 884 thousand barrels per day (kbpd). This will not be impacted by the Project.

Annual Capacity: The average sustainable pipeline throughput over a year. Annual capacity is calculated assuming historic average annual operating conditions. These operating conditions

include scheduled and unscheduled maintenance, normal operating issues, and crude supply availability. Annual capacity of a pipeline is typically 90 percent of design capacity, and represents the capacity requested in this Application. Annual Average Capacity for the Line 4 pipeline is 796 kbpd. This will not be impacted by the Project.

3.5.2 Product Description

Enbridge transports a wide variety of petroleum products. The products, generally described, are condensate, light crude, medium crude, heavy crude, and natural gas liquids.

The Line 4 pipeline currently transports predominantly heavy crude oil. The products shipped on Line 4 are not expected to change with the Project in service.

3.5.3 Safety Data Sheets

Enclosed as Appendix C are the Safety Data Sheets for the crude oil that may be transported on the Project.

3.6 Land Requirements

As proposed, the Project will require the acquisition of new Right-of-Way and temporary workspace on the Fond du Lac Band Reservation in Minnesota. Land requirements have been minimized by the Project's Preferred Route, which was selected in coordination with Fond du Lac to primarily share and/or run parallel to the existing Enbridge Mainline Corridor.

The Project will require the acquisition of up to 20 feet of new Right-of-Way in upland and wetland areas, up to 40 feet of new Right-of-Way in saturated wetlands areas, and up to 140 feet of temporary workspace, much of which will be disturbed during the Line 3 Replacement project. The proposed area necessary for new Right-of-Way varies in width based on the terms of existing easements and the current alignment of existing pipelines or utilities within existing easements. The temporary workspaces will be located adjacent to and contiguous with the proposed new Right-of-Way corridor and will be identified by distinctive staking of construction limits prior to clearing. Additionally, the Project's construction impacts will be minimized because the temporary workspace will generally be extended 20 feet outside of what was disturbed for the Line 3 Replacement Project.

A more detailed discussion of the land requirements is provided in the following sections.

3.6.1 Typical New Right-of-Way and Temporary Workspace

As noted above, the Project's Preferred Route will follow the existing Enbridge Mainline Corridor on the Fond du Lac Band Reservation and run parallel to the permitted Line 3 Replacement Project. Shown on Table 3.6.1-1 below are the anticipated land requirements on the Fond du Lac Band Reservation based on the location of the proposed 36-inch diameter pipeline. The Right-of-Way Configuration Drawings are located in Appendix D.

Table 3.6.1-1
Anticipated Land Requirements

Planned Disturbance[a]			New Disturbance	
New Line 4 Temporary Workspace & Planned Line 3R ROW	Planned New Line 4 ROW	Temporary Workspace Planned to be Cleared by the Line 3R Project	New Temporary Workspace For Line 4	Total Land Requirements (ft.)
51.5 – upland	20 - upland	48.5 - upland	20 - upland	140 - upland
51.5 – wetland	20 - wetland	23.5 - wetland	20 - wetland	115 - wetland
51.5 – saturated wetland	40 - saturated wetlands	23.5 - saturated wetlands	20 - saturated wetlands	135 - saturated wetlands

[a] Disturbance on the Enbridge Right-of-Way planned to occur for the Line 3 Replacement Project.

Overall, the amount of new Right-of-Way to be acquired is anticipated to be limited to 37 acres. In total, Project construction will affect approximately 168 acres of land. Of that total, 64 acres would be just the Line 4 temporary workspace and new Right-of-Way impacts. The rest of the total will be shared temporary workspace and new Right-of-Way workspace with the Line 3 Replacement Project.

As noted in Table 3.6.1-1 above, the Right-of-Way configuration drawings depicting the typical Project construction footprint in upland, wetland, and saturated wetland areas are included in Appendix D of this Application.

3.6.2 Additional Temporary Workspace (ATWS)

In areas that required special construction methods, the Project's Preferred Route may require additional temporary workspace (ATWS).

For example, Enbridge may require ATWS in locations where side sloping terrain requires additional soil management to build a working area for:

- Construction equipment and working personnel to travel safely within the Project's construction site;
- Environmental monitoring and mitigation to be employed as required; and
- Continuous ingress/egress for emergency equipment in the event of an accident during construction.

