Frontier Project

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Project Description

August 2019

ENBRIDGE FRONTIER INC.

ENBRIDGE

List of Contributors to the Project Description

CONTRIBUTORS	CREDENTIALS	SECTION(S)	RELEVANT EXPERIENCE
Jennifer Russell	P.Ag.	All	10+ years of regulatory and pipeline experience
Matt Mosher	M.Sc.	All	9 years of BC and pipeline regulatory experience
Carmen Holschuh	M.Sc., R.P.Bio.	All	15 years of BC and pipeline regulatory experience
Nicole Pilgrim		Section 5 (Project Location and Setting)	6 years of BC and pipeline regulatory experience
Dana Drumm	R.P.Bio.	Section 5 (Project Location and Setting); Appendix B (Preliminary List of Valued Components and Key Indicators); Appendix C (Wildlife Species with Provincial or Federal Conservation Status)	8 years of BC and pipeline regulatory experience
Mike Climie	R.P.Bio, P.Biol.	Section 5 (Project Location and Setting) and Appendix B (Preliminary List of Valued Components and Key Indicators)	10 years of BC and pipeline regulatory experience
Tyler Innes	M.Sc., R.P.Bio.	Section 5 (Project Location and Setting) and Appendix B (Preliminary List of Valued Components and Key Indicators)	8 years of BC and pipeline regulatory experience
Julie Greenwood	Ph.D.	Section 5 (Project Location and Setting) and Appendix B (Preliminary List of Valued Components and Key Indicators)	6 years of pipeline regulatory experience
Michaela Bjorseth		Sections 3 (Consultation and Engagement) and 5 (Project Location and Setting)	8 years of BC and pipeline regulatory experience
Emma Shea	APR	Sections 3 (Consultation and Engagement) and 5 (Project Location and Setting)	13 years of BC and pipeline regulatory experience
Michelle Langfeldt		Sections 3 (Consultation and Engagement) and 5 (Project Location and Setting)	8 years of BC and pipeline regulatory experience
Joelle Westlund		Sections 3 (Consultation and Engagement) and 5 (Project Location and Setting)	6 years of BC and pipeline regulatory experience

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Abbreviations and Acronyms

°C	degree(s) Celsius
AAIF	Archaeological Assessment Impact Form
ABA	Area Based Analysis
AIA	Archaeological Impact Assessment
ALC	Agricultural Land Commission
ALR	Agricultural Land Reserve
BC	British Columbia
BC CDC	British Columbia Conservation Data Centre
BC *EAA*	BC *Environmental Assessment Act*
BC EAO	BC Environmental Assessment Office
bcf/d	billion cubic feet per day
BC MECCS	BC Ministry of Environment and Climate Change Strategy
BC MFLNRORD	BC Ministry of Forests, Lands and Natural Resource Operations and Rural Development
BC MoH	BC Ministry of Health
BC MoTI	BC Ministry of Transportation and Infrastructure
BC *OGAA*	BC *Oil and Gas Activities Act*
BC OGC	BC Oil and Gas Commission
BRFN	Blueberry River First Nation
CAC	Criteria Air Contaminant
CAMEL	Commission Air Monitoring Environmental Laboratory
CEA	Cumulative Effects Assessment
cm	centimetre(s)
cmpd	cubic metres per day
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CSA	Canadian Standards Association
DFO	Fisheries and Oceans Canada
DRFN	Doig River First Nation
EA	Environmental Assessment
EAC	Environmental Assessment Certificate
Enbridge	Enbridge Inc. (parent company)
Enbridge Frontier	Enbridge Frontier Inc., a subsidiary of Enbridge Inc.
EPP	Environmental Protection Plan
FEED	front-end engineering design

Fort St. John	City of Fort St. John
GBC	Government of British Columbia
GHG	greenhouse gas
HDD	horizontal directional drill
HRFN	Halfway River First Nation
KLCN	Kelly Lake Cree Nation
km	kilometre(s)
km/h	kilometre(s) per hour
LRMP	Land and Resource Management Plan
m	metre(s)
MLIB	McLeod Lake Indian Band
MLTC	Master License to Cut
mm	millimetre(s)
mmcm/d	million cubic metre(s) per day
MOP	maximum operating pressure
Municipal District of Chetwynd	Chetwynd
Municipality of Taylor	Taylor
N/A	Not Applicable
NEWS	Northeast Water Strategy
NGL	Natural Gas Liquids
NOX	nitrogen oxide
NPS	Nominal Pipe Size
OGMA	Old Growth Management Area
Project	Frontier Project
PRFN	Prophet River First Nations
PRRD	Peace River Regional District
psig	pound(s) per square inch gauge
RMZ	Resource Management Zone
ROW	right-of-way
RSEA	Regional Strategic Environmental Initiative
SARA	*Species at Risk Act*
SCADA	supervisory control and data acquisition
SFN	Saulteau First Nations

TEK	Traditional Ecological Knowledge
TLU	Traditional Land Use
U.S.	United States
UWR	Ungulate Winter Range
VC	Valued Component
WMFN	West Moberly First Nations

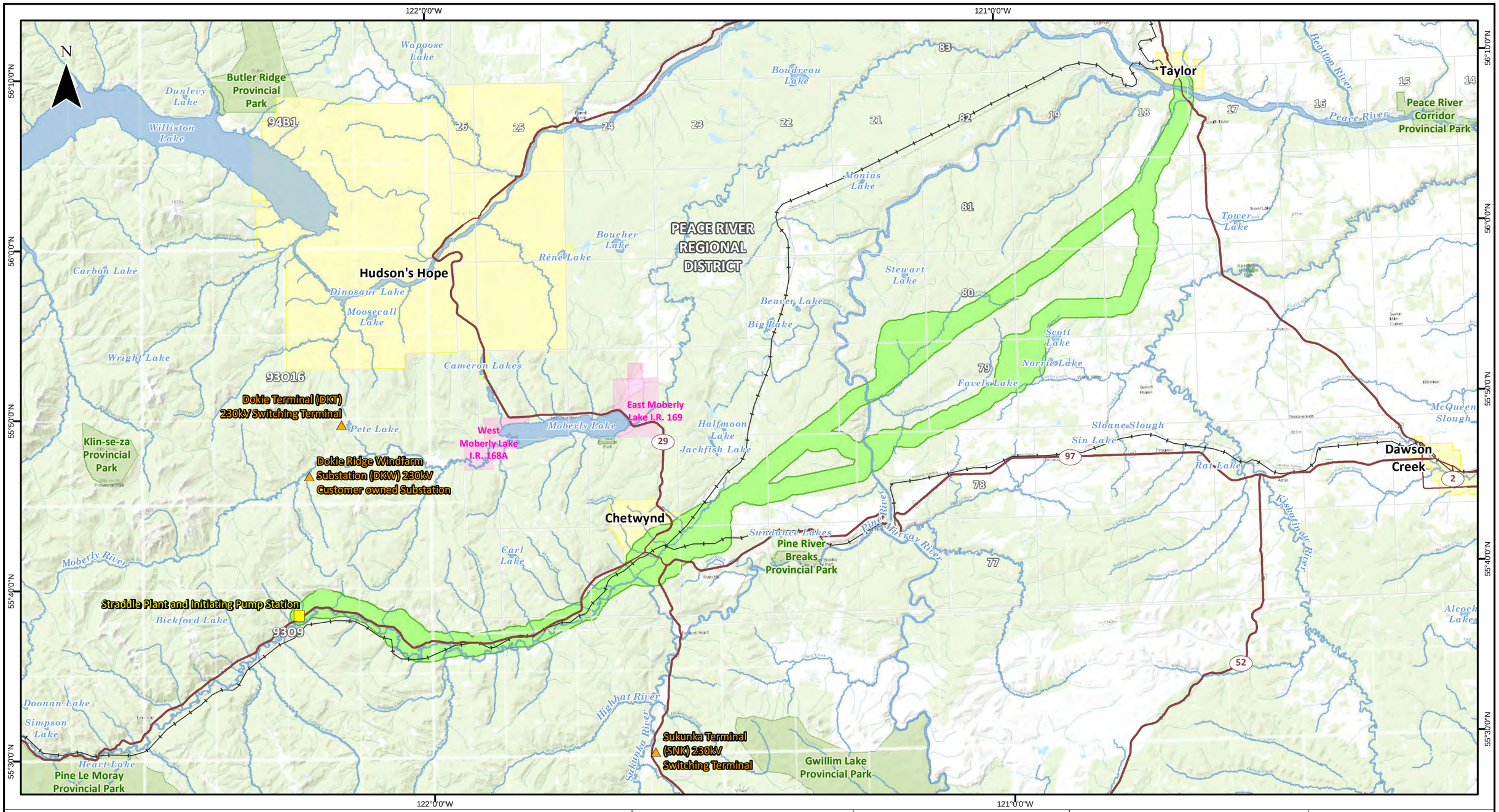
1. Introduction

Enbridge Frontier Inc., a wholly owned subsidiary of Enbridge Inc. (Enbridge Frontier), is proposing to construct and operate the Frontier Project, comprising a new natural gas liquids (NGL) straddle plant and NGL pipeline in northeastern British Columbia (BC) (the Project). The Project consists of a new straddle plant, an initiating pump station, and approximately 130 to 170 kilometres (km) of 16-inch (Nominal Pipe Size [NPS] 16) (406.4-millimetre [mm])-diameter pipeline, beginning approximately 36 km west of the Municipal District of Chetwynd (Chetwynd), BC at the proposed straddle plant and adjacent initiating pump station site, and traversing northeast near the Municipal District of Taylor (Taylor), BC, approximately 15 km south of the City of Fort St. John (Fort St. John), BC (see Figure 1-1 and Figure 1-2). Fractionation and rail loading facilities would be developed near Taylor and be owned and operated by third parties. The proposed straddle plant would extract NGLs from an existing pipeline system and transport them to fractionation and rail loading facilities for further processing and transportation to BC markets. The plant will have an initial capacity of approximately 1.0 to 1.5 billion cubic feet per day (bcf/d) (283 to 425 million cubic metres per day [mmcm/d]). In addition to the proposed straddle plant, initiating pump station, and pipeline, the Project would require an electricity transmission line to the straddle plant. It is anticipated that the transmission line will be approximately 15 to 45 km long based on a radius to reasonable sources of power in the area. The transmission line location is currently being considered through completion of a power system study to determine potential tie-in locations. The Project is investigating tying into 230-kilovolt power systems to the northwest and northeast of the straddle plant and initiating pump station location. Design for the transmission line is tied to the design load requirements for the facility which will be determined during front-end engineering design (FEED). Temporary infrastructure will be required during construction (such as, access roads, temporary bridges, stockpile sites, borrow sites, contractor yards, and construction camps). The proposed pipeline has a delivering capacity of approximately 16,000 cubic metres per day (cmpd).

Given that the Project is wholly located within the Province of BC and involves the construction of more than 40 km of pipeline that is greater than 323.9 mm in diameter, an Environmental Assessment Certificate (EAC) pursuant to the BC *Environmental Assessment Act* (BC *EAA*) is required. This Project Description has been prepared in accordance with the *Guide to Preparing a Project Description for an Environmental Assessment in British Columbia* (BC EAO 2016). A concordance table for BC Environmental Assessment Office (BC EAO) guidance is included in Appendix A.

This section includes an overview of the Project, its purpose and rationale, and information about Enbridge Frontier. Additional details for the proposed Project are described throughout this Project Description and include:

- Project details and technical information (Section 2);
- Enbridge Frontier's approach to consultation and engagement and what has been heard to date (Section 3);
- Regulatory context for the Project (Section 4);
- Project setting (environmental, social, economic, heritage, and health) (Section 5);
- Potential effects from the proposed Project (Section 6);
- A preliminary list of Valued Components (VCs) (Appendix B);
- Wildlife species with Provincial or Federal Conservation Status (Appendix C); and
- Environmental constraints mapping (Appendix D).



- Straddle Plant and Initiating Pump Station
- Potential Transmission Line Tie-in Location
- Potential Corridor
- Highway
- Road
- Railway
- Watercourse
- Waterbody
- Regional District
- Municipality
- Indian Reserve
- Park/Protected Area

ENBRIDGE

JACOBS

July 2019	Reference: D3135600
Mapped By: MJP	Checked By: MM

SCALE: 1:400,000

0 5 10 15 20 km

(All Locations Approximate)

NAD83 UTM Zone 10N
Basemap: ESRI World Topographic Map, Natural Resources Canada 2010. BC Grid: TERA Environmental Consultants 2010; Roads/Highways: Geobase 2008; Railways: NRCan 2012; Hydrography: BC FLNRO 2008; Parks/Protected Areas: BC MFLNRO 2008; Municipalities, Regional Districts: BC MFLNRO 2007; Indian Reserves: Government of Canada 2018; Compressor Station, Tie-in Locations: Enbridge 2019; Corridors: Jacobs 2019.

FIGURE 1-1

OVERVIEW OF PROPOSED CONCEPTUAL CORRIDORS

THE FRONTIER PROJECT

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

\\jacobs.com\common\Shares\CNR\GIS_Proj3\Enbridge_Frontier\MAPPING\OVERVIEW\Fig1-1_AllCorridors.mxd

123°0'0"W 122°0'0"W 121°0'0"W

56°0'0"N 55°50'0"N 55°40'0"N 55°30'0"N

N

94B3 94B2 94B1

93O14 93O15 93O16

REGIONAL DISTRICT OF FRASER-FORT GEORGE

PEACE RIVER REGIONAL DISTRICT

Williston Lake

Carbon Lake

Wright Lake

Pete Lake

Hudson's Hope

Dinosaur Lake

Moosecall Lake

Peace River

Boucher Lake

Réné Lake

Cameron Lakes

Moberly Lake

West Moberly Lake I.R. 168A

East Moberly Lake I.R. 169

Halfmoon Lake

Jackfish Lake

Chetwynd

Monias Lake

Stewart Lake

Beaver Lake

Big Lake

Favel's Lake

Sundance Lakes

Carl Lake

Straddle Plant and Initiating Pump Station

Highhat River

Sukunka River

Murray River

Gwillim River

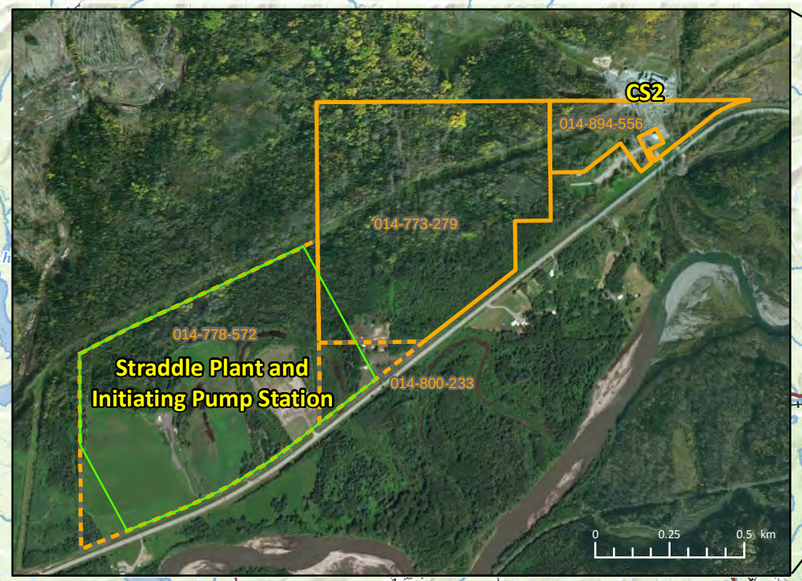
Azouzetta Lake

Mackenzie

93P6

19 21 22 23 24 25 26 77 78 79 80 81 82

29



Straddle Plant and Initiating Pump Station

Potential Straddle Plant and Initiating Pump Station Location

Potential Corridor

Enbridge Owned Property

Enbridge Optioned Property

Highway

Road

Railway

Watercourse

Waterbody

Regional District

Municipality

Indian Reserve

Park/Protected Area

C2 = Compressor Station 2 (CS2)

ENBRIDGE

JACOBS

July 2019	Reference: D3135600
Mapped By: SL	Checked By: MM

SCALE: 1:20,000

0 5 10 15 20 km

(All Locations Approximate)

NAD83 UTM Zone 10N
Basemap: ESRI World Topographic Map, Natural Resources Canada 2010. BC Grid: TERA Environmental Consultants 2010; Roads/Highways: Geobase 2008; Railways: NRCan 2012; Hydrography: BC FLNRO 2008; Parks/Protected Areas: BC MFLNRO 2008; Municipalities, Regional Districts: BC MFLNRO 2007; Indian Reserves: Government of Canada 2018; Project Components: Enbridge 2019; Project Corridors: Jacobs 2019.

FIGURE 1-2

OVERVIEW OF PROPOSED STRADDLE PLANT AND INITIATING PUMP STATION

THE FRONTIER PROJECT

\\ch2mhill\common\Shares\CNR\GIS_Proj3\Enbridge_Frontier\MAPPING\OVERVIEW\Fig1-2_Straddle_Plant.mxd

1.1 PROJECT PURPOSE AND RATIONALE

In Northeastern BC, natural gas is being collected and sent to customers in the lower mainland and Vancouver area. This existing supply will be utilized by Enbridge Frontier as the raw natural gas that comes from the wellhead is mostly comprised of methane (the largest constituent of household natural gas), but also contains various heavier hydrocarbons that can be separated. The heavier hydrocarbons generally consist of ethane, propane, butanes, and pentanes plus, and are called NGLs (NEB 2019).

NGLs have a wide variety of industrial and commercial uses in Canada, as shown in Table 1-1. For example, ethane, propane, and butane are used as feedstock for the creation of value-added petrochemicals (such as, polypropylene which is used in a wide variety of consumer products, such as plastics). NGLs can also be used for residential and commercial heating, cooking fuel, blending with vehicle fuel, diluent for heavy oil and bitumen, or for the production of fertilizers (NRCAN 2018).

Table 1-1. 2015 Natural Gas Liquids Energy Use in Canada

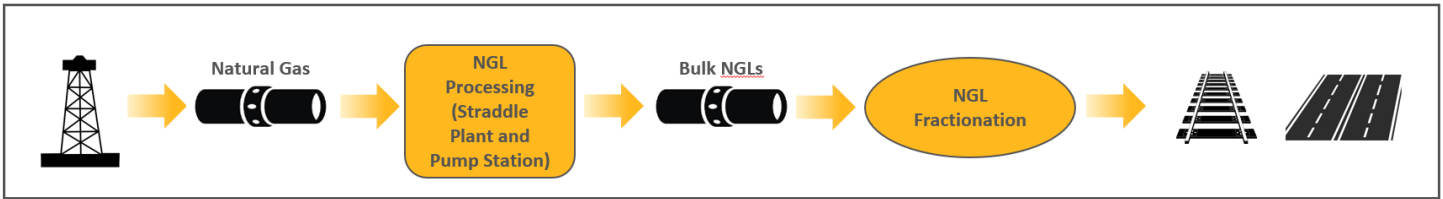
SECTOR	ENERGY USE* (PJ)	% OF THE TOTAL
Residential	14.0	11.0
Commercial	34.1	26.7
Industrial	60.0	47.0
Transportation	10.6	8.3
Agriculture	8.9	7.0
Total	127.7	100

Source: NRCAN 2018

Total NGL production in Western Canada is growing and has grown from 623 to 944 thousand barrels per day (52%) over the 2012 to 2017 period. The dominance of NGL production from gas processing is evident and is expected to remain such for the foreseeable future. Currently, BC produces approximately 10% of the NGLs in Western Canada, with the remaining 90% produced in Alberta, and uses a fraction of those as compared to the rest of Canada. At the moment, there is only one straddle plant in BC as compared to eight in Alberta. As such, the Project offers an opportunity to source NGLs locally to the BC market to meet increasing demand (CERI 2018).

In addition to meeting NGL demand, the nature of the gas supplies in Western Canada has evolved over time such that natural gas has an increasing heat content as the reservoir pressure drops. Over time, the heat content could potentially increase to a level where it is off specification and unfit for distribution. The straddle plant will proactively remove NGLs from the transmission system, lowering heat content and maintaining gas specification, without impacting the continued safe operations of these systems. The straddle plant would be able to process up to an estimated 1.5 bcf/d of gas and extract NGLs from existing natural gas pipeline systems. The NGLs would then be transported in an approximately 130 to 170 km, 16-inch NGL pipeline to fractionation and rail loading facilities located in BC for further processing and transportation to market. These fractionation and rail loading facilities would potentially be located in the Taylor area. The fractionation and rail loading facilities would be developed, owned, and operated by third-parties. See Figure 1-3 for an NGL supply chain overview.

Figure 1-3. Natural Gas Liquids Supply Chain Overview



Natural Gas Liquids Supply Chain

1.2 WHO WE ARE

The proposed Project will be designed, owned, and operated by Enbridge Frontier. Enbridge Frontier is not publicly traded and is registered to do business in BC. Enbridge Frontier has the opportunity to capture natural gas from existing pipeline systems and, through its parent company, Enbridge Inc., possesses the experience and expertise necessary to carry out the Project. Enbridge's BC Pipeline system stretches from Fort Nelson, in northeast BC, and from Gordondale near the BC-Alberta border, south to the Canada-United States border at Huntingdon/Sumas. Transporting approximately 55% of the gas produced in the province, our pipeline business has been the backbone of BC's natural gas industry since 1957.