For special construction techniques such as boring at roads and waterbodies, ATWS will also be required.

3.6.3 Associated Facilities

The associated facilities for the Project are valves (for which Enbridge acquires a separate and distinct easement) and cathodic protection test stations. Valves and other above-ground appurtenances (a perimeter fence with access gate, instrument building within the fenced area, valve stem, associated instrumentation, and electrical service meter) will require approximately 0.055 acre. New cathodic protection test stations will be installed along the Project. Ten temporary access roads and two new operational access roads for the valve sites are proposed along existing trails and roads where public roads do not provide adequate access to the Right-of-Way for construction. These temporary access roads are also planned to be used during the construction of the Line 3 Replacement Project. Enbridge will restore the temporary access roads after construction of the Project and the Line 3 Replacement Project is complete.

3.6.4 Trench Dimensions

Typical trench dimensions are included in Table 3.6.4-1 below. The total amount of soil excavated during construction will be approximately 100 thousand cubic yards that is separated, stored, and then returned to the trench during the Project's backfill operation.

Table 3.6.4-1 Typical Trench Dimensions	
	36" outside diameter pipe
Minimum ditch depth to allow for a nominal 36-inches of ground cover to the top of the pipe	72-inches
Trench width at the bottom	5-feet
Trench width at the top	10-12-feet

3.6.5 Minimum Depth of Cover

In accordance with federal requirements (49 C.F.R. § 195.248(a)), the depth of cover between the top of the pipe and the ground level, road bed, or river bottom can range between 18 to 48 inches, depending on the location of the pipe and the presence of rock, which is provided below:

> § 195.248 Cover over buried pipeline.
>
> (a) Unless specifically exempted in this subpart, all pipes must be buried so that it is below the level of cultivation. Except as provided in paragraph (b) of this section, the pipe must be installed so that the cover between the top of the pipe and the ground level, road bed, river bottom, or underwater natural bottom (as determined by recognized and generally accepted practices), as applicable, complies with the following table:

Table 3.6.5-1 Minimum Depth of Cover Location		
	Cover in inches	
Location	**For normal excavation**	**For rock excavation[1]**
Industrial, commercial, and residential areas	36	30
Crossing of inland bodies of water with a width of at least 100 feet from high water mark to high water mark	48	18
Drainage ditches at public roads and railroads	36	36
Deepwater port safety zones	48	24
Gulf of Mexico and its inlets in waters less than 15 feet deep as measured from mean low water	36	18
Other offshore areas under water less than 12 feet deep as measured from mean low water	36	18
Any other area	30	18
[1] Rock excavation is any excavation that requires blasting or removal by equivalent means.		

Based on site characteristics for this Project, these federal regulations allow a depth of cover of 30 inches. Where the pipeline crosses cultivated agricultural lands, state law requires that a minimum depth of cover of 54-inches be maintained, unless waived by the landowner. However, this Project does not cross cultivated agricultural lands and the minimum depth of cover required by the state will not apply.

3.6.6 Right-of-Way Sharing and Paralleling

As proposed, the Project will parallel existing Enbridge pipelines within the Enbridge Mainline Corridor for 100 percent of its length.

Table 3.6.6-1
Fond du Lac Band Line 4 Project - Paralleling Enbridge Pipelines

Begin Mile Post	End Mile Post	Enbridge Pipelines	Third-Party Pipelines	Other Utilities Corridors	Roads/ Railroads/ Highways	Greenfield	Paralleling Miles	Greenfield Miles	Total
1060	1070	X					10		
Total Miles							10	0	10
Percentages							100%	0%	

3.6.7 Project Widths

The Preferred Route width is 750 feet and the new Right-of-Way width is between 20-40 feet.

3.7 Pipeline Estimated Costs and Accessibility

The total Project estimated cost is approximately $100 million.

3.8 Project Schedule

The Project time schedule is shown in Table 3.8-1 below.