The BC Pipeline can move 2.9 bcf/d. The northern section of the BC Pipeline (Transmission North, or T-North) is designed to move gas production sourced from third-party processing plants in the Western Canadian Sedimentary Basin, Montney, and Horn River resource areas. The southern section of the BC Pipeline (Transmission South, or T-South) delivers gas supply from the T-North system to downstream markets within BC and the US Pacific Northwest. The BC Pipeline is regulated by the National Energy Board. The BC Pipeline is connected to a number of other key pipeline systems, including FortisBC, Pacific Northern Gas, Williams Northwest Pipeline, Alliance Pipeline, and TC Energy's Nova Gas Transmission Ltd. pipeline system.

The T-North section of the BC Pipeline is a series of gas transmission pipelines that transports production sourced from various processing plants to a compressor station near Chetwynd. From there, gas is either delivered to the T-South mainline or flows easterly along the T-North mainline to interconnecting pipelines at either Sunset Creek, BC or Gordondale, AB. T-North includes the Alberta Mainline, the Fort Nelson Mainline, the Fort St. John Mainline, the Stewart Lake Pipeline and the Boundary Lake Pipeline, whose lines range in diameter from 16 inches to 42 inches. T-South, the southern mainline of the BC Pipeline, connects production from northeastern BC to downstream markets within BC and export markets in the US Pacific Northwest.

Like other transmission lines, the BC Pipeline uses a series of compressor stations to transport natural gas. A series of 19 mainline compressor stations (typically 80 km, or 50 miles, apart) compress and push the gas to maintain its velocity and pressure as it travels through the system. Over distance, friction and elevation differences slow the movement of natural gas and reduce its pressure; these compressor stations give it a boost. BC Pipeline compressor stations are located at Prophet River, Sikanni, Cypress, Mackie Creek, Taylor, Gordondale, Willow Flats/Chetwynd, Sunset, Azouzetta Lake, McLeod Lake, Summit Lake, Hixon, Kersley, 150 Mile House, Lone Butte, Savona, Merritt, Hope and Rosedale. These 19 mainline compressor stations have 622,000 in compression horsepower.

Enbridge Frontier affiliate Westcoast Connector Gas Transmission Ltd. has an EAC for the Westcoast Connector Gas Transmission project. Enbridge is one of North America's premier natural gas infrastructure companies serving key links in the natural gas value chain; gathering and processing, transmission and storage, and distribution. Enbridge operations in Canada and the United States (U.S.) include more than 41,850 km of natural gas pipelines across North America and the Gulf of Mexico. Enbridge is committed to creating superior and sustainable value for investors, customers, employees, and communities by providing natural gas services in a safe, reliable, and responsible manner.

Enbridge's commitment to operating safely and reliably is a core operating principle. Enbridge is focused on asset integrity – both as an essential part of our deeply rooted safety culture and our responsibility to ensure safe, reliable delivery of natural gas to our customers. Enbridge is continually upgrading our pipeline system and invested approximately $1.2 billion across North America to maintain the safety and integrity of our energy delivery systems in 2018 (Enbridge 2018).

Thoughtful planning, stewardship, and safe work practices are foundational elements of Enbridge's network of pipelines. The designs for new pipelines meet or exceed applicable regulatory requirements. Additionally, extensive quality assurance is conducted in all phases of a pipeline project.

1.3 PROPONENT INFORMATION

Contact information for Enbridge Frontier, the main contact person for the Environmental Assessment (EA) process, and the website URL for the Project are provided in Table 1-2.

Table 1-2. Project Information and Key Contacts

Project Name	Frontier Project
Proponent	Enbridge Frontier Inc.
Proponent Corporate Address	200, Fifth Avenue Place 425 - 1st Street S.W. Calgary, Alberta Canada T2P 3L8
Proponent Contact Information and	Contact: Corporate Secretary Email: corporatesecretary@enbridge.com Phone: 403-231-3900 Fax: 403-231-5929
Principle Contact for the EA	Contact: Jennifer Russell Email: jennifer.russell@enbridge.com Phone: 780-392-4762
Company Website	https://www.enbridge.com/

2. Project Information

This section provides information on Project-related components and activities, a summary of the resource, emissions, and waste requirements associated with the Project, and information regarding the proposed Project schedule.

2.1 PROJECT DESCRIPTION

The proposed Project includes the following facilities and activities that are associated with the construction, operation, and maintenance of the pipeline, straddle plant, and initiating pump station, including general information regarding Project design and Project components under investigation.

2.1.1 Pipeline

The proposed NGL pipeline will include the following components and activities:

- The proposed pipeline will be approximately 130 to 170 km in length, have an outside diameter of 406.4 mm (16-inches), begin at the new proposed straddle plant site (approximately latitude 55°38’24”N and longitude 122°13’52”W) and initiating pump station approximately 36 km west of Chetwynd, traverse northeast, and terminate in the Taylor area at fractionation and rail loading facilities that would be developed, owned, and operated by third-parties (approximately latitude 56°08’28”N and longitude 120°40’11”W). The tie-in location is currently under consideration.
- The proposed pipeline will be situated within an approximately 40-metre-wide construction right-of-way (ROW) (15 metres [m] permanent easement, 25-m temporary workspace) and will be buried at a minimum depth of 0.9 m of cover along its entire length, with the exception of locations where there are directional drills or aboveground facilities (valve stations). The locations being evaluated include paralleling Highway 97, as well as locations north or south of the highway.
- The maximum operating pressure (MOP) of the pipeline will be compliant with Canadian Standards Association (CSA) Z662-19, rated at PN150 (ANSI 900) for the full length, and hydro-tested as required for a 2,160 pounds per square inch gauge (psig) MOP.
- The proposed pipeline has a delivering capacity of approximately 16,000 cmpd.
- The proposed Project will utilize existing public and approved private access routes, where possible. New access routes will be required along the Project ROW with an average spacing of every 20 to 25 km. These will be temporary and reclaimed during the reclamation phase of the Project. A few select ROW access routes may be permanently left in place to allow for access during maintenance and operations. If needed, these will be determined during FEED. The straddle plant, initiating pump station and valve site locations will require permanent access roads. All new access roads will meet federal and provincial regulatory requirements. Road use agreements will be obtained for existing roads and will include repair and maintenance as required.
- Various temporary construction workspaces will also be required, including but not limited to potential camp facilities to house workers, pipe and material storage areas, equipment lay-down areas, and related temporary access roads all of which will be reclaimed and re-vegetated, as appropriate, following construction.
- At this time, Proponents of projects, other than the Frontier Project, are establishing camps in the area. This provides a potential opportunity for the Project to utilize the existing camp locations. Where workforce may exceed camp capacity, local community hotels will be utilized. It is estimated that the nominal camp load for construction workforce accommodation will be approximately 450 workers per day. Construction management, safety, and inspection support will be stationed in Chetwynd and Fort St. John in hotels with some workers staying in camps. Hotel days will be in the range of 13,000 to 16,000 days for the life of the Project where the nominal hotel/camp load will be approximately 71 workers per day. It is important to note that these numbers are estimates at this stage of the Project and represent the complete work effort.

2.1.2 Straddle Plant and Initiating Pump Station

At this time, pre-FEED of the straddle plant and initiating pump station was completed for potential siting and cost feasibility purposes only. Additional information on the straddle plant and pump station such as size, dimension, and capacity will be determined through FEED. A block flow diagram has been included to explain the straddle plant process and function (see Figure 2-1). The following information for the straddle plant and initiating pump stations is known:

- Development of a proposed straddle plant and initiating pump station. The proposed straddle plant and initiating pump station will:
  - be located adjacent to one another within a fenced area up to 70 hectares (approximately latitude 55°38’24”N and longitude 122°13’52”W);
  - be located within the buffered area with the legal locations of 93-O-9, Block G, Units 68, 69, 78, and 79 (see Figure 1-2);
  - will meet its energy requirements through the use of electricity to minimize global greenhouse gas (GHG) emissions during construction and operation activities;
  - consist of one metering station, to measure delivery and receipt of gas and NGLs onto and off of the pipeline system;
  - be a proposed connection to Enbridge’s existing transmission pipeline at its CS2 Facility;
  - have isolation valves and barrel assemblies;
  - have a flare system that may include multiple stacks or possibly a multipoint ground flare;
  - have a supervisory control and data acquisition (SCADA) system linking the pipeline, associated straddle plant, and initiating pump station facilities to the control centre; and
  - include the necessary communication links and electrical power supply through an approximately 15-km to 45-km transmission line to service straddle plant and initiating pump station, metering stations, and other pipeline facilities.

2.1.3 Transmission Line

A high-level power feasibility study was completed to verify adequate power accessibility for the straddle plant and initiating pump station. A power system study will be undertaken during FEED to determine possible tie-in locations for the transmission line. It is anticipated that the transmission line will be approximately 15 to 45 km long based on a radius to reasonable sources of power in the area.

2.1.4 Transportation and Shipping of Project Materials

Construction logistics will involve moving equipment, personnel, materials, and supplies to locations along the pipeline ROW, and to the proposed straddle plant and initiating pump station site. Equipment, materials, camp facilities, water, food, fuel, and other project-related supplies will be transported from major distribution centres by rail or truck using existing infrastructure.

Pipe will be primarily transported by rail to sidings near the Project location and will then be loaded onto trucks for delivery to stockpile sites that will be located as close as practical to the pipeline ROW. Pipe may also be coated in an onsite concrete coating facility and stacked in a stockpile site.

2.1.5 General Project Information

Project design is currently in the conceptual stage. The first phase of FEED for the Project is scheduled to commence in Q3 2019. Design information from FEED will be incorporated into the EA for an EAC to the BC EAO.

Various options for individual Project components are currently being investigated. These include:

- workforce accommodation;
- need for upgraded or new access roads; and
- source of power supply including the location of an approximately 15 to 45 km transmission line and supporting infrastructure.

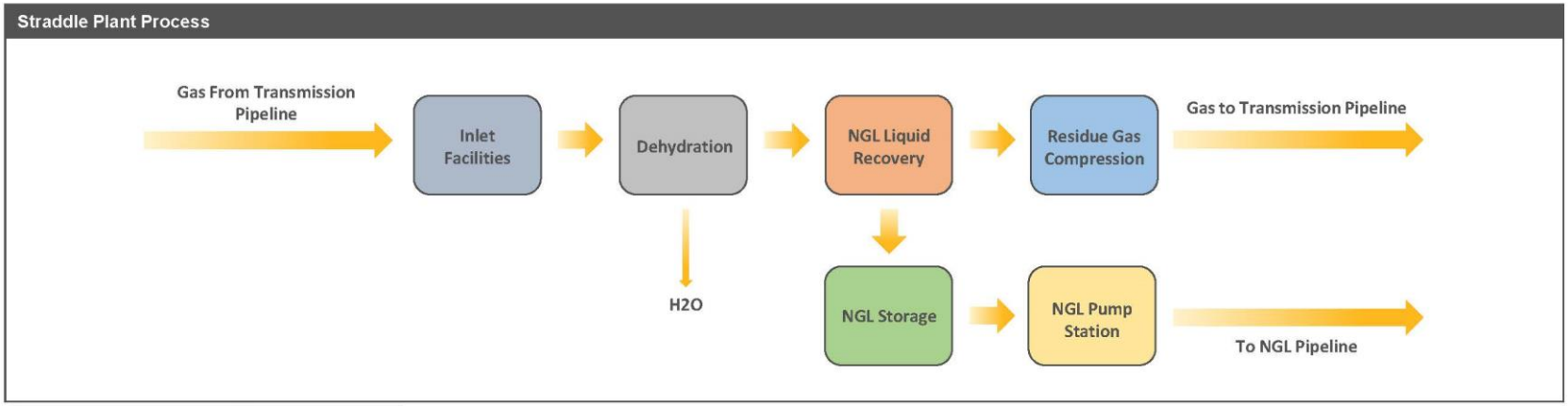
2.2 PROJECT COMPONENTS AND ACTIVITIES

This section provides an initial summary of proposed Project-related components and activities. Updated information will be provided in the EA Application. Table 2-1 provides a summary of the Project components.

Table 2-1. Project Components

KEY COMPONENTS	INDIVIDUAL COMPONENTS AND CAPACITIES
Pipeline	Approximately 130 to 170 km long
Straddle Plant	Initial capacity of approximately 1.0 to 1.5 bcf/d
Electrical Transmission Lines	Approximately 15 to 45 km of transmission line and associated substation at the straddle plant site
Initiating Pump Station	One pump station adjacent to the straddle plant
Meter Stations	One custody transfer meter for pulling gas off the mainline system and sending residue gas back to the mainline (once NGLs have been removed).

Figure 2-1. Straddle Plant Process Block Flow Diagram



Inlet Facilities	Gas from the transmission pipeline enters the straddle plant through the inlet facilities. Inlet facilities include pig receivers, emergency shutdown valves, inlet separator vessel(s), and gas metering facilities.
Dehydration	Gas from the pipeline is already very dry but in order to chill the gas and recover the liquids, the gas must be 'bone dry'. The dehydration process removes virtually all remaining water in the gas using a regenerative media. The small amount of water recovered is sent to a storage tank and the water is trucked off-site and disposed of accordingly at a disposal facility.
NGL Liquid Recovery	The gas is dropped in pressure and chilled to cryogenic temperatures (-100°C or colder) in order to extract NGLs from the gas. The NGLs are processed in a fractionation column and sent to storage. The straddle facility will likely have three or four of these NGL Liquids Recovery Units.
Residue Gas Compression	The gas is recompressed to high pressure and sent back into the pipeline. The straddle facility will likely have four or five compressors, similar to the units found on the mainline transmission pipeline system.
NGL Storage	A certain amount of NGL storage is required for dealing with any interruptions on the NGL pipeline or within the straddle plant process. The NGLs will be stored in bullets or possibly a sphere.
NGL Pump Station	The NGLs will be pumped into the NGL pipeline with high pressure pumps, similar to the pump stations along the NGL pipeline.
Utilities and other facilities contained within the straddle plant	Firewater and utility water system / high voltage substation / office, control room and warehouse buildings / fired heaters for utility and process heat / flare system including multiple stacks or possibly a multipoint ground flare / instrument air and utility air system / fuel gas system

A description of the activities related to the proposed Project's construction, operation, and maintenance are provided as follows. Table 2-2 describes the activities associated with the pipeline construction phase of the Project.

Table 2-2. Pipeline Construction Activities and Equipment Requirements

CONSTRUCTION PHASE	ASSOCIATED ACTIVITIES AND TYPICAL EQUIPMENT
Engineering	The proposed pipeline will be designed and constructed in accordance with all applicable CSA standards and BC Oil and Gas Commission (BC OGC) regulations.
Construction Survey	Activities include line-of-sight clearing with chain saws, flagging, and staking of the boundaries of the construction ROW, temporary workspace, and facility sites as well as marking trench line and the location of existing utilities. Areas to avoid (such as, protected habitats, archaeological sites, or rare plant communities) will be appropriately fenced or flagged.
Clearing	Snow, trees, brush, and other vegetation will be generally cleared from the construction ROW and extra temporary workspace. Salvageable timber will be cut, decked, and hauled to local mills (if merchantable). Non-salvageable vegetative debris will be burned unless required for mulch, corduroy, rollback, etc. Equipment used during clearing activities will include chainsaws, feller-bunchers, or other tree clearing equipment, as well as bulldozers and backhoes.
Topsoil Salvage	In agricultural lands, topsoil will be salvaged to ensure that the soil capability is maintained. The width and depth of topsoil salvage depends upon the land use, soil conditions, microtopography, regulatory agency requests, and grading requirements. Equipment used during topsoil handling activities includes bulldozers, graders, and backhoes.
Grading	Following topsoil salvage, grading will be conducted on irregular ground surfaces (including temporary workspace) to provide a safe work surface. Graders, backhoes, and bulldozers will be used for this activity. Blasting may be required where bedrock is encountered.
Stringing and Welding	The pipe will be transported by truck from the stockpile sites to the ROW. The pipe will be strung, bent, lined-up, welded, joint coated, and inspected before being lowered into the trench. Equipment used during stringing and welding activities includes pipe trucks, booms, welding stations, and x-ray or ultrasonic inspection equipment mounted on trucks.
Trenching	The trench will be excavated using tracked excavators to a depth sufficient to ensure the depth of cover is in accordance or in excess of applicable codes. Typical depth of cover will be a minimum of 0.9 m and may vary based on land use and soil condition from 0.9 m to 1.2 m or more. Trenching will generally occur after stringing, bending, and welding. Major road and railway crossings will be installed by boring under the road or railway. Watercourses will be crossed using a variety of methods (such as, open cut or horizontal directional drill).
Lowering-In	The pipe will be lowered into the trench using sideboom tractors. Trench dewatering may be necessary at certain locations during lowering-in (for example, to ensure acceptable bedding for pipe, to prevent the pipe from floating or for performing tie-in welds).
Backfilling	The trench will be backfilled using backhoes, graders, bulldozers, or specialized backfilling equipment. Backfill material will generally consist of trench spoil material excavated during trenching. Displaced subsoils will be crowned over the trench to allow for settlement. After settlement; any excess trench spoil will be feathered out over adjacent portions of the ROW.
Testing	The completed pipeline will be pressure tested in sequential segments, using water as the test medium. The water will be acquired from suitable sources and returned to the appropriate watersheds or other suitable location in accordance with permit requirements.

Table 2-2. Pipeline Construction Activities and Equipment Requirements

CONSTRUCTION PHASE	ASSOCIATED ACTIVITIES AND TYPICAL EQUIPMENT
Cleanup and Post-construction Reclamation	Initial cleanup and reclamation procedures will be initiated immediately following construction using bulldozers, backhoes, and graders. Final reclamation will be completed once weather and soil conditions permit, likely in the year following construction. Garbage or debris remaining along the ROW will be removed regularly and disposed of in compliance with local regulations. The ROW contours will be returned to a stable condition. In agricultural soils, compaction in subsoils will be relieved and the topsoil replaced. Disturbed upland areas will be seeded with an appropriate seed mix and specific land reclamation measures will be applied, as required.
Watercourse Crossings	Watercourse crossing methods will be based on engineering and environmental considerations. Crossing methods typically used during watercourse construction include trenched methods, such as open cut and isolation (for example, dam and pump, flumes), and trenchless methods (such as, boring and horizontal directional drilling (HDD).
Temporary Facilities	Additional temporary workspace will be required at certain locations to facilitate construction. The size of a temporary workspace will vary depending on site characteristics and specific construction activities. Examples of these locations include access roads, potential work camps, side bends, pipe and material storage areas, watercourse crossings, timber decking areas, borrow sites, pipe stockpile areas, and equipment laydown areas.

Straddle Plant and Initiating Pump Station Construction

Table 2-3 describes the activities associated with the straddle plant and initiating pump station construction phase of the Project.

Table 2-3. Straddle Plant and Initiating Pump Station Construction Activities and Equipment Requirements

CONSTRUCTION PHASE	ASSOCIATED ACTIVITIES AND TYPICAL EQUIPMENT
Engineering	The proposed straddle plant and initiating pump station will be designed and constructed in accordance with all applicable CSA standards and BC OGC regulations.
Site Preparation	Initial site preparation will involve surveying, clearing, salvage and storage of topsoil, excavating and removal of unsuitable fill, grading, site drainage, placement and compaction of a gravel surface on work areas, laying of foundation, and installation of building support pads. Equipment used during site preparation activities will include chainsaws, mowers, feller-bunchers and other timber clearing equipment, as well as bulldozers and backhoes.
Straddle Plant and Initiating Pump Station Construction	Construction of the proposed straddle plant and initiating pump station will entail building new structures, installing compression, pipe, valves and electronics equipment, tying new pipe into pipelines, pressure testing all piping, testing safety systems and instruments, final commissioning of new equipment and control systems, and perimeter fencing construction. Equipment used during the construction of the straddle plant and initiating pump station includes backhoes, cranes, and manlifts.

Transmission Line Pre-Construction, Construction, and Post-Construction Phase

Table 2-4 describes the activities associated with the transmission line construction phase of the Project. The transmission line will advance in three general stages: pre-construction, construction, and post-construction.

Table 2-4. Transmission Line Pre-Construction, Construction, and Post-Construction Activities (including Decommissioning) and Equipment Requirements

CONSTRUCTION PHASE	ASSOCIATED ACTIVITIES AND TYPICAL EQUIPMENT
Pre-construction	Pre-construction activities for the transmission line include land acquisition, land surveys, geotechnical surveys, and environmental surveys, as well as final structure placement and temporary access and workspace identification and allocation.
Construction	Construction activities for the transmission line include equipment cleaning station deployment (where warranted), ROW preparation (including brushing, logging, clearing, filling or grading and fence removal, and flagging of environmentally sensitive features, as needed), travel lane construction (as needed), temporary workspace preparation (as needed), structure foundation installation (may need grading or levelling, and soil stripping), substation expansion land preparation (grading, leveling, and marshalling yards), installation of substation building and equipment, materials hauling, installation of vehicle and equipment crossing, temporary structure installation at crossings, structure assembly, structure erection and setting, conductor stringing and tensioning (including shield wire and wire travel device installation), and clipping or tie-in (attaching conductors to insulators). Additional construction activities for the transmission line include the following: • Access preparation (including right-of-way and temporary workspace), temporary materials storage and marshalling yards, as necessary • Tree and brush removal, as necessary • Site preparation • Transmission structure removal, including the following activities: - Removal of conductors, insulators, and associated infrastructure - Removal of guy anchors, if applicable - Removal and lowering of structures and disassembly - Removal of structure foundations including minor excavation works to expose the structure to 1 m below ground and the cutting of the structure at 1 m depth, if applicable • Cleanup and reclamation
Post-construction	Post-construction activities for the transmission line include structure and transmission line inspection; temporary structure dismantling; energizing; decommissioning temporary workspaces, equipment cleaning stations, and right-of-way travel lane (where warranted); and land reclamation, fence installation, and weed control (where warranted).

Operations and Maintenance

Table 2-5 describes operations and ongoing maintenance activities for the pipeline ROW and associated facilities.

Table 2-5. Operations and Ongoing Maintenance Activities

OPERATION AND MAINTENANCE PHASE	ASSOCIATED ACTIVITIES
Aerial Pipeline Patrols	As part of routine operations and maintenance procedures, patrols will be conducted to visually inspect the pipeline ROW for: environmental issues; evidence of pipeline damage; erosion and wash-out areas; areas of sparse vegetation; damage to permanent erosion and sediment control structures; exposed pipe; and other potential problems that may affect the integrity and safe operation of the proposed pipeline.

Table 2-5. Operations and Ongoing Maintenance Activities

OPERATION AND MAINTENANCE PHASE	ASSOCIATED ACTIVITIES
Vegetation Management	Areas along the pipeline route not necessary for ongoing operations and maintenance will be specifically managed to revert to a natural vegetative state, where feasible. Vegetation control (including weed control), if warranted, will be conducted along the pipeline construction ROW in accordance with requirements from the appropriate regulatory authority. All vegetation, including weeds, within the straddle plant and initiating pump station boundaries will continue to be managed.
Pipeline In-Service Inspection and Maintenance	The proposed pipeline will be cathodically protected to prevent or reduce external corrosion of the pipelines. In the event that an actual or suspected pipeline integrity problem is identified, the pipeline will be exposed and visually inspected. Repairs will be made, when needed. Maintenance digs will be conducted in a manner similar to pipeline construction activities (that is, stripped topsoil will be salvaged; subsoil will be excavated to expose the pipe and will be stockpiled separately; when the maintenance activity is complete, the trench will be backfilled and feathered out; and topsoil replacement, reseeding, and reclamation will be conducted).
Straddle Plant and Pump Station Inspection and Maintenance	Straddle plant and pump station inspections and maintenance are performed based on reliability and planned maintenance in an Enbridge database that follows industry best practices and manufacturer recommendations, in addition to specific Enbridge Maintenance Procedures for some specialized equipment. Frequencies for maintenance are prescribed in Enbridge's Operational Procedures. During operations, the straddle plant and initiating pump station will be monitored by onsite operations staff.
Transmission Line Inspection and Maintenance	Typical inspection and maintenance activities include monitoring and analyzing the condition and performance of the transmission lines and related facilities during routine and non-routine operations to limit transmission disruptions. Maintenance activities associated with operation of the proposed transmission lines and related infrastructure may include the following: • Vegetation management along the proposed transmission line ROW (such that vegetation height does not impact reliability or safety standards) • Inspection of the structures, conductors, insulators, and substations • Aerial inspection • Maintenance activities informed by the results of the annual transmission line patrols and related infrastructure site visits

As a separate corporate entity, Enbridge Frontier will rely upon Enbridge's corporate policies and programs regarding environment, health, safety, and operations and maintenance programs. Enbridge has six Protection Programs designed to accomplish specific goals and results. These programs operate in a coordinated and integrated fashion across traditional departmental structures to achieve safety and reliability objectives across the lifecycle of Enbridge assets. The Programs include Damage Prevention, Emergency Management, Environmental Protection, Integrity Management, Safety Management, and Security Management. The programs share a common goal which is to anticipate, prevent, manage, and mitigate conditions that can adversely affect the environment, property, the public or Enbridge employees and contractors. Additionally, Enbridge has five Policies included in their Environmental Management System which include an Environmental Policy, Hazard and Risk Management Policy, Health and Safety Policy, Integrated Management Policy and Emergency Management Policy.

Operations and ongoing maintenance activities are required as per the Enbridge Integrity Management Program to investigate for defects (such as, corrosion, dents, and cracking). The program will be expanded to reflect the addition of this pipeline system. The Project will have specific integrity management plans to ensure that the operations and maintenance of the Project meet the requirements of the Enbridge Integrity Management Program throughout the Project's service life.

Internal inspection is an integral part of the Enbridge Integrity Management Program. The proposed pipeline will include in-line inspection facilities to allow the periodic running of internal inspection tools to establish or verify the system integrity. These internal inspection tools are placed into the pipeline at pig launching and receiving facilities which will be designed to allow passage of various types of pigs including cleaning pigs and high and low resolution in-line inspection tools. Enbridge performs corrosion and condition monitoring on its pipelines to identify areas of reduced integrity and a regular monitoring schedule will be developed for this pipeline system. Enbridge retains qualified contractors to perform in-line inspection tool runs which are designed and selected to achieve the desired objectives. The in-line inspection results are analyzed and defects meeting Enbridge criteria for field assessment require excavation, assessment, and the appropriate repair (such as, re-coating and sleeving). Site reclamation and follow-up monitoring will be conducted following excavation and repairing activities to restore the worksite to its pre-disturbance condition.

Enbridge has an operations and maintenance program focused on standard operating procedures that is available to all employees. The program outlines the instructions and requirements for maintaining Enbridge's BC Pipeline and Field Services pipeline assets. The purpose is to ensure that a safe and functional pipeline system is maintained. The program is also used as a guide for the requirements of certain design and construction functions on new and existing installations. Items covered in the program include instructions and requirements for:

- corrosion control
- ROW maintenance
- incident reporting
- lands and ROW management
- pipeline pigging
- pipeline patrol, class locations, and leak detection
- shutdown, commissioning, deactivation, reactivation, and abandonment
- aerial crossing inspection and maintenance
- safety
- valve inspection and maintenance
- maintenance welding and branch connections
- emergency and incident procedures
- communications
- measurement and gas quality
- excavating and line locating
- integrity assessment and mitigation
- coating and recoating
- permanent and temporary repair
- pressure testing
- integrity management plan
- environmental protection programs
- management of change
- custody transfer
- risk assessment
- training
- media and public communications
- materials replacement and new construction

SCADA Monitoring

Enbridge Frontier will have the ability to monitor and control the emergency shut-down valves from its control centre. Enbridge Frontier's control centre will be staffed 24-hours per day, 7-days per week, information will be gathered by the operators, and using specialized software, the information will be trended to analyze equipment function over time as well as provide an ability to quickly detect and react to any depressurization events.

Decommissioning and Abandonment

At the end of its useful life, the pipeline would be decommissioned or abandoned in accordance with applicable laws and regulations. At this time, it is indeterminate when or how the replacement pipeline, transmission line, plant, and associated facilities will be decommissioned or abandoned at the end of their useful life (40+ years). The methods of decommissioning or abandonment that will ultimately be implemented for the Project will be determined at the time of the application. However, those determinations will be based on the most current, sound, scientific studies, and accepted industry practices at that time. Enbridge Frontier will work with the BC EAO and BC OGC at the time of decommissioning or abandonment.

2.3 RESOURCE REQUIREMENTS, EMISSIONS AND WASTE

Table 2-6 provides a summary of the resource requirements, emissions and waste associated with the Project during construction, operations and decommissioning or abandonment phases.

Table 2-6. Resource Requirements, Emissions and Waste Requirements

RESOURCE REQUIREMENT	CONSTRUCTION	OPERATIONS	DECOMMISSIONING OR ABANDONMENT
Energy Requirements	Energy requirements to construct all components of the Project will come from gasoline, diesel, temporary transmission line power and battery-operated equipment.	The straddle plant and initiating pump station will be operated by electrical power for straddle plant and initiating pump station use. Energy requirements will come from third-party generated electricity in BC.	Energy requirements to decommission or abandon the Project will come from gasoline, diesel, transmission line power and battery-operated equipment.
Water Requirements	Water is required during construction for HDD, hydrostatic pressure testing of the pipeline, fire suppression, line locating with hydrovac trucks and for dust control. Withdrawal and return of hydrostatic test water used during construction will be conducted in consultation with appropriate regulators, including Fisheries and Oceans Canada (DFO), the BC OGC, and the BC Ministry of Environment and Climate Change Strategy (BC MECCS).	The straddle plant and initiating pump station will not require process water during operations. The straddle plant will require fire water, which will be held in a tank and sourced from a nearby water source (that is, surface water or using a well). Fire water storage will be anywhere from 30,000 to 50,000 bbl. Water will be required for domestic and utility use at the straddle plant and initiating pump station. The source of the domestic water will be determined during FEED. Domestic grey water and sewage disposal may be required for temporary construction camps and for operation of the straddle plant and initiating pump station. All applicable laws and regulations relating to water withdrawal and discharge will be adhered to. Additionally, water is separated during the dehydration process at the straddle plant (see Figure 2-1). This water will be trucked away and disposed of accordingly at a disposal facility. Water will be required during pipeline construction for activities such as hydrostatic testing, dust control, and ROW freeze down. Specific requirements such as source locations and volumes will be determined during FEED. Any water withdrawal will be completed in accordance with relevant regulatory requirements.	There may be a potential for water requirements during decommissioning of the pipeline as cleaning requirements at the time of decommissioning could dictate the need for water. This will be contingent on the cleaning methods and requirements at the time of decommissioning or abandonment.

Table 2-6. Resource Requirements, Emissions and Waste Requirements

RESOURCE REQUIREMENT	CONSTRUCTION	OPERATIONS	DECOMMISSIONING OR ABANDONMENT
Atmospheric Emissions	GHG emissions associated with the construction of the Project will be limited to the use of heavy machinery and ancillary vehicles. It is estimated that a total of approximately 7 million litres of fuel will be used to construct the Project.	The electrical supply for the proposed pipeline and plant will be provided by renewable energy sources. The base case for the straddle plant facility design is electrification for all major loads (mainly compression). It is anticipated that there will be one or two direct fired heaters on site to provide utility and process heat. The heater duty and GHG emissions resulting from these heaters will be determined in FEED.	Atmospheric emissions to decommission or abandon the Project will come from gasoline and battery-operated equipment. Fuel totals will be calculated at the time of decommissioning or abandonment.
Waste Management and Discharges	During all Project phases, Enbridge Frontier will manage waste and discharges in accordance with the Enbridge Waste Management Program. The Enbridge Waste Management Program focuses on building best practices associated with waste disposal. With a goal of continuous improvement around environmental performance, the Enbridge Waste Management Program includes regulatory compliance, administrative streamlining, comprehensive waste characterization, pre-qualified third-party services, transportation, reporting, waste and invoice tracking, and waste recycling and disposal.		

2.4 POTENTIAL PROJECT BENEFITS

The Project will result in a wide range of economic benefits, including increases in employment, gross domestic product, labour income, and government revenues, as well as the enhancement of workforce and business capacity. The Project will create employment and contracting opportunities during planning and construction, and a limited number of long-term jobs during Project operations. The Project will also provide fair bidding opportunities for local contracting work. Additional benefits include ongoing property taxes paid to the PRRD. Development of the Project will contribute to continued development of BC's natural gas resources; this in turn creates jobs and royalty revenue for the Provincial government, which helps pay for social services. Enbridge Frontier will work with local businesses (that is, tourism operators and guide outfitters) to mitigate potential revenue loss that may occur during construction activities.

The Project is expected to provide in the range of 1,200 to 1,400 person years of employment during design and construction, and approximately 30 to 50 permanent jobs during the operational life of the Project. The estimated capital cost is in development and is highly reliant on the final selected route, and pipeline and plant design. At this early stage, capital costs for the Project are estimated to be in the range of $2.5 billion. Annual operating costs are predicted to range from $25 million to $50 million per year.

Additionally, the employment and income effects of projects can lead to positive social outcomes, such as increased living standards, enhanced skills and economic choices, and improvements in quality of life.

2.5 PRELIMINARY PROJECT SCHEDULE

The preliminary schedule for the Project is outlined in Table 2-7.

Table 2-7. Project Schedule

MILESTONE	DATE
Enbridge announced the Project	Spring 2019
Project Description filing to initiate EA	Spring 2019
Assessment Certificate application to BC EAO	Winter 2020
Completion of Feasibility Stage (FEED)	Winter 2020

Table 2-7. Project Schedule

MILESTONE	DATE
Detailed Engineering Design	Winter 2021
Anticipated EA Approval	Spring 2021
BC OGC Applications	Fall 2020 to Spring/Summer 2021
Construction and commissioning • Commence construction • Clearing and site preparation (including camps, storage yards, clearing, access, and ROW preparation) • Facility and mainline construction (including pipeline, straddle plant, initiating pump station, transmission line, and meter stations)	Winter 2021
In-Service	Winter 2024
Decommissioning and abandonment	End of useful life of pipeline (40+ years)

3. Engagement and Consultation

3.1 ENBRIDGE FRONTIER'S APPROACH TO ENGAGEMENT AND CONSULTATION

Enbridge Frontier is committed to meaningful engagement with Indigenous groups, local communities, interested parties, landowners, and other stakeholders through open and transparent communication and interactive consultation. Enbridge Frontier recognizes the importance of working with all persons and groups who may be potentially affected by any phase of a project. In developing the engagement program for the Project, Enbridge Frontier set out the following goals and objectives:

- Identify stakeholders and Indigenous groups who have interests in the Project area who could potentially be affected by the Project as soon as possible in the Project planning phase;
- Inform potentially affected stakeholders and Indigenous groups throughout the various phases of the Project by sharing information on key Project specifics in a clear and timely manner;
- Create opportunities for meaningful stakeholder and Indigenous groups engagement as early as possible in the Project planning process and advise stakeholders and Indigenous groups of their opportunities to communicate with the required regulatory agencies, including the BC EAO and BC OGC;
- Develop a feedback loop within the Enbridge Project team to ensure Indigenous groups and stakeholder feedback and input are incorporated into the Project planning process;
- Understand and respond to any issues or concerns raised by stakeholders or Indigenous groups in an effort to resolve or mitigate those issues or concerns; and
- Maintain ongoing communications with stakeholders and Indigenous groups throughout the planning, construction, and post-construction phases with a view to continued development of the long-term relationships required for the operation of the Project.

3.2 INDIGENOUS ENGAGEMENT

Enbridge Frontier understands that while the duty to consult ultimately rests with the Crown, it may delegate the procedural aspects of that duty to industry proponents. Informed by Indigenous groups' input during the early engagement process, Enbridge Frontier will develop a comprehensive Indigenous Consultation Plan, outlining an engagement process that is inclusive of Indigenous groups potentially affected by the Project. Enbridge Frontier is basing its Indigenous engagement activities for the Project on the following principles set out in Enbridge's Indigenous Peoples Policy, which states:

- We recognize the legal and constitutional rights possessed by Indigenous groups in Canada and in the U.S., and the importance of the relationship between Indigenous groups and their traditional lands and resources.
- We commit to working with Indigenous groups in a manner that recognizes and respects those legal and constitutional rights and the traditional lands and resources to which they apply, and we commit to ensuring that our projects and operations are carried out in an environmentally responsible manner.
- We recognize the importance of the United Nations Declaration on the Rights of Indigenous Peoples within the context of existing Canadian and U.S. law and the commitments that governments in both countries have made to protecting the rights of Indigenous Peoples.
- We engage in forthright and sincere consultation with Indigenous Peoples about Enbridge's projects and operations through processes that seek to achieve early and meaningful engagement, so their input can help define our projects that may occur on lands traditionally used by Indigenous Peoples.
- We commit to working with Indigenous Peoples to achieve benefits for them resulting from Enbridge's projects and operations, including opportunities in training and education, employment, procurement, business development, and community development.
- We foster understanding of the history and culture of Indigenous Peoples among Enbridge's employees and contractors, in order to create better relationships between Enbridge and Indigenous groups.

This Policy outlines Enbridge Frontier's recognition of the diversity of Indigenous groups who live where we work and operate and recognizes the importance of reconciliation between Indigenous groups and broader society. Positive relationships with Indigenous groups, based on mutual respect and focused on achieving common goals, will create constructive outcomes for Indigenous groups and for Enbridge Frontier. Enbridge Frontier will implement this Policy in its engagement with Indigenous groups.

3.2.1 Potentially Affected Indigenous Groups

Based on its understanding of the Project area, the Project overlaps Treaty Lands and traditional territories for Treaty 8 First Nations. No Indian Reserves are crossed by the conceptual pipeline corridors.

Enbridge Frontier has identified the following Indigenous groups whose traditional territory overlaps with, and who are in proximity to the Project area. The known registered population per community is listed below, as sourced from the Indigenous and Northern Affairs Canada website (INAC 2019).

- Blueberry River First Nations (BRFN) – population 547
- Doig River First Nation (DRFN) – population 548
- Halfway River First Nation (HRFN) – population 546
- Horse Lake First Nation (HLFN) – population 449
- McLeod Lake Indian Band (MLIB) – population 618
- Saulteau First Nations (SFN) – population 542
- West Moberly First Nations (WMFN) – population 545

In addition to the above noted Indigenous groups, Enbridge Frontier acknowledges that other Indigenous groups have interests in the area and may be affected by the Project and its components or activities. These include:

- BC Métis Federation
- Dene Tha' First Nation – population 448
- Fort Nelson First Nation – population 543
- Fort St. John Métis Society
- Kelly Lake Cree Nation (KLCN)
- Kelly Lake First Nation
- Kelly Lake Métis Society
- Métis Nation BC
- Moccasin Flats Métis
- Prophet River First Nations (PRFN) – population 544

Enbridge Frontier will engage with all Indigenous groups to understand how they would like to be consulted throughout the Project.Enbridge acknowledges that there are other Indigenous groups that may be affected by the Project, and Enbridge intends to update this list as the Project planning advances, with input from Indigenous groups, regulatory agencies and its own knowledge and information.

3.2.2 Indigenous Engagement Activities Completed to Date

Enbridge Frontier Project representatives began initial engagement on the Project in March 2019 with directly impacted Indigenous communities. Initial outreach and dialogue took place with West Moberly First Nations, Halfway River First Nation, Saulteau First Nations, McLeod Lake Indian Band, Blueberry River First nations, Doig River First Nation, Horse Lake First Nation, and Kelly Lake Cree Nation. As a result of feedback received from these early engagements, Enbridge Frontier recognized the need to collaborate on the preliminary pipeline routing with these Indigenous groups and conversations focused primarily on route selection and introducing the Project concept. Initial discussions did identify preliminary interest raised by the Indigenous groups which will shape the consultation process and feasibility studies in order to understand how these issues can be addressed. A summary of the key areas of interest raised to date relating to the Project are outlined in Section 3.2.3.

Following this initial engagement, in May 2019, Enbridge Frontier began to engage more broadly with all potentially-affected Indigenous groups outlined in Section 3.2.1. Engagement included sending Indigenous groups a Project factsheet with preliminary information and a request for feedback as to how they would prefer to be engaged throughout the Project. In addition to the Project factsheet, engagement activities began to take place in the form of individual and groups meetings, written correspondence, and telephone communications with community representatives. Enbridge Frontier will continue to adapt its engagement approach and activities over time based on the needs of the particular Indigenous group being engaged and throughout all phases of the Project.

An offer was made to each of the above-mentioned Indigenous groups to review the draft Project Description, provide context with respect to Enbridge Frontier's approach to development, to seek their input on how best to consult moving forward, and to incorporate feedback into the Project planning process. The following sections provide a summary of engagement activities that have occurred with individual Indigenous group(s) whose traditional territory overlaps with, and who are in proximity to the Project area.

3.2.2.1 Blueberry River First Nations

Enbridge Frontier commenced its engagement on the Project with Blueberry River First Nations in March 2019. Through Project engagement activities, Blueberry River First Nations received general information on the Frontier Project and GIS files detailing the initial routing options for the Project. Although Blueberry River First Nations expressed interest in the Project with a request to meet with Project representatives, they later advised that they needed to defer engagement on the Project given other community priorities. That said, Enbridge Frontier Project representatives will continue to engage with Blueberry River First Nations as they would like to be engaged with a goal of continuing to gather information on their interests, Indigenous rights and traditional land use that may be affected by the Project, developing a comprehensive Indigenous Consultation Plan, discussing proposed mitigation measures and incorporating feedback into Project design where feasible. Enbridge Frontier Project representatives will also continue to provide Blueberry River First Nations with regular Project updates and outline opportunities for their participation in the Environmental Assessment process.