Table 3.8-1
Project Schedule

Milestone	Time
Submission of Pipeline Routing Permit and Partial Exemption	1st Quarter 2019
Issuance of Pipeline Routing Permit and Partial Exemption	3rd Quarter of 2019
Construction Start Date	3rd Quarter of 2019
Anticipated Construction Complete	1st Quarter of 2020
In-Service Date	1st Quarter of 2020

The Project is proposed to be constructed in conjunction with construction of the Line 3 Replacement Project. This coordination will eliminate the need for Enbridge to re-mobilize after the Line 3 Replacement Project, reduce the duration of construction activity and extent of environmental impacts, and will expedite the restoration process.

3.9 Project Expansion

There are no current plans for expansion of the Project.

4.0 Right-of-Way Preparation and Construction Sequence

The following sections provide an overview of the typical processes and procedures that will be implemented for this Project. Associated facilities will be constructed concurrently with the pipeline.

4.1 Environmental Controls

Enbridge plans to utilize the Environmental Protection Plan (EPP) found in Appendix B for this Project. The EPP is a description of environmental techniques used to protect the environment and sets the minimum environmental standards that must be followed on the Project. The EPP includes general environmental practices, construction, restoration, and notification procedures addressing soils erosion and sedimentation, wetland and waterbody crossings, spill prevention and containment, construction and hydrotest dewatering, etc. Enbridge has developed standardized erosion control and restoration measures to minimize potentially adverse environmental effects associated with pipeline construction. These measures are described in more detail in Section 1 of Enbridge's EPP (Appendix B), and in Section 6 of this Application. Additional environmental standards that will be followed by the Project are included in Appendix B.

Further, Enbridge also plans to utilize the Unanticipated Discoveries Plan to set forth guidelines in the event archaeological resources or human skeletal remains are discovered during construction activities (Appendix F), and the Contaminated Sites Management Plan to present guidance on managing contaminated soil, water, debris or other materials which may be encountered during Project (Appendix H).

Enbridge will also assign Environmental Inspectors (EIs) to the Project. The same EIs for the Line 3 Replacement Project will be assigned to the Fond du Lac Band Line 4 Project. Environmental inspections will be conducted during construction and restoration activities. The EIs act as a resource for construction personnel and as a liaison among the contractor, Enbridge's Project Management, and agency officials. The EIs are responsible for assisting with pre-construction field tasks such as marking wetland and waterbody boundaries, clarifying environmental requirements, identifying possible issues and challenges ahead of construction, conducting environmental training of construction staff, offering advice and consultation to Enbridge's contractors, and conducting inspections/monitoring in accordance with applicable laws, permits, and Project plans. Enbridge's EIs are required to document environmental compliance throughout the duration of the Project. Additionally, Enbridge will be working with Fond du Lac Band throughout construction because they will also have a monitor from their resource management department on-site throughout Project construction.

4.1.1 Construction Timing

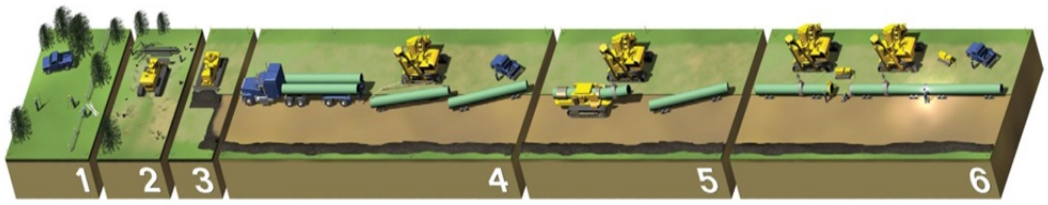
Certain parts of construction are best performed at set times of the year, and while construction timing is largely contingent on receiving all applicable permits, Enbridge strives to schedule construction to avoid and minimize impacts to the environment. Depending on when Enbridge receives required permits, it may be able to start construction activities in 3rd Quarter of 2019. Enbridge has contingency plans that accommodate restricted construction seasons for sensitive resources should the need arise.

If permitting authorizations and construction seasons allow as proposed, the Project is to be constructed in the same construction season as the Line 3 Replacement Project. Constructing in the same season will eliminate the need for Enbridge to re-mobilize and reopen the construction footprint after the Line 3 Replacement Project, further reducing the duration of construction activities and the extent of environmental impacts, and will allow for an expedited, and a more timely restoration process.