3.2.2.2 Doig River First Nation

Enbridge Frontier commenced its engagement on the Project with Doig River First Nation in March 2019. Through Project engagement activities, Doig River First Nation received a presentation on the Frontier Project, GIS files detailing the initial routing options for the Project, as well as a Project factsheet and a draft of the Project Description for input. Doig River First Nation provided Enbridge Frontier Project representatives with feedback on the draft Project Description. This feedback included a desire to collaborate on a formal Indigenous Consultation Plan to ensure Doig River First Nation participation in the Project, and ensure that potential effects of the Project on Treaty and Indigenous rights will be assessed and appropriate mitigation measures will be determined in collaboration with Doig River First Nation and other potentially impacted Indigenous nations to address any potential Project impacts. Doig River First Nation have expressed interest in the Project by requesting participation in all environmental field programs, construction and operational monitoring. Doig River First Nation have also requested Indigenous Knowledge and socio-economic/community wellbeing studies, including an independent technical review of biophysical studies be conducted for the Project. Enbridge Frontier Project representatives will continue to engage Doig River First Nation by continuing to gather information on their interests, Indigenous rights and traditional land use that may be affected by the Project, developing a comprehensive Indigenous Consultation Plan, discussing proposed mitigation and incorporating feedback into Project design where feasible. Enbridge Frontier Project representatives will also continue to provide Doig River First Nation with regular Project updates and outline opportunities for their participation in the Environmental Assessment process. Doig River First Nation has also expressed interests in the economic benefits from activities occurring within their territory and any opportunities for participation in education, training, employment, and/or contracting programs.

3.2.2.3 Halfway River First Nation

Enbridge Frontier commenced its engagement on the Project with Halfway River First Nation in March 2019. Through Project engagement activities, Halfway River First Nation received a presentation on the Frontier Project, GIS files detailing the initial routing options for the Project, as well as a Project factsheet and a draft of the Project Description for input. Halfway River First Nation have expressed interest in the Project by requesting: wildlife cameras during summer and winter field studies, helicopter overflights, site visits, consultation on routing, participation in workshops, environmental field studies and construction monitoring. In addition, Halfway River First Nation have requested a Traditional Use Study (TUS), and the ability to review a draft of the Project Description, which was provided to them, the Indigenous Consultation Plan, and Indigenous Consultation Report prior to final submission, and to create a feedback loop for Traditional Ecological Knowledge (TEK) values and mitigation identified during fieldwork. Enbridge Frontier Project representatives will continue to engage with Halfway River First Nation by continuing to gather information on their interests, Indigenous rights, and traditional land use that may be affected by the Project, developing a comprehensive Indigenous Consultation Plan, discussing proposed mitigation and incorporating feedback into Project design where feasible. Enbridge Frontier Project representatives will also continue to provide Halfway River First Nation with regular Project updates and outline opportunities for their participation in the Environmental Assessment process.

3.2.2.4 Horse Lake First Nation

Enbridge Frontier commenced its engagement on the Project with Horse Lake First Nation in April 2019. Through Project engagement activities, Horse Lake First Nation received a presentation on the Frontier Project, GIS files detailing the initial routing options for the Project, as well as a Project factsheet and a draft of the Project Description for input. Horse Lake First Nation have expressed interest in the Project and understanding the potential economic benefits of the activities. In addition, Horse Lake First Nations has requested a draft of the Project Description prior to final submission, which was provided to them, participation in field studies, construction monitoring and economic development opportunities, as well as completing a TLU study for the Project. Enbridge Frontier Project representatives will continue to engage with Horse Lake First Nation by continuing to gather information on their interests, Indigenous rights and traditional land use that may be affected by the Project, developing a comprehensive Indigenous Consultation Plan, discussing proposed mitigation and incorporating feedback into Project design where feasible. Enbridge Frontier Project representatives will also continue to provide Horse Lake First Nation with regular Project updates and outline opportunities for their participation in the Environmental Assessment process.

3.2.2.5 Kelly Lake Cree Nation

Enbridge Frontier commenced its engagement on the Project with Kelly Lake Cree Nation in March 2019. Through Project engagement activities, Kelly Lake Cree Nation received a presentation on the Frontier Project, a Project factsheet, GIS files detailing the initial routing options for the Project and a draft Project Description for their input. Kelly Lake Cree Nation expressed interest in the Project by requesting participation in fieldwork and a TLU study. Enbridge Frontier Project representatives will continue to engage with Kelly Lake Cree Nation by continuing to gather information on their interests, Indigenous rights and traditional land use that may be affected by the Project, developing a comprehensive Indigenous Consultation Plan, and incorporating feedback into Project design where feasible. Enbridge Frontier Project representatives will also continue to provide Kelly Lake Cree Nation with regular Project updates and outline opportunities for their participation in the Environmental Assessment process.

3.2.2.6 McLeod Lake Indian Band

Enbridge Frontier commenced its engagement on the Project with McLeod Lake Indian Band in March 2019. Through Project engagement activities, McLeod Lake Indian Band received a presentation on the Frontier Project, a Project factsheet, GIS files detailing the initial routing options for the Project, as well as a draft Project description for their input. Enbridge Frontier Project representatives also provided preliminary Project routing maps at the request of the community. McLeod Lake Indian Band have expressed interest in the Project by requesting a Treaty Impact Assessment, completing a desktop analysis of the Project area and participating in all environmental field programs. The McLeod Lake Indian Band have expressed interest in preserving Old Forest Stands and in understanding the location of cottonwood stands along the east bank of the Pine River. McLeod Lake Indian Band have informed Enbridge Frontier Project representatives that they wish to participate in the EAO working group and a potential independent technical review with two other First Nations. Enbridge Frontier Project representatives will continue to engage with McLeod Lake Indian Band by continuing to gather information on their interests, Indigenous rights and traditional land use that may be affected by the Project, developing a comprehensive Indigenous Consultation Plan, discussing proposed mitigation and incorporating feedback into Project design where feasible. Enbridge Frontier Project representatives will also continue to provide McLeod Lake Indian Band with regular Project updates and outline opportunities for their participation in the Environmental Assessment process.

3.2.2.7 Saulteau First Nations

Enbridge Frontier commenced its engagement on the Project with Saulteau First Nations in January 2019. Through Project engagement activities, Saulteau First Nations received a presentation on the Frontier Project, a factsheet and GIS files detailing the initial routing options for the Project, as well as a draft Project Description for their input. Saulteau First Nations have expressed interest in the Project by requesting a community open house, participation in a TLU study, and a possible independent technical review of the Project. Saulteau First Nations have expressed an interest in having the Project avoid impact to the Peace Moberly Tract. Enbridge Frontier Project representatives will continue to engage with Saulteau First Nation by continuing to gather information on their interests, Indigenous rights and traditional land use that may be affected by the Project, developing a comprehensive Indigenous Consultation Plan, discussing proposed mitigation and incorporating feedback into Project design where feasible. Enbridge Frontier Project representatives will also continue to provide Saulteau First Nation with regular Project updates and outline opportunities for their participation in the Environmental Assessment process.

3.2.2.8 West Moberly First Nations

Enbridge Frontier commenced its engagement on the Project with West Moberly First Nations in January 2019. Through Project engagement activities, West Moberly First Nations received a presentation on the Frontier Project, a Project factsheet, GIS files detailing the initial routing options for the Project and a draft Project Description for their input. Enbridge Frontier Project representatives also sent additional routing analysis information and a map outlining potential route options at the community's request. West Moberly First Nations expressed interest in providing input into routing and requested monitors ground truth the route options. West Moberly First Nations expressed concern regarding impacts to the Peace Moberly Tract, caribou habitat and additional pipelines within a crowded corridor. West Moberly First Nations suggested that the Indigenous Consultation Plan be written in collaboration with Indigenous communities, and advised Frontier representatives that they would like to conduct a Traditional Use Study. Enbridge Frontier Project representatives will continue to engage with West Moberly First Nations by continuing to gather information on their interests, Indigenous rights and traditional land use that may be affected by the Project, developing a comprehensive Indigenous Consultation Plan, discuss proposed mitigation and incorporating feedback into Project design where feasible. Enbridge Frontier Project representatives will also continue to provide West Moberly First Nations with regular Project updates and outline opportunities for their participation in the Environmental Assessment.

3.2.2.9 Other Indigenous Interests

In addition to the above noted Indigenous groups, Enbridge Frontier acknowledges that other Indigenous groups have interests or have expressed an interest in the area and may be affected by the Project and its components or activities. Beginning in May 2019, Enbridge Frontier commenced initial engagement activities on the Project with the groups listed below. Through engagement activities with these Indigenous groups, Enbridge Frontier provided them with a Project introduction and factsheet, and an offer for them to review and comment on the draft Project Description. Thus far, only Fort St. John Métis Society and the Kelly Lake Métis Society requested a copy of the draft Project Description, which was provided to them. Enbridge Frontier Project representatives will continue to engage with all Indigenous groups with potential interest in the Project to understand if and how they would like to be consulted on the Project. And to obtain information regarding their interests, Indigenous rights and traditional land use that may be affected by the Project, developing a comprehensive Indigenous Consultation Plan, discussing proposed mitigation and incorporating feedback into Project design where feasible.

- BC Métis Federation
- Dene Tha' First Nation
- Fort Nelson First Nation
- Fort St. John Métis Society
- Kelly Lake First Nation
- Métis Nation BC
- Moccasin Flats Métis
- North East Métis Association
- Prophet River First Nations
- River of the Peace Métis Society

3.2.3 Indigenous Interests and the Use of Lands and Resources for Traditional Purposes

"Indigenous interests" are defined by the BC EAO as potential or established Indigenous rights, including title, and treaty rights. Enbridge Frontier understands the importance of identifying and recommending measures to address potential adverse effects to Indigenous interests from the Project, or from its cumulative interaction with past, present, or reasonably foreseeable projects. This will be an important element of the EA and the fulfillment of the Crown's duty to consult and accommodate, where appropriate.

Enbridge Frontier recognizes Indigenous interests may be impacted by Project activities. Resources used by Indigenous groups include, but are not necessarily limited to, current use and peaceful enjoyment of lands and any resources, for activities such as hunting, fishing, medicinal, or spiritual purposes. Enbridge Frontier will work with potentially affected Indigenous groups to understand how they would like to identify and assess their interests and collaboratively discuss potential mitigation measures so that the Project can be developed in alignment with Indigenous groups interests.

Ongoing consultation efforts with Indigenous groups will seek to identify, confirm and expand upon Enbridge Frontier's current understanding of Indigenous land use interests in and around the Project area, including how this relates to Project routing and access. It is common for Enbridge to support independent studies by Indigenous groups in order to understand the Project's potential impacts to traditional and current land use, Indigenous rights and interests, and collaboratively develop appropriate measures to avoid or mitigate any potential impacts the Project may have on Indigenous interests including the use of lands and resources for traditional purposes.

Indigenous interests are taken into consideration in the management of heritage resources (see section 5.5), as these resources are important and of value to the scientific, cultural, and public communities. Archaeological sites in BC (predating 1846 AD) are administered by the Archaeology Branch as specified in the BC Archaeological Resource Management Handbook. The BC OGC is the permitting agency for the Project where BC MFLNRORD is responsible for structures and sites of historical age (post-1846). However, post-1846 Indigenous heritage sites are recognized in the BC EAA and may be protected under the Heritage Conservation Act under agreement with Indigenous groups.

3.2.4 Key Areas of Interest

Table 3-1 provides a summary of the issues identified through initial engagement with Indigenous groups. As the engagement process is in its early stages, Enbridge Frontier is also in the early stages of identifying interests and issues to be addressed. As engagement continues on the Project, Enbridge Frontier will work with Indigenous groups to determine how the interests listed in Table 3-1 will be addressed, as appropriate. Enbridge Frontier expects that many of these interests will be addressed by collaboratively working with potentially affected Indigenous groups on consultation plans, environmental field programs and land use studies, to name a few. As an example, through early engagement efforts and feedback obtained from Indigenous groups during meetings regarding pipeline routing, Enbridge Frontier decided to eliminate the Northern Route as a potential routing option for the Project to mitigate impacts on Indigenous rights and interests.

Table 3-1. Summary of Preliminary Interests Identified Through Initial Engagement with Indigenous Groups

KEY INTEREST	INTEREST DETAILS
Capacity funding	Support consultation through BC EAO process Support for participation of technical experts and independent review
Environment	Potential effects on wildlife and wildlife habitat (including fish habitat) How environmental values will be assessed Wildlife monitoring Soil management (erosion) and soil salvage Biophysical studies Vegetation management Input of TEK into Project planning Location and preservation of Old Growth Forest Stands
Traditional Use	Completion of Traditional Land Use (TLU) studies, where appropriate
Pipeline routing selection	Gathering feedback to minimize impacts Weighting of key interests and values Interest in route access management, including for recreational purposes Slope stability in proximity to the Pine River Avoidance of routing through the Peace Moberly Tract
Consultation	Opportunities for participation and input during the regulatory review process including review of regulatory submissions, input into routing selection, and input on development of the Indigenous Consultation Plan

Table 3-1. Summary of Preliminary Interests Identified Through Initial Engagement with Indigenous Groups

KEY INTEREST	INTEREST DETAILS
Socio-Economic	Employment and procurement opportunities Local economic developments during construction and operations Socio-economic/community wellbeing studies Interest in Project revenue sharing
Participation in field programs and monitoring	Collection of Traditional Ecological Knowledge (TEK) Use of local expertise and Indigenous involvement in environmental and archeological studies Involvement in construction monitoring Elder participation in field programs Interest in independent technical studies, where appropriate
Caribou protection	Potential effects on caribou and caribou habitat
Cumulative impacts	Impact of additional industrial development within the area and potential pressure on environmental values
Treaty and Indigenous rights	Potential Project effects on Treaty and Indigenous rights
Construction and Operations	Air quality Facility operations safety

3.2.5 Ongoing and Proposed Activities

Enbridge Frontier will continue to work with Indigenous groups to identify the most effective methods of engagement throughout the Project. Based on feedback and input received, Enbridge Frontier will develop a comprehensive Indigenous Consultation Plan, outlining engagement objectives and activities for the Project, including further details regarding how Enbridge Frontier plans to engage and provide Indigenous groups with opportunities to participate in the Project. Engagement will focus on collaboratively gathering information on interests, Indigenous rights and traditional land use that may be affected by the Project and how interests raised can be addressed.

Engagement methods may include any of the following activities:

- One-on-one meetings with Chief and Council, Band Economic Development Officers, Land and Resource Officers, and other Band-based office representatives
- Workshops and map reviews
- Community meetings
- Topic-specific information sessions
- Technical meetings
- TLU studies
- Participation in fieldwork
- Flyovers and site visits
- Presentations
- Participation at community events

To facilitate meaningful engagement and supplement two-way dialogue with communities, Enbridge Frontier will utilize various tools for communication. These tools will ensure Indigenous groups are able to obtain a deep understanding of the Project and support sharing of Project information and gather feedback. These may include:

- Project website
- Maps
- Shapefiles and KMZ files
- Factsheets
- Newsletters
- Community posters and advertisements
- PowerPoint presentations
- Information email account
- Toll-free telephone inquiry line
- Videos and animations

3.3 ENGAGEMENT WITH LOCAL GOVERNMENTS, PUBLIC, LANDOWNERS, STAKEHOLDERS, AND OTHER PARTIES

Enbridge Frontier is committed to engaging with local governments, the public, landowners, community stakeholders, and other interested parties prior to and throughout the regulatory review process. As part of the early engagement, Enbridge Frontier will develop a comprehensive Public Consultation Plan, outlining an engagement process that is inclusive of persons and organizations potentially affected by the Project. Enbridge Frontier recognizes additional stakeholders may be identified as the Project progresses and will continue to update its Public Consultation Plan accordingly.

3.3.1 Activities to Date

Enbridge Frontier Project representatives initiated engagement with local governments, the public, stakeholders, and other parties in northeast BC in April 2019. Enbridge Frontier provided preliminary Project introductions to local Municipalities, Regional Districts, and local Chambers of Commerce potentially-affected by the Project by way of mailed Project factsheets, presentations and/or one on one meetings.

Key Project stakeholders identified for engagement include:

- District of Chetwynd
- Peace River Regional District (PRRD)
- City of Fort St. John
- District of Taylor
- District of Hudson's Hope
- City of Dawson Creek
- Fort St. John and District Chamber of Commerce
- Chetwynd Chamber of Commerce
- Dawson Creek and District Chamber of Commerce
- Residents of Fort St. John, Chetwynd, Dawson Creek, and Hudson's Hope
- Affected and adjacent landowners and land users
- Northern Health
- Local RCMP
- Local Fire Departments

An offer was made to the District of Chetwynd, PRRD, Fort St. John, Taylor, the District of Hudson's Hope, and the City of Dawson Creek to provide context with respect to Enbridge Frontier's approach to development, to seek their input and to incorporate feedback into the Project planning process.

Enbridge Frontier will implement a robust landowner engagement program for the Project. Some landowner engagement activities have been initiated including discussions with landowners for the proposed straddle plant site area in the winter/spring of 2019. To date, this

has included the potential of a plant site in the area and obtaining verbal approval for various preliminary survey activities. Landowners in the vicinity of the pipeline will be contacted once a corridor has been selected.

3.3.2 Key Areas of Interest

Through Spectra Energy, a subsidiary of Enbridge Frontier's parent company Enbridge, Enbridge Frontier can capitalize on Enbridge's long history of working in the Project area and engaging with the key parties outlined in Section 3.3.1. As the engagement process is in its early stages, Enbridge Frontier is also in early stages of identifying interests and issues to be addressed. Enbridge Frontier will continue to work with the parties throughout the Environmental Assessment process to further refine their interests and address any Project-related concerns they may have by continuing to engage with the parties and involve them in the Project planning phase, as feasible.

Table 3-2 provides a summary of the key areas of interest that Enbridge Frontier anticipates will be raised by local governments, the public, stakeholders, and other parties.

Table 3-2. Summary of Anticipated Interests to be Identified Through Initial Engagement with Local Governments, Public, Stakeholders and Other Parties

KEY INTEREST	INTEREST DETAILS
Environmental	Participation in the environmental assessment process
Socio-economic impacts	High-level of industrial development in the area putting pressure on public services Local business utilized during construction and operation
Employment opportunities	Training and skills development Employment opportunities for local and Regional businesses
Safety	Pipeline safety
Consultation	Providing opportunities for public participation and input throughout the regulatory review process
Community Investment	Ensuring benefits for the local communities
Construction and operational impacts	Dust, noise and visual impacts

3.3.3 Ongoing and Proposed Activities

Enbridge Frontier will continue to work with local governments, public, stakeholders, and other parties to identify the most effective methods of engagement throughout the Project to gather input and feedback. Engagement will focus on facilitating an understanding of the Project among the public, stakeholders, and other parties and listening to how the Project may impact them. Concerns and interests raised will be addressed by Enbridge Frontier and inform the Project development. Engagement methods may include the following:

- In-person, ongoing meetings
- Formal meetings with community groups
- Topic or issue-specific workshops
- Open houses and/or community meetings
- Technical meetings
- Flyovers and site visits
- Participation at community events and Regional conferences
- Coffee chats

To facilitate meaningful engagement and supplement two-way dialogue with the public, stakeholders and other parties, Enbridge Frontier will utilize various communication tools. This may include:

- Project website
- Information email account
- Toll-free telephone inquiry line
- Social media platforms

- Community posters
- Open house display boards
- Maps
- Factsheets
- Newsletters
- Newspaper and radio advertisements
- PowerPoint presentations
- Speeches
- Videos and animations

3.4 GOVERNMENT AND REGULATORY AGENCIES

Enbridge Frontier initiated engagement with Provincial and Federal government and regulatory staff in May 2019. During this early engagement period, discussions focused on introducing the Project, discussing the pipeline routing selection and permitting and regulatory processes, and understanding how the governments would like to be engaged as the Project progresses. All parties were provided a Frontier Project introduction and factsheet.

Enbridge Frontier will continue to engage these groups through in-person meetings, phone calls and emails, local events, and presentations to further build relationships and opportunities for input on the Project.

To date, the governing bodies and agencies identified for engagement include the following:

Provincial Government:

- BC EAO
- BC OGC
- Northern Health
- BC Ministry of Indigenous Relations and Reconciliation
- BC Ministry of Energy, Mines and Petroleum Resources
- BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development (BC MFLNRORD)
- BC MECCS
- Mike Bernier (Members of Legislative Assembly Peace River South)
- Dan Davies (Member of Legislative Assembly Peace River North)

Federal Government:

- Ministry of Environment and Climate Change
- Crown-Indigenous Relations and Northern Affairs Canada
- Natural Resources Canada
- DFO
- Transport Canada
- Bob Zimmer (Member of Parliament Prince George-Peace River- Northern Rockies)

3.4.1 Key Areas of Interest

Through its parent company Enbridge, and through Spectra Energy, a subsidiary of Enbridge, Enbridge Frontier can capitalize on Enbridge's long history of working in the Project area and engaging with many of the key parties outlined in Section 3.4. As the engagement process is in its early stages, Enbridge Frontier is also in the early stages of identifying interests and issues to be addressed. Enbridge Frontier will work with the parties throughout the EA process to further refine their interests and address any Project-related concerns they may have by continuing to engage with the parties and involve them in the Project planning phase, as feasible. Table 3-3 provides a summary of the key areas of interest that Enbridge Frontier anticipates will be raised by Provincial Government.

Table 3-3. Summary of Anticipated Interests to be Identified Through Initial Engagement with Provincial Government

KEY INTEREST	INTEREST DETAILS
Environmental	Greenhouse gas (GHG) reduction opportunities from electrification
Socio-economic impacts	Economic benefit to the province Economic benefit to B.C. natural gas producers
Employment opportunities	Employment opportunities for businesses
Consultation	Engagement with local and Indigenous communities

4. Regulatory Context

The following subsections provide an overview of the regulatory framework, Treaty Lands and Indigenous Agreements, and the permitting requirements for the proposed Project.

4.1 PROVINCIAL REGULATIONS

The Project is wholly located within the Province of BC and involves the construction of more than 40 km of pipeline that is greater than 323.9 mm in diameter. Accordingly, pursuant to Table 8, section 4 of the *Reviewable Projects Regulation*, an EAC pursuant to the BC *EAA* will be required. This Project Description is required to initiate the Provincial EA process.

4.2 FEDERAL REGULATIONS DESIGNATING PHYSICAL ACTIVITIES

The proposed Project does not meet the definition of a "physical activity" under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) and therefore does not require a federal environmental assessment.

The triggers for determining which projects are subject to federal environmental assessment, as outlined in the *Regulations Designating Physical Projects* under CEAA 2012, were considered, as follows:

- Gas plants or facilities are not included on the list, unless they are located in a designated wildlife area or migratory bird sanctuary (lands owned by the federal government). Following detailed review, Enbridge Frontier confirms that the Project will not traverse a federal designated wildlife area or migratory bird sanctuary.
- Liquified petroleum gas storage facilities with a storage capacity of 100,000 m^3 or more are included on the list; however, the Project does not meet this threshold.
- Gas pipelines and electrical transmission lines are not included on the list unless they are regulated by the National Energy Board (NEB) or are located in a wildlife area or migratory bird sanctuary. Neither of these criteria apply to the Project.

As a result, no CEAA 2012 triggers are met for these Project components.

4.3 NATIONAL ENERGY BOARD

Generally speaking, the National Energy Board (NEB) regulates the construction and operation of interprovincial and international pipelines, while provincial agencies (including the BC Environmental Assessment Office) regulate pipelines that are entirely within provincial borders. The Frontier Project is a stand-alone pipeline system, designed to retrieve NGLs from existing pipeline systems in BC and transport them by truck or rail to market. The proposed pipeline would not supply or otherwise be integrated with or part of Enbridge's NEB-regulated natural gas transmission system. Further, the pipeline and facilities for the Project will be located entirely within BC; therefore, the Project is appropriately regulated by the provincial regulator, and not the NEB.

4.4 PERMITTING REQUIREMENTS

Enbridge Frontier will require permits to construct and operate the Project pursuant to section 25 of the BC *Oil and Gas Activities Act* (BC *OGAA*). No toll or tariff approvals will be sought from the BC Utilities Commission, as the pipeline will not be providing utility services.

In addition to the authorizations described previously, the permits, licenses, approvals, and authorizations shown in Table 4-1 may be required. The permits and authorizations have been grouped according to the Project phase during which they will be required.

Table 4-1. Preliminary List of Additional Permits and Approvals for the BC NGL Project

APPROVAL	AGENCY	LEGISLATION/ REGULATION	APPLICATION CONSIDERATIONS	SUBMISSION REQUIREMENTS
Pipeline Permit	BC OGC	BC *OGAA*	Requires approximately 2 years of environmental baseline fieldwork, detailed engineering information (that is, location of pipeline in ROW, location of all associated infrastructure), consultation with Indigenous Groups and public stakeholders prior to application submission. Section 39(5) of the Water Sustainability Regulation allows for instream works to be authorized by a permit issued under BC *OGAA*. A Pipeline Permit from the BC OGC meets this requirement, so separate approvals for Changes In and About a Stream under the *Water Sustainability Act* are not required.	• Sketch plans • Designs and drawings • Work/construction plan • Stream crossings • Fish habitat assessments • Wildlife habitat features • Archeological assessments • Mitigation strategies • Geotechnical reports
Transportation, Utility, and Recreational Trail Use approval or Non-Farm Use approval	BC OGC	*Agricultural Land Commission (ALC) Act*	The ALC approves new ROWs and developments (such as, compressor stations) on lands outside of the Northern Rockies and the PRRD, but within the Agricultural Land Reserve (ALR). ALR lands crossed in northeast BC are included in pipeline applications to the BC OGC. Pipelines and access roads fall under a special application process for Transportation, Utility, and Recreational Trail Use. Applications are not referred to Municipalities and require a plan/sketch map, site photos, a professional report, and a proof of serving notice to landowners of the application to the ALR.	• Plan/sketch map • Site photos • An Agricultural Capability Assessment including a detail soil survey a professional report • Proof of serving notice to landowners of the application to the ALR
Road Permit	BC OGC	BC *OGAA* and Oil and Gas Road Regulation	Road permits are required to build new roads on Crown land. This permit application would be developed in conjunction with the pipeline permit. Requires site-specific environmental baseline fieldwork (that is, vegetation and wetlands, fish and fish habitat, archaeology, etc.), detailed engineering information, and consultation with Indigenous Groups and public stakeholders prior to application submission. Fieldwork would be coordinated with pipeline fieldwork program.	• Location maps • Plans of roads • Stream crossings - Environment • Fish habitat assessments - Environment • Wildlife habitat features - Environment • Archeological assessments - Environment • Mitigation strategies - Environment

Table 4-1. Preliminary List of Additional Permits and Approvals for the BC NGL Project

APPROVAL	AGENCY	LEGISLATION/ REGULATION	APPLICATION CONSIDERATIONS	SUBMISSION REQUIREMENTS
Facility Permit	BC OGC	BC *OGAA*	A facility permit is required for the construction and operation of the plant. This permit application would be developed in conjunction with the pipeline permit. Requires site-specific environmental baseline fieldwork (that is, vegetation and wetlands, fish and fish habitat, archaeology, etc.), detailed engineering information, and consultation with Indigenous Groups and public stakeholders prior to application submission. Fieldwork would be coordinated with pipeline fieldwork program.	• Sketch plans • Designs and drawings – Process flow diagrams – Schematics • Work/construction plan • Stream crossings • Fish habitat assessments • Wildlife habitat features • Archeological assessments • Mitigation strategies • Geotechnical reports
Master License to Cut (MLTC)	BC OGC	*Forest Act*	A MLTC is required and must be approved where the removal of Crown timber is required to conduct oil and gas activity. A MLTC is required for each Forest District.	• Permit application • Project description • Corridor maps
Request for Reserve	BC Ministry of Energy and Mines	*Mineral Tenure Act*	Required to ensure persons or corporations filing an interest for subsurface minerals are aware of the proposed Project.	• Application form
Highway Permits or Approvals	BC Ministry of Transportation and Infrastructure	*Transportation Act*	Where the pipeline, access roads or temporary workspaces use or occupy highway ROWs a permit or approval may be required from the BC Ministry of Transportation and Infrastructure (BC MoTI).	• Design drawings • Consultation and engagement information • Mitigation plan(s)
Local Government Permits	Municipalities and Regional Districts	*Local Government Act*	Municipalities and Regional Districts that are crossed by the pipeline route, temporary workspaces, facilities, and access roads may require permits or approvals (such as, development permits), prior to construction.	• Design drawings • Stream and habitat assessments • Geotechnical reports
Archaeological Assessment Information Form (AAIF)	BC OGC and BC MFLNRORD (on public and private lands in BC)	BC *OGAA*	All oil and gas development proposed in BC requires an AAIF to be submitted with the application package to the BC OGC. The AAIF indicates whether the proposed development will require a further Archaeological Impact Assessment (AIA). Major projects that cover substantial area typically require an AIA. The AAIF can be completed prior to finalizing the AIA; however, the approval would be conditional on completion of an AIA. Expected duration for field screening and reporting prior to application submission is 3 to 6 months.	• AAIF • AIA

Table 4-1. Preliminary List of Additional Permits and Approvals for the BC NGL Project

APPROVAL	AGENCY	LEGISLATION/ REGULATION	APPLICATION CONSIDERATIONS	SUBMISSION REQUIREMENTS
Heritage Investigation Permit	BC MFLNRORD	*Heritage Conservation Act* (Section 14)	A Heritage Investigation Permit may be required to authorize systematic study and data recovery from an archaeological site that cannot be avoided during development activities. A Heritage Investigation Permit is typically used during mitigation of significant archaeological sites. Application preparation is approximately 2 months. Potentially affected Indigenous groups will be engaged by the Province during the Application review phase, and this can influence the regulatory review timeline.	• This application is submitted by the archeological service provider
Heritage Site Alteration Permit	BC MFLNRORD	*Heritage Conservation Act* (Section 12)	A Heritage Site Alteration Permit will be required to alter (meaning to change in any manner) an archaeological site. Typically follows a Heritage Inspection Permit and/or Heritage Investigation Permit. An AAIF must be completed in advance. Application preparation is approximately 2 to 3 months, depending on the complexity and significance of the site proposed for alteration. Engagement with potentially affected Indigenous groups will be required during the preparation of the Application and could draw out timelines. Avoiding archaeological sites is key to reducing schedule risks.	• AAIF • AIA
Request for Review and *Fisheries Act* Authorization for Paragraph 35(2)(b)	Fisheries and Oceans Canada	*Fisheries Act*	Required for watercourse crossings and other activities requiring clearing of riparian vegetation or instream disturbance which will result in serious harm to fish that are part of a commercial, recreational, or Indigenous fishery, or to fish that support such a fishery. Requires approximately 2 years of environmental fieldwork, detailed engineering information (that is, location of pipeline in ROW, location of all associated infrastructure), consultation with Indigenous Groups and public stakeholders prior to application submission. Changes to the *Fisheries Act* are anticipated with Bill C-68 which may impact permit requirements and timelines.	• Aquatic technical report • Project design drawings • Environmental management plan • Site-specific mitigation plan • Potential requirement: fish and fish habitat offset plan
Navigable Waters Request for Work Approval	Transport Canada	*Navigation Protection Act* Section 5	An approval is required for any construction in, on, over, under, or through a navigable water as per Schedule 2 of the *Navigation Protection Act.* Application preparation is approximately 1 month and requires detailed engineering inputs. Changes to the *Navigation Protection Act* are anticipated with Bill C-69 which may impact permit requirements and timelines.	• Project design information • Construction timing and methodology
General Permit Applications	BC MFLNRORD	*Wildlife Act*	Required for amphibian salvage, wildlife sundry, fish research at watercourse crossing and fish salvage.	• Detailed project description • BC Animal Care form • Map of location

5. Project Location and Setting

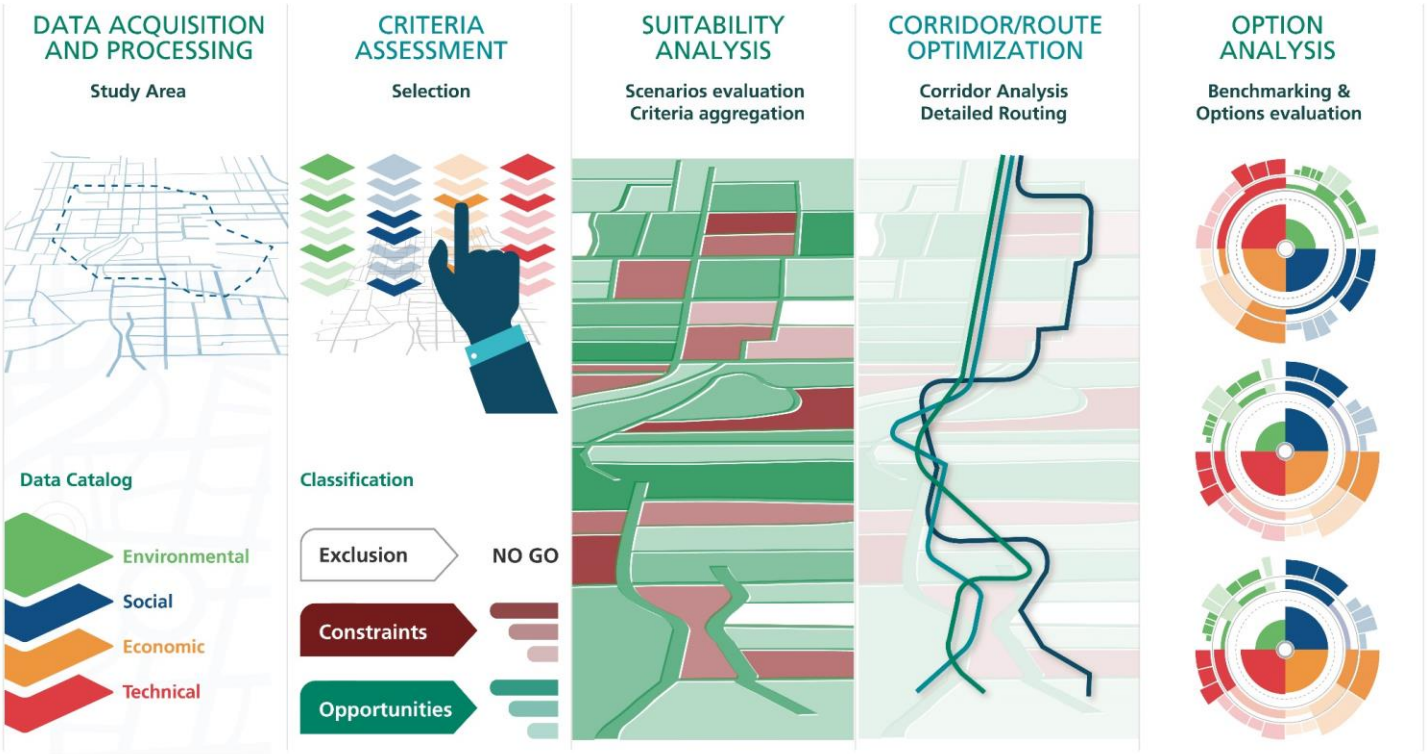
This section describes the location of the proposed straddle plant, the conceptual pipeline corridors, and transmission line that are being considered and the process used for Project routing and site selection. This section also describes the environmental, economic, social, heritage, and health features for the Project by utilizing existing literature, data, internet searches and input from qualified professionals.

5.1 PROJECT LOCATION OVERVIEW

The Project originally had two conceptual pipeline corridors for the pipeline route and one proposed location for the straddle plant. The conceptual pipeline corridors are in the process of being refined through consultation and engagement, as well as further input from FEED work and baseline studies. The North Corridor has recently been removed from consideration based on feedback received from Indigenous groups. The remaining corridor now being considered is the 'South Corridor' (see Figure 1-1 and Appendix D). The transmission line has not been included in the setting as its routing is subject to identifying a power source location. When a proposed transmission line corridor is chosen, a routing analysis will be shared with those who have participated in the Project to date with the opportunity to provide comments and feedback. Routing and Site Selection for the Project

A thorough pipeline route identification, analysis, and evaluation process is being conducted for the Project. The process, called 'routing alternative assessment methodology', consists of mapping and quantitatively classifying spatial routing criteria. Upon running the data collected, multiple routing alternatives are considered allowing a full range of Project perspectives. These perspectives will then be used to engage Indigenous groups, landowners, and the public in the routing process. See Figure 5-1 for more details.

Figure 5-1. Technical Routing Selection Process



Source: Golder 2019

Enbridge chose the conceptual pipeline corridors based on the routing alternative assessment methodology (see Figure 1-1). Following the routing alternative assessment, and based on years of experience with local Indigenous communities who have requested early engagement in route planning, meetings were set up with several potentially affected Indigenous groups to provide a routing analysis presentation that describes the Project's routing selection process. Feedback to-date has informed the routing process, with one potential pipeline corridor no longer under consideration based on feedback received from Indigenous groups. These corridors will be refined through further detailed consultation during the pre-application phase of the EA process and further consultation with interested parties including landowners and governments. The details and objectives of the consultation and engagement program are outlined in more detail in Section 3.

5.1.1 Straddle Plant and Initiating Pump Station

The straddle plant is located approximately 36 km west of Chetwynd, BC. Enbridge Frontier considered six potential site alternatives for the straddle plant, ultimately refining the options to the current location near the CS2 Facility. The site at the CS2 Facility was selected after an engineering, technical, and environmental review that considered the six alternatives. The key criteria that led to the straddle plant location included geotechnical considerations, location to existing infrastructure and utilizing existing disturbance.

The footprint of the straddle plant will undergo refinement and definition as Project planning advances, field programs are conducted, and further feedback is captured from Indigenous groups and stakeholders during the pre-application phase of the EA. The approximately 70-hectare footprint will fall within the conceptual buffered area identified in Figure 1-2 and is located within the legal locations of 93-O-9, Block G, Units 68, 69, 78, and 79 (see Figure 1-2).

5.1.2 Conceptual Pipeline Corridors

The South Corridor begins approximately 36 km west of Chetwynd in the Pine River Valley at the CS2 Facility. Originating in the foothills of the Rocky Mountains, the corridor extends east along areas of gradual to steep, forested terrain, following the Pine River Valley. From there, the corridor continues east, crossing mixed forested, agricultural, and rural settlement as the corridor reaches the community of Chetwynd. Options include going through the community or south of the community. The Southern Corridor options converge again east of Chetwynd for approximately 5 km before the North Corridor branches off and traverses north.

The South Corridor continues northeast along mixed-use lands, eventually crossing the Pine River approximately 20 km east of Chetwynd. From this location, the South Corridor has two variations, one that is further south and generally crosses existing corridors and disturbances, and one that is further north that crosses or parallels both areas with existing corridors, disturbances, and forested areas. The two variants converge approximately 12 km south of Taylor. From there, the South Corridor follows existing linear disturbances and crosses the Peace River at a location downstream of the confluence with the Pine River before its end-point in the Taylor area at fractionation and rail loading facilities that would be developed, owned, and operated by third-parties.

The North Corridor, now no longer being considered based on Indigenous input, branched off from the South Corridor in a northeastern direction, and north of the Pine River, for approximately 50 km where it mostly paralleled land with existing disturbance from a transmission line, through rural developments, agricultural, and forested land. The corridor crossed the Peace River just upstream of the Pine River confluence and headed east, just south of Taylor, before the end point at fractionation and rail loading facilities that would be developed, owned, and operated by third parties. Enbridge Frontier has included details of the North Corridor in the Project Description for background and informational purposes only. See Figure 5-2 showing the previously considered northern corridor.

The conceptual pipeline corridors are approximately 2 km wide to account for further route refinement and definition that will occur as Project planning advances, field programs are conducted and further feedback is captured from Indigenous groups and stakeholders during the pre-application phase of the EA.

5.1.3 Transmission Line

The determination of the transmission line route will be based on requirements in accordance with regulatory guidelines and to identify route options that have the lowest potential impacts. A similar routing approach to that of the pipeline will be completed for the transmission line once an appropriate power source has been identified. Additional criteria will be considered such as agricultural impacts, visual impacts, and feedback received during the consultation and engagement process.

PREVIOUSLY PROPOSED NORTHERN CORRIDOR - REMOVED FROM CONSIDERATION

122°0'0"W 121°0'0"W

56°10'0"N 56°0'0"N 55°50'0"N 55°40'0"N 55°30'0"N

N

Butler Ridge Provincial Park
94B1
Wapoose Lake
Dunlevy Lake
Williston Lake
Carbon Lake
Hudson's Hope
Dinosaur Lake
Moosecall Lake
Wright Lake
93O16
PEACE RIVER REGIONAL DISTRICT
Cameron Lakes
Pete Lake
Klin-se-za Provincial Park
West Moberly Lake I.R. 168A
East Moberly Lake I.R. 169
Moberly Lake
Boucher Lake
René Lake
Monias Lake
Stewart Lake
Beaver Lake
Big Lake
Halfmoon Lake
Jackfish Lake
Chetwynd
Carl Lake
Moberly River
Bickford Lake
9309
Doonan Lake
Simpson Lake
Heart Lake
Pine Le Moray Provincial Park
Sundance Lakes
Pine River Breaks Provincial Park
Pine-Murray River
Highhat River
Sukunka River
Gwillim Lake Provincial Park
Taylor
Beatton River
Peace River
Peace River Corridor Provincial Park
Tower Lake
Scott Lake
Norrie Lake
Favels Lake
Sloans Slough
Sin Lake
Rat Lake
McQueen Slough
Dawson Creek
Kiskatinaw River
Alcock Lake
77 78 79 80 81 82
15 16 17 18 19 21 22 23 24 25 26
29 97 2 52

Previously Proposed North Corridor	Railway	Municipality
Potential Corridor	Watercourse	Indian Reserve
Highway	Waterbody	Park/Protected Area
Road	Regional District	

ENBRIDGE

JACOBS

July 2019	Reference: D3135600
Mapped By: MJP	Checked By: MM

SCALE: 1:400,000

0 5 10 15 20 km

(All Locations Approximate)

NAD83 UTM Zone 10N
Basemap: ESRI World Topographic Map, Natural Resources Canada 2010. BC Grid: TERA Environmental Consultants 2010; Roads/Highways: Geobase 2008; Railways: NRCan 2012; Hydrography: BC FLNRO 2008; Parks/Protected Areas: BC MFLNRO 2008; Municipalities, Regional Districts: BC MFLNRO 2007; Indian Reserves: Government of Canada 2018; Compressor Station, Tie-in Locations: Enbridge 2019; Corridors: Jacobs 2019.