4.2 Preparing the Right-of-Way and Construction Sequence

Figure 4.2-1, illustrates the typical steps in pipeline construction. Pipeline construction includes survey and staking of the Right-of-Way; clearing and grading; topsoil stripping and soil segregation; pipe stringing; bending; welding/coating; inspection; trenching; lowering-in; backfilling; hydrostatic testing; cleanup; restoration and revegetation, as explained in the following sections. More detailed information, regarding the construction-related environmental policies, procedures, and protection measures that Enbridge plans to implement in the preparation of the Right-of-Way and construction of this Project, is discussed in the EPP (Appendix B).

Typical Project Construction Footprint in Upland and Wetland Areas



(1) Based on the information gathered during surveying, a final route is developed, and the route is then marked with stakes.

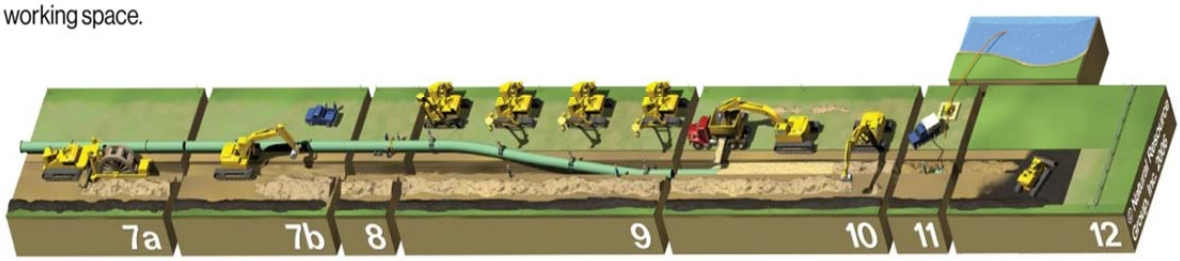
(2) Crews begin to prepare for construction by grading the right-of-way, removing trees and preparing the working space.

(3) In cultivated areas, the topsoil along the right-of-way is stripped and stored in piles for careful replacement following the installation of the pipeline.

(4) Crews then re-stake the center of the trench area, lay out, or "string," sections of the pipe along the right-of-way.

(5) Crews bend and weld the sections of pipe into a longer piece that follows the contours of the land.

(6) Individual sections are already coated to prevent corrosion. Each weld is inspected by X-ray and then coated.



(7a) Once this process is complete, a trench is dug to accept the pipe.

(7b) In agricultural areas, careful attention is paid to properly separate and store the topsoil and subsoil so they do not mix.

(8) The pipe coating is inspected one more time before the pipe is lowered into the trench.

(9) The pipe is lowered into the trench and laid within the prepared trench bottom.

(10) The trench is then carefully backfilled with subsoil and topsoil.

(11) Before operation, pressurized water is used to test the pipeline and verify the structural integrity of the pipe and welds.

(12) The right-of-way and workspace is regraded and vegetated according to agency requirements and landowner agreements.

The construction process usually takes less than two to three months to complete on an individual landowner's property, depending on weather conditions. Throughout the many phases of pre-planning and construction, Enbridge representatives work closely with communities and individuals along the route to provide information, seek input and answer questions.

NOTE: These illustrations are conceptual and general in nature; specific construction and restoration techniques could vary depending on circumstances.

Figure 4.2-1 Typical Project Construction Footprint in Upland and Wetland Areas

4.2.1 Construction Staking

Before construction begins, Enbridge crews will stake the centerline and exterior boundaries of the construction Right-of-Way. Exterior boundary stakes will mark the limit of approved disturbance areas and will be maintained throughout the construction period. Enbridge and its contractors will contact the Gopher One-Call System to identify and mark the locations of underground utilities. During staking, equipment involved in construction will be moved onto the Right-of-Way using existing roads for access wherever practicable. Figure 4.2.1-1 shows an example of the staked construction Right-of-Way to mark the centerline, workspace limits, and the area approved for ground disturbance.

Figure 4.2.1-1 Right-of-Way Staking

Once the Right-of-Way is properly staked, traffic control measures are implemented where the construction Right-of-Way intersects public roads to ensure both construction worker and public safety as shown in Figure 4.2.1-2.

Figure 4.2.1-2 Traffic Control