FIGURE 5-2

OVERVIEW OF THE PREVIOUSLY PROPOSED NORTHERN CORRIDOR - REMOVED FROM ROUTING CONSIDERATION

THE FRONTIER PROJECT

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

\\ch2mhill\common\Shares\CNR\GIS_Proj3\Enbridge_Frontier\MAPPING\OVERVIEW\Fig5-1_PreviouslyProposedNorthCorridor.mxd

5.2 ENVIRONMENT SETTING

This section provides a general overview of the physical environment, atmospheric environment, aquatic resources, vegetation, wetlands, and wildlife and wildlife habitat found within the Project area.

5.2.1 Physical Environment

The conceptual pipeline corridors cross two physiographic regions in BC; the Great Plains and the North and Central Plateaus and Mountains. The Great Plains region is characterized by flat or gently sloping surfaces with the only relief coming from incised large rivers and their tributaries (Church and Ryder 2010). Within the North and Central Plateaus and Mountains, the conceptual pipeline corridor crosses the Rocky Mountains and Rocky Mountain Foothills. The Rocky Mountain Foothills contain rolling topography with mature erosional surfaces while the Rocky Mountains consist of high peaks typically with a thin cover of drift and broad valleys of mature erosional surfaces (Church and Ryder 2010).

Bedrock underlying the Project consists of sedimentary rock formed during the Cretaceous period in the Dunvegan Formation, Fort St. John Group, and Smokey Group (BC MoEM 2018). Surficial geology has been highly influenced by glaciation with deposits of glaciolacustrine, glacial, and glaciofluvial sediments as the main substrate in the Project area with some alluvial sediments (Hickin and Fournier 2011).

Studies conducted during Project design will collect information about potential geohazards and other unique terrain features that require specific consideration in the design of the Project and development of construction and reclamation techniques.

5.2.2 Atmospheric Environment

Climate in the Project area is characterized as continental with extreme temperature ranges. Summers are short, warm, and moist in contrast to the long winters with prolonged periods under -10 degrees Celsius (°C) (BC MoF 1996, 1998). Two weather stations are located near the proposed Project; Chetwynd (Chetwynd A, Climate ID 1181508) and Fort St. John (Fort St. John A, Climate ID 1183000) (GoC 2019a, 2019b). Climate normals are summarized from 1981 to 2010 for both stations in Table 5-1.

Table 5-1. Climate Averages for Chetwynd and Fort St. John, British Columbia Weather Stations (1981 to 2010)

WEATHER STATION	LOWEST DAILY AVERAGE TEMPERATURE (°C)	HIGHEST DAILY AVERAGE TEMPERATURE (°C)	HIGHEST AVERAGE RAINFALL (MM)	HIGHEST AVERAGE SNOWFALL (CM)	AVERAGE MONTHLY WINDSPEED (KM/H)	MAXIMUM AVERAGE HOURLY WIND SPEED (KM/H)
Chetwynd (Climate ID 1181508)[1]	-10.2 (January)	15.4 (July)	75.7 (June)	27.3 (January) 28.5 (March)	7.1 to 9.1	74 (October)
Fort St. John (Climate ID 1183000)[2]	-12.8 (January)	16.2 (July)	75.2 (July)	32.5 (November) 23.7 (January)	11.8 to 14.8	97 (December)

[1] GoC 2019a

[2] GoC 2019b

Notes:
cm = centimetre(s)
km/h = kilometre(s) per hour

The conceptual pipeline corridors are located in the Northeast Air Zone (Omineca-Peace Region). A summary report of up to 15 years (1998-2013) of ambient air quality data in the PRRD determined that ambient concentrations of three pollutants (sulfur dioxide, fine particulate matter, and nitrogen dioxide) were rarely exceeded at the four air quality monitoring stations in the area (Taylor 2015). An air quality dispersion modelling study indicated that no 1-hour exceedance of any of these pollutants occurred at any of the nearby communities (that is, Taylor, Taylor South Hill, Fort St. John, Dawson Creek, Chetwynd, Hudson's Hope, Buick, and Blueberry #205) (Taylor 2015).

Background noise levels in the Project area primarily originate from primary and secondary roads, active forest roads, nearby communities, and industrial activity. Most of the conceptual pipeline corridors are located in sparsely populated areas; therefore, back-country noise levels are very low.

5.2.3 Aquatic Resources

As a part of the Northeast Water Strategy (NEWS) the Government of British Columbia (GBC) has conducted several studies to better understand groundwater and aquifer quality, quantity, and locations in the area (GBC 2017). Based on the groundwater well database there are several commercial and industrial, private domestic, water supply system wells, and unknown or other wells (BC MoE 2008). There are also licensed springs for domestic use in the Project conceptual footprint (BC MFLNRO 2010). The Project is underlain by a range of aquifers considered as low vulnerability, moderate vulnerability, and high vulnerability to contamination based on hydrogeology characteristics (BC MoE 2011a).

The conceptual pipeline corridors are located in the Peace River basin within the Mackenzie principal drainage basin. The Project is primarily located in the Pine River watershed with the exception of one watercourse crossing, the Peace River, in the Lower Peace River watershed (GBC 2019a, 2019b). The Pine River originates in the Rocky Mountains of BC and drains an area of about 12,100 square kilometres (GeoScience BC 2010). Freshet is typically in May or June when melting snow from the headwaters in the mountains feed the watershed. Extreme spikes in flow occur during summer months when significant rainfall events occur. The conceptual pipeline corridors cross the Peace River near Taylor, approximately 120 km downstream of the Bennett Dam, 2 km downstream of the confluence with the Pine River.

The conceptual pipeline corridors cross several named stream crossings (Table 5-2), and a preliminary search of the Freshwater Atlas of BC indicates that approximately 80 to 100 linear hydrolayers are crossed by the conceptual pipeline corridors (BC MFLNRO 2008). The Pine River watershed and the Peace River are rich in fish species diversity and include salmonids such as Arctic grayling, bull trout, rainbow trout, mountain whitefish, and brook trout and other common sport-fished species such as walleye and northern pike (Table 5-2) (GBC 2019a, 2019b).

Table 5-2. Watercourse Crossing and Fish Species Documented within Conceptual Pipeline Corridors

WATERSHED	NAMED WATERCOURSE CROSSINGS	FISH SPECIES DOCUMENTED[1, 3]	CONCEPTUAL PIPELINE CORRIDOR
Pine River	Pingel Creek	Lake chub, bull trout, longnose sucker.	South Corridor
	Stewart Creek	Lake chub, rainbow trout, arctic grayling, redside shiner, longnose sucker, longnose dace, brassy minnow, burbot.	South Corridor
	Pine River	Redside shiner, northern pikeminnow, mountain whitefish, bull trout, longnose sucker, largescale sucker, arctic grayling, white sucker, burbot, walleye, rainbow trout, longnose dace, northern pike, slimy sculpin, splake, dolly varden[2], lake whitefish, finescale dace, lake chub, flathead chub, troutperch.	South Corridor and North Corridor
	Centurion Creek	White sucker, slimy sculpin, longnose sucker, longnose dace, lake chub, arctic grayling, bull trout, dolly varden[2].	South Corridor and North Corridor
	Fernando Creek	Rainbow trout.	South Corridor and North Corridor
	Wildmare Creek	Redside shiner, lake chub, slimy sculpin, rainbow trout, mountain whitefish, bull trout, longnose dace, arctic grayling.	South Corridor and North Corridor
	Bisset Creek	Rainbow trout, mountain whitefish, arctic grayling.	South Corridor and North Corridor
	Stone Creek	Rainbow trout.	South Corridor and North Corridor

Table 5-2. Watercourse Crossing and Fish Species Documented within Conceptual Pipeline Corridors

WATERSHED	NAMED WATERCOURSE CROSSINGS	FISH SPECIES DOCUMENTED[1, 3]	CONCEPTUAL PIPELINE CORRIDOR
	Commotion Creek	Rainbow trout, bull trout, mountain whitefish, arctic grayling.	South Corridor and North Corridor
	Bowlder Creek	Rainbow trout, bull trout.	South Corridor
	Rocket Creek	No fish previously documented.	South Corridor
	Fur Thief Creek	No fish previously documented.	South Corridor and North Corridor
	Windrem Creek	Bull trout	North Corridor
	Widmark Creek	Longnose dace, longnose sucker, redside shiner	North Corridor
	Wilkie Creek	No fish previously documented.	North Corridor
	Graveyard Creek	Lake chub, northern redbelly dace x finescale dace, slimy sculpin, sucker (general)	North Corridor
	Beaver Ranch Creek	No fish previously documented.	North Corridor
	Windy Creek	Minnow (general)	North Corridor
Lower Peace	Peace River	Lake trout, longnose sucker, longnose dace, lake chub, slimy sculpin, troutperch, redside shiner, northern pike, mountain whitefish, arctic grayling, bull trout, burbot, prickly sculpin, kokanee, spottail shiner, largescale sucker, northern pikeminnow, rainbow trout, white sucker, finescale dace, spoonhead sculpin, lake whitefish, leopard dace, walleye, flathead chub, goldeye, yellow perch, northern redbelly dace, northern pearl dace, torrent sculpin, cutthroat trout[3], peamouth chub, pygmy whitefish, brook stickleback, brook trout, mottled sculpin, dolly varden[2]	South Corridor and North Corridor

[1] List compiled from GBC (2019a, 2019b) and McPhail (2007)

[2] Dolly Varden were identified during a fish species query using Habitat Wizard, however, these documented occurrences are outside of the species habitat range and has been disregarded as a misidentification or as a result of reclassification in 1978 of the inland species to bull trout (GBC 2004). As per distribution maps found within The Freshwater Fishes of British Columbia, Dolly Varden are not found within the Project region (McPhail 2007).

[3] Westslope cutthroat trout were identified during a fish species query using Habitat Wizard, however, this documented occurrence is outside of the species native habitat range and is likely due to stocking of a small number of lakes in the lower Peace River system. COSEWIC (2006) and McPhail (2007).

No species listed on Schedule 1 List of Wildlife Species at Risk under the Federal *Species at Risk Act* (*SARA*) are documented to occur in the waterbodies near the proposed Project; however, the status of bull trout is summarized by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as 'special concern' (Table 5-3) (GoC 2019c). There is potential for the Red-listed spottail shiner and Blue-listed brassy minnow, bull trout, goldeye, northern pearl dace, and northern redbelly dace to occur within waterbodies crossed by the Project (Table 5-3) (BC CDC 2019).

Table 5-3. Fish Species Previously Documented in Streams Crossed by the Conceptual Pipeline Corridors that are Provincially- or Federally-Listed

COMMON NAME[a]	SCIENTIFIC NAME[b]	SPAWNING SEASON[c]	BC STATUS[d]	COSEWIC CANDIDATE SPECIES[e]	*SARA* LISTED SPECIES[f]
Brassy minnow	*Hybognathus hankinsoni*	Spring/Summer	Blue	No Status	No Status
Bull trout	*Salvelinus confluentus*	Fall	Blue	Special Concern[g]	No Status
Goldeye	*Hiodon alosoides*	Spring	Blue	No Status	No Status
Northern redbelly dace	*Phoxinus eos*	Spring/Summer	Blue	No Status	No Status
Pearl dace	*Margariscus margarita*	Spring	Blue	No Status	No Status
Spottail shiner	*Notropis hudsonius*	Summer	Red	Not at Risk	No Status

[a] List compiled from GBC (2019a, 2019b)
[b] Latin names are from Page et al., 2013
[c] Scott and Crossman, 1998; Nelson and Paetz, 1992; McPhail, 2007
[d] BC CDC 2019
[e] COSEWIC 2019
[f] GoC 2019c
[g] Western Arctic populations include those in the Mackenzie River system and major tributaries, such as the Peace River within BC.

5.2.4 Vegetation and Wetlands

The Project area is mainly located within the Boreal White and Black Spruce biogeoclimatic zone and to a lesser extent within the Sub-Boreal Spruce biogeoclimatic zone. The Boreal White and Black Spruce zone contains three types of subzones; Dry Cool dominated by forests of white spruce or lodgepole pine with distinguishing species of *Shepherdia canadensis* (soopolallie) and *Geocaulon lividum* (bastard toad-flax), Moist Warm with forests dominated by white spruce or aspen and distinguishing species typically include *Lathyrus ochroleucus* (creamy peavine), *Mertensia paniculate* (tall bluebells), *Galium boreale*, and *Mitella nuda* (common miterwort) and Wet Cool dominated by forests of white spruce and lodgepole pine with distinguishing species of *Abies lasiocarpa* (subalpine fir) and *Vaccinium membranaceum* (black huckleberry) (Meidinger and Pojar 1991). The Sub-Boreal Spruce biogeoclimatic zone is dominated by dense coniferous forest consisting of hybrid white spruce, subalpine fir, and occasionally black spruce and lodgepole pine with some pioneer deciduous species and understory of various species of shrubs and herbs (BC MoF 1998).

A preliminary search of the Freshwater Atlas of BC indicates that approximately 40 to 60 wetlands are crossed by the conceptual pipeline corridors (BC MFLNRO 2008). The flat plateaus in these biogeoclimatic zones contain a variety of channels, depressions, oxbows, and lakes that hold wetland ecosystems (BC MoF 1996, 1998). Wetland ecosystems in the region include bogs, fens, swamps, and marshes. The conceptual pipeline corridors are located in the Central Rocky Mountain and Continental Mid-Boreal wetland regions of Canada. The Central Rocky Mountain wetland region is characterized by peat plateau bogs, palsa and veneer bogs in valleys and low slopes and small basin bogs and fens in alpine areas (Energy, Mines and Resources Canada 1986). The Continental Mid-Boreal region is characterized by flat bogs and basin bogs often associated with horizontal and ribbed fens (Energy, Mines and Resources Canada 1986). Marshes can be found along sloping lakeshores in the Continental Mid-Boreal region.

The BC OGC has developed a process for managing the impacts of oil and gas development activities in northeast BC called Area Based Analysis (ABA) for values such as, riparian reserve zones, old forest, Old Growth Management Areas (OGMAs) and wildlife (BC OGC 2018a). The ABA review process determines if a proposed activity will impact an ABA value and whether an enhanced management or regulatory/policy trigger occurs. The Project does not encounter any Old Forest ABA value locations (BC OGC 2018a). The Project approaches several OGMAs; however, none of these areas are specified under the ABA as requiring enhanced management or regulatory/policy measures (BC MFLNRO 2009; BC OGC 2018b). Riparian reserve zones crossed by the Project in the Upper Pine, Lower Pine and Lower Peace basins are considered 'Enhanced Management' areas (BC OGC 2018c). Areas that are defined as Enhanced Management have been identified as having a high level of disturbance at the landscape level and require a

mitigation strategy. One vegetation species, elliptic spike-rush, blue-listed by the British Columbia Conservation Data Centre (BC CDC) is documented as occurring near the Project (BC CDC 2012). No vegetation or wetland species have a status provided by the COSEWIC or *SARA* (GoC 2019c).

5.2.5 Wildlife

The conceptual pipeline corridors cross upland forests, wetlands, watercourses, and pasture lands that may provide suitable habitat for a variety of wildlife, including mammals, birds, amphibians, and reptiles. The Project area is within the Boreal White and Black Spruce and Sub-Boreal Spruce biogeoclimatic zones, which are rich in wildlife, especially ungulates, and support abundant predator populations (BC MoF 1996, 1998). Wildlife in the Project area have specifically adapted to survive the long cold snowy winters by travelling on top of the snow or burrowing underneath, hibernating, or migrating. Despite the harsh climate, the Boreal White and Black Spruce zone has a rich diversity of wildlife including moose, caribou, mule deer, elk, white-tail deer, bison, stone sheep, dall sheep, mountain goat and large predators such as black bear, gray wolf and grizzly bear are common to the area (Meidinger and Pojar 1991). Frequent forest fires have led to a mosaic of upland forests at different stages which provide productive habitat for ungulates and variety of birds and small mammals. Some birds such as the black-throated green warbler, white-throated sparrow, rose-breasted grosbeak, broad-winged hawk and blue jay are not commonly found in other zones (Meidinger and Pojar 1991). The dominance of dense spruce on gently rolling terrain and abundant wetlands in the Sub-Boreal Spruce zone provide abundant habitat for moose and early winter habitat for caribou (Meidinger and Pojar 1991). These forests also provide habitat and prey for a range of predators including grizzly bear, gray wolf, fisher, marten and ermine (Meidinger and Pojar 1991). The mature coniferous forests provide nesting habitat for many bird species and a food supply through foliage or seeds from coniferous tree cones (Meidinger and Pojar 1991).

The conceptual pipeline corridors, transmission line, straddle plant and initiating pump station cross the Moberly (Klinse-za) and Burnt Pine caribou ranges within the Southern Mountain (Central Group) Local Population Unit; however, the Burnt Pine caribou herd is listed extirpated (GBC 2019c). Additionally, the conceptual pipeline corridors cross the Moberly caribou range for approximately 6 km and are located within Type 1 matrix range. This range consists of areas that have not been delineated as summer or winter range and may include seasonal migration areas and areas of lower use compared to delineated seasonal ranges (EC 2014). The function of Type 1 matrix range is to provide some forage, connectivity between seasonal ranges, security from human disturbance, and a low risk of predation (EC 2014). The status of the Southern Mountain population is Threatened on Schedule 1 of *SARA,* Endangered by COSEWIC, and Red-listed in BC (GoC 2019c; COSEWIC 2019; BC CDC 2019). Enbridge Frontier is aware of the draft bilateral conservation agreement between BC and Canada under Section 11 of the *SARA* (Section 11 Agreement) and the draft Partnership Agreement between BC, Canada, West Moberly, and Saulteau First Nations for the Conservation of the Central Group of the Southern Mountain Caribou (Partnership Agreement) and continues to monitor updates to these draft recovery agreements. Recent announcements include the implementation of an interim moratorium to protect caribou in northeast BC. The Project does not fall within any areas subject to the moratorium, however, the proposed conceptual corridor does border the proposed Zone B1, Sustainable Resource Activity Area, with some overlap occurring within the first approximately 33 km. The proposed location of the straddle plant and initiating pump station do not fall within any of the proposed management zones (BC Provincial Caribou Recovery Engagement 2019).

The BC OGC ABA for wildlife considers intactness of Ungulate Winter Range (UWR) and Wildlife Habitat Areas (BC OGC 2018b). The conceptual pipeline corridors cross one UWR (u-9-001, SPE-009) for approximately 1 km near the Pine River. The North Corridor also crosses UWRs (u-9-001, SPE-003 and SPE-025) near the Pine River. The UWRs are designated for rocky mountain elk, mule deer, and moose, and all have ABA Status of Normal, indicating a high level of intactness (BC OGC 2019). The BC OGC's Environmental Information Management System identifies Planning and Operational Measures for these UWRs as established in the General Wildlife Measures (GWMs) for UWR u-9-001. The GWMs include a timing window of November 1 to April 30 when activities should be avoided to limit disturbance to overwintering ungulates, and several measures to limit impacts to habitat (BC OGC 2018d). The Environmental Information Management System also provides ABA guidance for Enhanced Management, which states that only activities with no locational flexibility or alternate routing should be considered within this UWR and a Mitigation Strategy is required, with the exception of SPE-025 (BC OGC 2018d).

Grizzly bears are an important part of BC's ecosystem and healthy populations are considered an indicator of ecological integrity. The status of Grizzly bears (western population) are blue-listed in BC and are of Special Concern on Schedule 1 of *SARA* and by COSEWIC (BC CDC 2019; GoC 2019c; COSEWIC 2019). The southern portion of the conceptual pipeline corridors cross the Moberly and Hart Grizzly Bear Population Units, both of which are considered viable (BC MoE 2012a, 2012b).

The conceptual pipeline corridors cross a 50-km by 50-km grid square within which critical habitat for little brown myotis and/or northern myotis is found (ECCC 2018). The 50 km by 50 km grid square is located near Taylor, BC. Critical habitat is present within the grid square where occupied hibernacula have been previously identified. Detailed critical habitat mapping (that is, hibernacula locations) is not provided within the Recovery Strategy (ECCC 2018).

The Project is not located within any National Wildlife Areas (GoC 2019d), Migratory Bird Sanctuaries (GoC 2017), Important Bird Areas (Bird Studies Canada 2015), or Western Hemisphere Shorebird Reserves (WHSRN 2019). A preliminary list of species with Federal or Provincial conservation status (that is, status of Schedule 1 of *SARA* or by COSEWIC, Red- or Blue-listed in BC, or designated status under the BC *Wildlife Act*) that may occur in the Project area is provided in Appendix C.

5.3 ECONOMIC SETTING

The economy in the PRRD is based on mining, oil and gas exploration, forestry, farming, construction, and tourism. A large service sector also functions in the region, offering education, health care, transportation, and retail services. Pipeline construction and oil and gas drilling began as early as 1920 and has been a primary source of employment in the region since the 1950s (Janicki 2008).

The economies of Indigenous groups in the Project area include contracting and employment in the mining, oil and gas, and forestry sectors.

The conceptual pipeline corridors pass through or within 1 km of Chetwynd and Taylor. Fort St. John is a larger service centre located approximately 15 km north of Taylor (See Figure 1-1 and Appendix D).

In 2016, 72.8% of the PRRD population aged 15 years and over were in the labour force. The unemployment rate at that time was 12.1% compared to 6.7% in BC overall (Statistics Canada 2017a). Historically, unemployment rates in the region were consistently lower than the Provincial average until the downturn in the oil and gas sector in 2016. Rates in 2017 have returned to around 7% (WorkBC 2018).

According to the 2016 Census, the prevalent occupations in the PRRD included sales and service occupations and trades, transport and equipment operators, and related occupations (Statistics Canada 2017a). The top three industries in terms of employment numbers in 2016 were construction, retail and mining, quarrying, and oil and gas extraction (Statistics Canada 2017a).

5.4 SOCIAL SETTING

The following subsections provide a general overview of the communities that may have an interest in the Project; a summary of the communities, infrastructure and services; land and resources; as well as land use plans found within the Project area.

5.4.1 Communities, Infrastructure and Services

The Project is located within the PRRD. The PRRD is characterized as having resource-based economies, land that is home to many Treaty 8 First Nations and relatively small populations in the context of greater BC. The Project is currently considering options that traverse through and around Chetwynd. The proposed straddle plant location is located at the CS2 Facility approximately 36 km west of Chetwynd.

Communities in proximity to the Project and their 2016 Census populations are presented in Table 5-4.

Table 5-4. Communities and Population

COMMUNITY	POPULATION
PRRD	62,942
Chetwynd	2,503
Taylor	1,469
Fort St. John	19,897
Hudson's Hope	1,015

Source: Statistics Canada 2017a, b, c, and d

At the time of the 2016 Census, the PRRD had a population of 62,942, an increase of 4.8% from 2011. During that same period the population of Chetwynd decreased by 5.7% (Statistics Canada 2017b), the population of Taylor increased by 7% (Statistics Canada 2017c) and the population of Fort St. John increased by 7% (Statistics Canada 2017d). Individuals identifying as Indigenous in the 2016 Census made up 15% of the population of the PRRD (Statistics Canada 2017a).

Chetwynd is a natural transportation hub and service centre for a diverse range of industries including forestry, oil and gas production and transportation, coal mining, wind farms, and agriculture. Fort St. John also provides infrastructure and services including an airport. Taylor is a smaller settlement that also has capacity to support the oil and gas industry. Health services, including hospitals are available in Chetwynd and Fort St. John.

5.4.2 Land and Resources

The land crossed by the Project supports a variety of land use activities on private and Crown land including agriculture, forestry, mineral, coal and oil and gas exploration and development, recreational activities (that is, fishing, camping, hiking, and biking), hunting, trapping and guide outfitting. The transmission line has not been included as its routing is subject to identifying a power source location. See Table 5-5 for a summary of activities.

See section 3.2.3 regarding Indigenous Interests and the Use of Lands and Resources for Traditional Purposes.

Table 5-5. Land and Resources within the Straddle Plant and Initiating Pump Station and Conceptual Pipeline Corridors

LAND AND RESOURCES	DESCRIPTION
Agriculture	Most of the conceptual pipeline corridors cross land included in the ALR. The Project crosses agricultural lands including ALR lands and five range tenures. Agricultural crop production occurs along the pipeline. The conceptual pipeline corridors traverse approximately 73 km of ALR lands at various locations. The Straddle Plant and Initiating Pump Station are not located within any ALR lands or range tenures.
Forestry	The conceptual pipeline corridors cross forested lands and approach OGMAs. OGMAs will be avoided to the extent practical. Forestry activities occur in the Project area. The Straddle Plant and Initiating Pump Station are located in a forested landscape but are not located within any OGMAs.
Mineral and Coal Exploration and Development	The mining industry is active in the PRRD. The Peace River coalfield contains an estimated coal resource of 160 billion tons of coal. The coalfield includes the area around Chetwynd.
Oil and Gas	Oil and gas extraction activities are a dominant activity in the PRRD. Oil and gas exploration and development activities and infrastructure are prevalent in the area. These activities include seismic exploration, pipelines and related facilities, well sites, gas processing plants, and access roads.

Table 5-5. Land and Resources within the Straddle Plant and Initiating Pump Station and Conceptual Pipeline Corridors

LAND AND RESOURCES	DESCRIPTION
Recreational activities, hunting, trapping and guide outfitting	The conceptual pipeline corridors cross through areas where recreational activities (that is, fishing, camping, hiking, and biking), hunting, trapping, and guide outfitting occur. The Straddle Plant and Initiating Pump Station are located in Trapline Area Identifier TR0722T007 with one guiding certificate holder in the area. The Straddle Plant and Initiating Pump Station are not located near any identified recreational trails, golf courses, recreational sites or recreational polygons as identified through Government of BC data layers.
Protected Areas and Recreation Areas	The proposed conceptual pipeline corridor crosses through the Taylor Landing Provincial Park (the Park) located east of the Alaska Highway at Mile 36, approximately 1 km south of the community of Taylor on the south side of the Taylor Bridge. The total area of the Park is approximately 2.4 hectares. Off-Road Vehicles are prohibited within the park. The site was established in 1978 and is used as a boat launch to allow access to the Peace, Pine, Beatton, and Halfway Rivers. The Park is located in the Peace Lowland ecosection and is covered by the boreal white and black biogeoclimatic ecosection. Forest cover is comprised of balsam poplar, trembling aspen, willows, alders and white spruce. The Peace River system empties into the Arctic Ocean by way of the Mackenzie River (BC Parks 2019). Enbridge will avoid the Park entirely and provide an appropriate setback upon completing further consultation and engagement as well as geotechnical studies and route analysis.

5.4.3 Land Use Plans

A majority of the conceptual pipeline corridors cross the Dawson Creek Land and Resource Management Plan (LRMP) area, and approximately 1 km also crosses the Fort St. John LRMP area. In the Dawson Creek LRMP, the conceptual pipeline corridors pass through several land use zones including Settlement/Agriculture Resource Management Zones (RMZs), Special River Corridor, Enhanced South Peace, Enhanced grazing, and Multivalue Plateau. The General RMZ is managed with specific strategies to integrate a wide array of resource values. The Enhanced RMZ is intended for development of resources (such as, timber, minerals and oil and gas) while minimizing impacts on other resource values. The Special RMZ supports conservation of one or more resource values (such as, habitat, scenery, and recreation) while still enabling resource development activities. The Settlement/Agriculture RMZ manages Crown lands consistently with the historical pattern of settlement and agriculture (primarily private lands). The Dawson Creek LRMP supports opportunities for oil and gas transportation.

Within the Fort St. John LRMP, the Project is within the Peace Corridor Special Management Area. The LRMP allows for oil and gas development while managing the effects. At this time, the Fort St. John LRMP is in the process of being updated as part of the GBC's commitment to reconciliation with Indigenous groups, and also in recognition that the land use context has changed since the LRMP was originally developed. It is understood that this process will be ongoing and the government has reviewed public input received early March 2019. A 'What we Heard' report was released in July 2019 with a draft terms of reference to be issued in the fall of 2019. Furthermore, the technical planning process commenced in June 2019 and is expected to be completed in June 2021.

Enbridge Frontier is also monitoring the development of a Regional Strategic Environmental Initiative (RSEA) project in northeast BC. Enbridge Frontier will consider this initiative while developing the EA and plans to utilize the RSEA to inform the baseline of the cumulative effects assessment.

5.5 HERITAGE RESOURCES SETTING

The Project is located in the northeast portion of BC within the Subarctic Boreal Forest Culture Region, making it suitable for heritage resources (BC MFLNRORD 2019). The northeastern portion of BC is characterized by flat plains to gentle to steep slopes composed of fine-grained glacial lake sediment and till, with some glaciofluvial deposits. Large glacial lakes formed in northeast BC as the Laurentide

Ice Sheet retreated, blocking the Regional drainage. These lakes drained shortly after de-glaciation during the Late Pleistocene, making the region suitable for human habitation.

Heritage resources are a non-renewable resource managed under the BC *Heritage Conservation Act*. The *Heritage Conservation Act* recognizes the historical, cultural, scientific, spiritual, and educational value of archaeological sites to Indigenous groups, local communities, and the public (BC MFLNRORD 2019). Heritage sites are defined in the *Heritage Conservation Act* as "land, including land covered by water, that has heritage value to British Columbia, a community or an aboriginal people." Archaeological sites on both public and private land are protected under the *Heritage Conservation Act* and must not be altered without a valid permit (BC MFLNRORD 2019). These locations include Indigenous sites, archaeological sites, and palaeontological sites. Therefore, these locations warrant consideration prior to any land development.

5.6 HEALTH SETTING

The conceptual pipeline corridors are located within the Peace River North and South Local Health Area of the Northern Health Regional Health Authority (GBC 2019d). The BC Ministry of Health (BC MoH) began the Human Health Risk Assessment of Oil and Gas Activities in Northeast BC in 2012 based on public health concerns surrounding oil and gas development in the area. The results of the Human Health Risk Assessment indicated that public health risk associated with oil and gas activity in northeast BC are low. The document suggested 14 recommendations for improvement that generally focused on water quality, air quality, and safety issues (GBC 2019e). The BC MoH has been working on these recommendations and released a status report in 2016 detailing their initiatives (BC MoH 2016). Initiatives include mapping groundwater wells and aquifer vulnerability (as described in Section 5.2.3), updating emergency planning zones and conducting more extensive air quality monitoring described further as follows.

Air quality monitoring began in northeast BC in the 1990s; however, rising public concerns about possible impacts from oil and gas activity on human health lead to the Northeast Air Monitoring Project that involved the installation of three new monitoring stations in December 2013 and January 2014 near Doig River, Farmington Community Hall, and Tomslake (GBC 2019f). The monitoring stations were moved in the summer of 2016 to Blueberry River First Nation, Taylor Lone Wolf Golf Course and Rolla on 213 Road. The primary pollutants measured were sulfur dioxide and total reduced sulfur. A summary report from 2013 to 2017 data concluded that sulfur dioxide concentrations remained below BC's hourly air quality objective (BC MoE 2017). Total reduced sulfur also remained below air quality objectives at most locations; however, was exceeded about 4% of the time at the Taylor Lone Wolf location and a brief time at the Tomslake location. Ozone, nitrogen dioxide and particulate matter were also measured in 2016 and 2017 but did not exceed air quality objectives. The BC OGC has also conducted its own air monitoring using a mobile laboratory, the Commission Air Monitoring Environmental Laboratory (CAMEL) (BC OGC 2017a). CAMEL has been deployed to Taylor, Fort St. John, Dawson Creek, Tumbler Ridge, and Chetwynd to date to measure several air pollutants and atmospheric conditions (BC OGC 2017b). The data has not yet been released publicly.

6. Potential Effects

This section includes a brief overview of the potential environmental, economic, social, heritage and health effects, and proposed mitigation, as they are currently understood, that may arise from construction, operation, decommissioning, and abandonment for the Project (see Table 6-1).

6.1 POTENTIAL PROJECT EFFECTS

This preliminary list of effects and mitigation has been informed by professional judgment and expertise of discipline specialists who have worked on projects of similar scope, as well as by feedback gathered during initial engagement with Indigenous groups, regulatory agencies, and stakeholders in the Project area. The understanding of potential effects of the Project will be further refined through additional studies and engagement activities and will be addressed during the development of the VC selection document, and ultimately in the Application for an EAC.

Section 3 describes the Indigenous groups whose traditional territories are crossed by the conceptual pipeline corridors. Enbridge Frontier will continue to engage directly with these Indigenous groups to understand any impacts the Project may have on their rights and interests and how such impacts can be avoided or appropriately mitigated.

Table 6-1. Potential Project Effects

VALUED COMPONENT	PROJECT PHASE	POTENTIAL PROJECT EFFECT	MITIGATION
ENVIRONMENT			
Physical Environment, including terrain stability and soil capability.	• Activities will primarily occur during the construction phase with potential to continue into the operations and decommissioning / abandonment phases unless suitably mitigated.	• The surface disturbance caused by construction activities has the potential to result in soil erosion, which will be addressed through soil handling measures to avoid soil loss or transport and maintain soil capability. • Loss or mixing of topsoil/strippings and subsoil caused by salvage, storage, and replacement activities in agricultural land uses, limited loss of cover and the potential to create conditions favourable for invasive species in forested land uses. • Trenching, grading and sidehill slope cuts may create areas of terrain instability, causing slope failure, erosion, or slumping. • Slope instability causing slope failure, erosion, or slumping may occur where a trenched crossing method is used at watercourse crossings with steep, potentially unstable banks and approach slopes. • Topography may be altered permanently where slopes are too steep to be restored to pre-construction profile.	• Mitigation will include soil handling measures to avoid soil loss or transport and maintain soil capability. • The Project team will continue to review relevant regulatory guidance and post-construction monitoring reports from pipeline projects of similar scope and location to establish the effectiveness of the proposed mitigation to avoid or reduce potential effects on the Physical Environment.
Atmospheric Environment	• Construction and decommissioning / abandonment phases will interact with the atmospheric environment, however, will be short-term in duration and transient in nature. • Once the Project is in operations, emissions are expected to be minimal, as the straddle plant and initiating pump station will be operated using electrical power.	• Construction of the pipeline, transmission line, straddle plant and pump station and associated temporary and permanent facilities will require the use of a variety of equipment that burns hydrocarbon fuels (e.g., gasoline, diesel and natural gas), resulting in emissions of combustion by-products, including criteria air contaminants (CACs), such as nitrogen oxides (NOX), sulfur dioxide (SO2), carbon monoxide (CO), and GHGs. Emissions will be temporary and occur during the construction activities.	• Potential adverse effects will be minimized through the use of environmental protection practices that are known to effectively mitigate potential effects on the receiving environment. • Mitigation will include reduction of emissions during the construction phase of the Project wherever possible. This may be achieved through reducing vehicle idling and use of improperly maintained vehicles. Additional measures may include controlling construction-related fugitive road dust.

Table 6-1. Potential Project Effects

VALUED COMPONENT	PROJECT PHASE	POTENTIAL PROJECT EFFECT	MITIGATION
Aquatic Environment	• Activities will primarily occur during the construction phase with potential to occur during operations and decommissioning / abandonment phases.	• Potential effects may include the deposition of sediment into watercourses, temporary disturbance of species present at crossings and potential disturbance to fish habitat. • Alteration of natural surface water flow patterns.	• Mitigation of these effects will be addressed through a variety of techniques, including erosion and sedimentation control methods and pipeline watercourse crossing techniques that are well known and well documented to address these environmental concerns. These mitigation measures will be tailored to specific locations, approved by regulatory authorities where required, and described in the environmental assessment and environmental protection plans. • Surface water drainage patterns will be maintained during excavation activities. Erosion and surface water run-off control measures will be implemented, where and when required.
Terrestrial Ecosystems, Wetlands and Vegetation	• Activities will occur during construction, operations and maintenance, and decommissioning / abandonment phases.	• Potential for the alteration or loss of wetland function. • Alteration of wetland hydrological and biogeochemical function. • Removal of vegetation may reduce available habitat, including the habitat of species at risk. • Proliferation of non-native and invasive species may reduce biodiversity and reduce habitat quality, including the habitat of species at risk.	• The mitigation for the Project will serve to preserve wetland vegetation and riparian buffers, prevent compaction, and rutting of wetland substrate, maintain natural flow patterns and return surface water to pre-construction levels, and allow the regrowth of the existing wetland vegetation community in a natural successional pattern. • Mitigation measures and plans will be formulated to minimize disturbance to vegetation species and communities and address current issues with the merchantable timber resources (such as, pine beetle infestation). • A Project reclamation plan will be developed to revegetate the ROW and will include seed mixes and weed control measures. The goal of the mitigation measures is to minimize the residual effects of the Project on soils vegetation along the route.
Wildlife and Wildlife Habitat	• Activities will occur during construction, operations and maintenance, and decommissioning / abandonment phases.	• Loss or degradation of terrestrial habitat may occur due to changes in vegetation, soil, water quality and quantity, and air quality, or as a result of sensory disturbance effects resulting from human activity, noise, vibration and light generated by the Project. • Changes in movement patterns of wildlife, including species at risk, may occur due to displacement by Project activities. • Injury or mortality to wildlife, including species at risk, may result from land clearing activities and from traffic associated with Project infrastructure (that is, roads).	• The focus of field programs will be species at risk (for instance, southern mountain caribou, bay-breasted warbler, Nelson's sparrow) and species of management concern (for example, grizzly bear, wolverine, horned grebe) and their habitats (see Appendix C for Provincial/Federal conservation status). Through the identification of wildlife habitat types, location, suitability, structure, relative use and abundance, as well as sensitive periods during species life stages, measures will be developed to avoid or mitigate potentially adverse effects. • The Planning and Operational Measures specified for UWR u-9-001 will be considered and incorporated in Project design and mitigation to the extent feasible. Where the Planning and Operational Measures cannot be practically adopted, rationale will be provided and alternative mitigation proposed.

Table 6-1. Potential Project Effects

VALUED COMPONENT	PROJECT PHASE	POTENTIAL PROJECT EFFECT	MITIGATION
			• Project activities, such as clearing for construction, have the potential to adversely affect migratory birds and their nests. The Project expects to identify measures to avoid or mitigate the potential for adverse effects on migratory birds and their nests, including scheduling certain activities outside the breeding window, to the extent practical. • Enbridge Frontier will work with Indigenous groups, government agencies and the public to apply appropriate mitigation and offsetting measures to account for potential loss to Caribou habitat.
ECONOMIC			
Economic Conditions	• Activities will occur during construction, operations and maintenance, and decommissioning / abandonment phases.	• Potential adverse effects may include the disruption of local businesses (that is, grocery stores, tourism operators and guide outfitters). An increased demand on business may provide adverse effects to residents. • The Project procurement may favour large contractors that are not in the local area. • The Project may incentivize local employees to leave lower paying local jobs, potentially contributing to a local labour market shortage.	• Enbridge Frontier will work with local businesses (that is, grocery stores, tourism operators and guide outfitters) to mitigate potential impacts to local residents and revenue loss that may occur during construction activities. This may include communicating Project workforce windows and peak periods with local businesses to prepare them for the potential influx of workers in the area. • Ensure collaboration between Enbridge Frontier, training and employment agencies, and trade unions. • Provide training opportunities in the region that focus on employment and the long-term career benefits. • Develop Project procurement strategy that is inclusive of local and small businesses.
SOCIAL			
Social Conditions	• Activities will occur during construction, operations and maintenance, and decommissioning / abandonment phases.	• There is a potential to have adverse effects on recreational activities (that is, fishing, camping, hiking, and biking), hunting, trapping and guide outfitting. Areas of recreational activities, hunting, trapping and guide outfitting will be identified within the conceptual pipeline corridors through consultation activities. Key areas of concern identified through the consultation process will be considered in the Project planning process. • The influx of workers to the local communities surrounding the Project area may result in adverse effects on vulnerable subpopulations, such as children and youth, seniors and low-income families. • Potential to have adverse effects on recreational activities (that is, fishing, camping, hiking and biking), hunting, trapping and guide outfitting. • The Project has the potential for adverse effects to the visual landscape. • Potential adverse effects from noise, vibrations and night-lighting on land users and resources harvested by land users.	• Areas of recreational activities, hunting, trapping and guide outfitting will be identified within the conceptual corridor. • Key areas of concern identified through the consultation process will be considered in the visual impact assessment process. Available information databases, including the Province of BC visual inventory, will be reviewed. Key areas of concern identified through the consultation process will be considered in the visual impact assessment process. • Enbridge Safety Policy aims to ensure the safety of its communities, customers, employees, contractors and partners and measures outlined in this policy should reduce increased demands on the health care system and associated other social services (Enbridge 2017). • Enbridge strives to provide employment opportunities in the communities where Enbridge operates (Enbridge 2003).

Table 6-1. Potential Project Effects

VALUED COMPONENT	PROJECT PHASE	POTENTIAL PROJECT EFFECT	MITIGATION
		• The influx of workers to local communities has the potential to increase demand on the health care system and other community services. • Potential for increased demand on community infrastructure and local business operations.	• Enbridge Frontier will implement measures to reduce the short-term increases in noise levels, air emissions from construction equipment operation, and dust from vehicle use of access roads and the pipeline right-of-way. • It is anticipated that the operation of the straddle plant will result in noise but will be within applicable regulatory requirements. Enbridge Frontier will apply mitigation to reduce the level of noise and night lighting from the straddle plant to meet regulatory requirements as required.
HERITAGE			
Archaeological, Paleontological and Aboriginal Resources	• Activities will primarily occur during the construction phase with potential to occur during operations and decommissioning / abandonment phases should work occur outside of the disturbed footprint.	• Potential effects may include direct and indirect impacts on archaeological sites, paleontological sites, and historical sites.	• All identified historical sites will be mapped, photographed, recorded and the sites' relationship to the proposed development's impact zone determined. Areas of particular interest will include areas of high or moderate archaeological potential identified by resource proximity and access, traditional, ethnographic, and historical land use characteristics, and known archaeological site proximity. Based on the results of the initial tests, recommendations regarding the mitigation options will be reviewed with affected Indigenous groups and provided to the appropriate regulatory authority. • Enbridge Frontier will use the Fossil Occurrence Database for spatial information on the distribution of paleontological sites in BC as the database displays information (such as, site description, taxonomic data, site geology, fossil information, and reports). Through the database, Enbridge Frontier will work with professional paleontologists and geologists, Indigenous groups, and government to make informed decisions regarding the mitigation of paleontological resources that may occur in the Project area.
HEALTH			
Human Health	• Activities will primarily occur during the construction phase with potential to occur during operations and decommissioning / abandonment phases.	• The Project has the potential to increase noise levels and air emissions from construction equipment operation and dust from vehicle use of access roads and the pipeline ROW in the short-term. • Operation of the plant will result in noise, but will be within applicable regulatory requirements. • Night lighting used at the plant has the potential to effect nearby residents and land users and resources harvested by local land users. • Potential for increased uptake of contaminants from ingestion of plants, soil, water, aquatic species and wildlife by local harvesters.	• Enbridge Frontier will implement measures to reduce the short-term increases in noise levels, air emissions from construction equipment operation, and dust from vehicle use of access roads and the pipeline right-of-way. • It is anticipated that the operation of the straddle plant will result in noise but will be within applicable regulatory requirements. Enbridge Frontier will apply mitigation to reduce the level of noise and night lighting from the straddle plant to meet regulatory requirements as required.

Table 6-1. Potential Project Effects

VALUED COMPONENT	PROJECT PHASE	POTENTIAL PROJECT EFFECT	MITIGATION
			• Enbridge Frontier will be relying on Enbridge's Safety Policy, which aims to ensure the safety of its communities, customers, employees, contractors and partners and measures outlined in this policy should reduce increased demands on the health care system and associated other social services. • During construction, stringent procedures which comply with or exceed all applicable laws and regulations will be used to minimize the potential for any accidents or malfunctions during the construction and commissioning phases.

6.2 POTENTIAL CUMULATIVE EFFECTS

A Cumulative Effects Assessment (CEA) will be completed for the Project. The CEA will evaluate the residual environmental and socio-economic effects directly associated with the Project, in combination with the likely residual effects arising from other projects and activities that have been or will be carried out in the Project study areas. The other projects and activities to be included in the CEA will be identified as the EA progresses.

Detailed methodology and rationale used to determine if the proposed Project is expected to have significant adverse cumulative effects and how the other projects will be identified will be provided in Enbridge Frontier's application for an EAC. The EA and the cumulative effects assessment will be informed by:

- approved land use plans that designate the most appropriate activities on the land base;
- baseline studies and historical data that factor in the effects of past development and set out the current conditions; and
- potential overlapping impacts due to present developments.

Enbridge Frontier is monitoring the development of a RSEA project (as part of the Environmental Stewardship Initiative) in northeast BC. The RSEA is in partnership with seven Treaty 8 First Nations (BRFN, DRFN, HRFN, PRFN, SFN, WMFN, and MLIB) and the Province of BC and is the primary cumulative effects project in northeast BC. Enbridge Frontier will consider this initiative while developing the EA and plans to utilize the RSEA to inform the baseline of the cumulative effects assessment.

6.3 ACCIDENTS OR MALFUNCTIONS

The application for an EAC will provide a summary of potential accidents or malfunctions which could occur in connection with the Project, the potential effect of such incidents on the environment, and mitigation measures that will be implemented as part of the Project design.

During the construction and commissioning phases, the potential for accidents or malfunctions may occur as a result of the use of machinery and equipment, and in particular, the storage of fuels and lubricants, and re-fueling procedures. The potential for spills during these phases is limited to materials used in site preparation, fabrication and installation of the pipeline, and facilities and equipment/vehicles. Stringent procedures which comply with or exceed all applicable laws and regulations will be used to minimize the potential for any accidents or malfunctions during the construction and commissioning phases.

During the operations phase, the potential for accidents or malfunctions primarily relates to accidental releases of gasses to the environment either as a result of a rupture or maintenance activities. NGLs are liquids when inside the pipeline or in storage tanks but become gaseous if released into the atmosphere. Potential risks as a result of a rupture or maintenance activities include the accidental release of gas to the environment or the release of gas resulting in a fire. Depending on the location and severity of the fire, potential environmental effects include alteration or degradation of soil productivity, surface freshwater/marine water quality, groundwater quality, fish and fish habitat, riparian habitat, wetland function, plants and plant communities, wildlife and wildlife habitat and/or human health.

Through Enbridge Frontier's ongoing and thorough maintenance, testing, training, monitoring and safety programs, a pipeline release has a very low probability of occurrence and is considered unlikely.

6.4 EFFECT OF THE ENVIRONMENT ON THE PROJECT

Enbridge Frontier understands that potential effects of the environment on the proposed Project must be considered and appropriately mitigated to the extent possible. Extreme weather events are a key concern for the environment causing potential effects to the proposed Project. These events may include large snowfalls, earthquakes, avalanches, high winds, forest fires, lightning, and high amounts of rain leading to high stream flows and flooding Enbridge has constructed and operated pipeline systems and associated facilities throughout North America, including northeastern BC, for many years. This experience has will be applied by Enbridge Frontier at all stages of construction and operation in order to prevent and respond to potential adverse effects of the environment on the proposed Project.

6.5 POTENTIAL MONITORING PROGRAMS

To confirm the effects of the proposed Project and the effectiveness of the applied mitigation, Enbridge Frontier will develop and implement monitoring programs during the construction and operations phases of the Project. Monitoring programs may include vegetation, soils, watercourse, and wildlife programs. The monitoring programs listed are not exhaustive and will be refined throughout the EA process. It is anticipated that where appropriate, Indigenous participation will occur in the development and implementation of monitoring programs where programs occur on Indigenous traditional territory.

7. Conclusion

Enbridge Frontier is pleased to submit this Project Description to initiate the regulatory review process for the proposed Project. Through Spectra, Enbridge Frontier has established relationships with many Indigenous groups and stakeholders in northeast BC. Enbridge Frontier strives to maintain positive relationships with all Indigenous groups and stakeholders living near its projects and operations. It carries out its activities in a manner consistent with its values of safety, integrity, and respect.

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Appendix A

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Table of Concordance

BC EAO PROJECT DESCRIPTION GUIDELINES	REFERENCE SECTION
GENERAL INFORMATION AND CONTACT(S)	
The name of the proposed project and a two-to-three paragraph description of its nature and general location.	*1.0*
A list of government ministries, Aboriginal groups, and other parties, including the public, that were consulted prior to the preparation of the Project Description.	*3.0*
Proponent contact information, including name, mailing address, phone and fax numbers, email address, and website URL. Include the name of a contact person for the EA.	*1.3*
Corporate information, including particulars of company incorporation, whether the company is private or publicly traded, and partners' names (if applicable).	*1.2 and 1.3*
The names of other projects or facilities owned or operated by the proponent (or its parent, subsidiary, or affiliated company) in BC, including any other projects in respect of which an EA certificate has been applied for or issued.	*1.0 and 2.0*
A description of corporate policies regarding environment, health, safety, sustainability, local hiring and procurement, and/or Aboriginal and stakeholder engagement, if any.	*2.0 and 3.2*
The names, qualifications, and summary of relevant experience of qualified persons responsible for preparing the information provided in the Project Description.	*Prior to Section 1*
PROJECT OVERVIEW	
A description of the project purpose and rationale.	*1.1*
The size, dimensions, and capacity of the proposed project and its components.	*2.1*
A description of the major components and ancillary activities associated with all phases of the proposed project, including construction, operation, and decommissioning and reclamation, if applicable. Include the purpose of each component and options if the final site layout and design/route selections are not yet made.	*2.1*
A description of utilities and infrastructure requirements, including any new facilities or modifications to existing facilities that are required in order for the proposed project to proceed. Identify the owners/developers of those other facilities, if other than the proponent.	*2.1*
A description of activities related to transportation and shipping of materials to or from the site, in the construction, operation and decommissioning phases of the project. Include loading locations, the use of existing or new transportation corridors and frequency and timing of shipping.	*2.1.3*
Number of construction jobs and operating jobs (in person years or full-time equivalents), and a description of any proposed workforce accommodation.	*6.2.1 and 2.1.4*
Estimated cost for construction and decommissioning of the project, as well as projected annual operating costs.	*6.2.1*
Project schedule, including the anticipated date of application for an EA certificate if one is determined to be required, anticipated construction start date and duration, timing and duration of main activities, duration of commissioning, if applicable, operational in-service date, expected life of the project, and timing of eventual decommissioning and reclamation, if applicable.	*2.4*
Indication of the current stage of project design (such as, conceptual, feasibility, preliminary, detailed) and an identification of any major technical, economic, or other data gaps pertinent to design.	*2.1.4*

BC EAO PROJECT DESCRIPTION GUIDELINES	REFERENCE SECTION
EMISSIONS, DISCHARGES, WASTE	
A description of expected emissions, effluents, discharges, wastes, and other disturbances associated with all phases of the project, including potential accidents and malfunctions, their sources and locations.	*2.3 and 6.4*
CONSTRUCTION, OPERATION, DECOMMISSIONING AND ABANDONMENT PHASES AND SCHEDULING	
If proponents are planning to proceed in stages they should provide a description of all proposed stages, including the approximate timing of proposed expansion or modifications and the components and activities associated with each stage.	*2.2*
PROJECT LOCATION, LAND AND WATER USE	
Provide the latitude and longitude (degrees, minutes, seconds) of the Project and maps at an appropriate scale showing the proposed project's location in relation to neighboring communities, Indian Reserves, established or asserted traditional territories of Aboriginal groups, major natural and anthropogenic landscape features, and environmentally sensitive areas.	*5.1, Figure 1-1, and Appendix D*
A description of the land required for the proposed project, including whether the project is located in whole or in part on private lands, Provincial or Federal Crown lands, or Indian Reserve lands. Include the applicable zoning as well, Agriculture Land Reserve designation, land and resource management plans, and other land use designations (such as, parks and protected areas) and the legal land descriptions and/or tenure numbers of those lands, if known.	*5.2, 5.4.2 and 5.4.3*
A description of past uses of the land required for the proposed project, including whether the site has been previously developed.	*5.4.2, 5.4.3 and 5.4.4*
A description of water requirements for the project, if applicable, and the proposed source of water.	*2.3.2*
REGULATORY CONTEXT	
The type and size of the proposed project, with specific reference to the thresholds set out in the Reviewable Projects Regulation.	*1.0*
Whether the provisions of the Federal Regulations Designating Physical Activities apply. Materials supporting those conclusions, including any correspondence received from the Canadian Environmental Assessment Agency (Agency), can be included as an appendix. If a determination from the Agency has not yet been received but it is felt that the project will not be Federally-designated, please provide the rationale for that conclusion.	*1.0*
If the proposed project is located in an area subject to a Treaty or related agreement between BC and a First Nation, whether there are other EA or regulatory requirements pursuant to the Treaty or agreement that are expected to apply.	*5.4.1*
A list of other required Provincial, Federal, or Municipal approvals, permits, licences, tenures, or other authorizations and their status if any have been applied for.	*4.3*
POTENTIAL ENVIRONMENTAL, ECONOMIC, SOCIAL, HERITAGE AND HEALTH EFFECTS	
Identification of any sensitive or vulnerable environmental, economic, social, heritage, or health values that may be affected by the project.	*5.0 and 6.0*

BC EAO PROJECT DESCRIPTION GUIDELINES	REFERENCE SECTION
A list of existing data, including monitoring reports, previous EAs, Regional studies, and/or other sources of information that support the understanding of the existing conditions and potential effects of the proposed project.	*5.0 and 6.0*
A summary of key conclusions of any feasibility studies undertaken that may be pertinent to understanding the potential effects of the proposed project, if applicable.	*Not Applicable*
A brief description of the potential environmental, economic, social, heritage, and adverse health effects that may result from the project.	*6.0*
A preliminary assessment of any anticipated cumulative effects.	*6.2*
A preliminary assessment of any anticipated trans-BC-boundary effects.	*Not Applicable*
Initial measures or practical means to prevent or reduce the potential effects to an acceptable level. Include measures that could be integrated into project design, compliance with applicable regulations, standards, codes of practice, or Best Management Practices, corporate management systems, and/or project-specific measures that will be implemented.	*6.0*
A brief description of proposed monitoring programs that will be implemented to confirm the effects of the project and the effectiveness of mitigation, if known.	*6.5*
ENGAGEMENT AND CONSULTATION WITH ABORIGINAL GROUPS	
A list of Aboriginal groups including Treaty Nations whose established or asserted traditional territories overlap with or may be affected by the project and its components or activities, and if known, a summary of information regarding established or asserted Aboriginal rights, title, and other interests, including current use for traditional purposes, that may be affected by the project.	*3.2.1 and 5.4.1*
For each Aboriginal group identified above, a summary of engagement activities that have been carried out, a description of issues that have been raised with respect to the project, and an explanation of how those issues have been or will be addressed by the proponent.	*3.2.2 and 3.2.3*
A preliminary assessment of potential impacts on established or asserted Aboriginal rights, title, and other interests.	*3.2.3*
ENGAGEMENT AND CONSULTATION WITH GOVERNMENTS, THE PUBLIC AND OTHER PARTIES	
A summary of consultation activities that have been carried out with Provincial and Federal agencies and local governments.	*3.4*
A summary of consultation activities that have been carried out with landowners, other commercial, industrial, agricultural, and recreational land users, as well as the public. Provide a table identifying the issues that have been raised by those parties with respect to the project, and an explanation of how those issues have been or will be addressed by the proponent.	*3.3.1 and 3.3.2*

Appendix B

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Preliminary List of Valued Components and Key Indicators

This Appendix outlines the preliminary Valued Components (VCs) and Key Indicators (KIs) selected for the purposes of the Project Description. VC identification described in this report reflects Enbridge's current understanding of the environmental, social, economic, heritage, and health issues associated with the construction and operation of the proposed Enbridge Frontier Project (the Project). Enbridge acknowledges the importance of input from interested parties (that is, Indigenous groups, public and all levels of government involved in the Environmental Assessment [EA] process) and understands that the candidate VCs outlined in this Project Description will be reviewed and refined during the pre-application phase of the EA process.

VCs are those components of the environment, economic, social, health, and heritage pillars (the five pillars referenced by the EA process) that are considered to be important and have the potential to interact with the Project. Consequently, VCs warrant evaluation in an EA and KIs are topics that can be described or measured to evaluate the interaction between VCs and the Project. The British Columbia (BC) Environmental Assessment Office (BC EAO) refers to VCs broadly as "*components of the natural and human environment that are considered by the proponent, public, Indigenous groups, scientists and other technical specialists, and government agencies involved in the assessment process to have scientific, ecological, economic, social, cultural, archaeological, historical, or other importance*." (BC EAO 2013).

Selecting VCs and KIs is part of the scoping phase of an EA. Scoping determines the important issues and parameters that should be addressed in an EA, establishes the boundaries of the assessment and focuses the assessment on relevant issues and concerns. VCs and KIs influence the baseline data collection and analysis for the EA. The expected Project effects on the VCs after applying mitigation measures will ultimately be used to determine the significance of residual effects.

It is expected that VCs will be considered in the preparation of an Application for an Environmental Assessment Certificate (EAC) and ultimately approved by the BC EAO. The requirements of the BC *Environmental Assessment Act* (BC *EAA*) (that is, assessment for potentially significant adverse environmental, health, heritage, economic, and social effects) are also considered and implemented.

Table B1-1. List of Candidate Valued Components, Key Indicators and Topics to be Considered in the Assessment of Adverse Environmental Effects

PILLAR	SUBJECT	VALUED COMPONENT	KEY INDICATOR	RATIONALE FOR VALUED COMPONENT AND KEY INDICATOR SELECTION
Environment	Geophysical Environment	Terrain Integrity	• Terrain Stability • Erosion Potential	Terrain integrity was selected as a VC to identify geophysical hazards that could compromise the environment and pipeline, straddle plant and pump station integrity. Terrain stability and erosion potential were identified as KIs based on the experience of the assessment team and to suitably analyze the potential interactions between the Project and terrain integrity.
		Soil Capability	• Agricultural Capability • Land Restoration Suitability	Soil capability was selected as a VC to capture potential Project interactions with soils, which can subsequently affect plant growth. Agricultural suitability and Land Restoration Suitability were identified as KIs of soil capability as measurable indicators of soil capability.
		Metal Leaching and Acid Rock Drainage (ML/ARD)	• ML/ARD Potential	ML/ARD was selected as a VC as certain rock types have the potential to change soil pH and cause metal leaching when exposed to air and water. ML/ARD potential was identified as a KI to identify areas near the project that may contain acid generating rock.

Table B1-1. List of Candidate Valued Components, Key Indicators and Topics to be Considered in the Assessment of Adverse Environmental Effects

PILLAR	SUBJECT	VALUED COMPONENT	KEY INDICATOR	RATIONALE FOR VALUED COMPONENT AND KEY INDICATOR SELECTION
	Atmospheric Environment	Air quality	• Criteria Air Contaminants (CACs)	Air quality was selected as a VC to capture potential Project effects related to air. Criteria air contaminants were identified as a KI to quantify and report on changes to air quality.
		Acoustic Environment	• Sound Levels	Acoustic environment was selected as a VC to capture potential Project effects related to noise. Sound levels were identified as a KI to facilitate the analysis of the Project's interaction with the acoustic environment.
		Greenhouse Gases	• Carbon dioxide (CO2) • Nitrous oxide (N2O) • Methane (CH4) • Perfluorocarbons (PFCs) • Hydrofluorocarbons (HFCs) • Sulfur hexafluoride (SF6)	GHG emissions were selected as a VC to address concerns regarding GHGs. Specific GHGs were identified as KIs to report on sources and the condition and trend of Project-related GHG emissions.
	Water	Surface Water	• Surface Water Quality • Surface Water Quantity	Surface water was selected as a VC based on scientific studies and the experience of the assessment team. Surface water quality and quantity were identified as KIs to assess water quality and quantity using Provincial and Federal guidelines.
		Groundwater	• Groundwater Quality • Groundwater Quantity	Groundwater was selected as a VC based on scientific studies, the experience of the assessment team and potential interactions between surface and groundwater flows. Groundwater quality and quantity were identified as KIs to assess potential project interactions with subsurface water.
	Fish	Fish and Fish Habitat	• Fish Species at Risk or of Special Management Interest and their Habitat	Fish and fish habitat was selected as a VC based on scientific studies and experience of the assessment team. Fish species of management interest and their habitat was identified as a KI to include species of fish that contribute to commercial, Indigenous and recreational fisheries, as well as fish species of conservation concern that are Provincially- or Federally-listed or considered in planning documents.

Table B1-1. List of Candidate Valued Components, Key Indicators and Topics to be Considered in the Assessment of Adverse Environmental Effects

PILLAR	SUBJECT	VALUED COMPONENT	KEY INDICATOR	RATIONALE FOR VALUED COMPONENT AND KEY INDICATOR SELECTION
	Vegetation	Vegetation	• Plant Species at Risk or of Special Management Interest • Vegetation Communities of Concern • Native Vegetation • Invasive Plant Species	Vegetation was selected as a VC since native vegetation is present in the Project area. A combination of species level (that is, plant species at risk or of special management interest, invasive plant species) and community level (that is, vegetation communities of concern and native vegetation) KIs were selected. These KIs were identified based on Provincial and Federal guidance and policy.
	Wetlands	Wetland Function	• Hydrologic Function • Habitat Function • Biogeochemical Function	Wetland function was selected as a VC based on scientific studies and the experience of the assessment team. Hydrologic, habitat and biogeochemical function were identified as KIs to assess wetland function using Provincial and Federal guidance, legislation and policy.
	Wildlife	Wildlife and Wildlife Habitat	• Furbearers (marten, fisher, wolverine) • Bats (little brown myotis and northern myotis) • Grizzly bear • Ungulates (elk, moose and mule deer) • Southern mountain caribou • Late Seral Forest Birds • Early Seral Forest Birds • Riparian and Waterbirds • Common nighthawk/short-eared owl • Olive-sided flycatcher • Canada warbler • Peregrine falcon/bank swallow • Western toad	Wildlife and wildlife habitat was selected as a VC given potential for interaction with the Project, importance to human from both consumptive (such as, hunting, trapping) and non-consumptive (such as, wildlife observation) resource use, as well as high value from a conservation perspective (that is, there are a number of wildlife species at risk that will potentially interact with the Project) and cultural/traditional importance. Wildlife KIs were identified that have a potential to interact with the Project, conservation/management status of concern, human importance, and/or are an environmental indicator (that is, sensitive to change). A combination of species-specific KIs (such as, western toad), species group KIs (such as, furbearers) and habitat-based species communities (such as, late seral forest birds) are selected as KIs. The group and community KIs are included because they address the broader suite of species in a given community/habitat type potentially affected by the Project, and they represent important habitat types that will be affected by the Project.

Table B1-1. List of Candidate Valued Components, Key Indicators and Topics to be Considered in the Assessment of Adverse Environmental Effects

PILLAR	SUBJECT	VALUED COMPONENT	KEY INDICATOR	RATIONALE FOR VALUED COMPONENT AND KEY INDICATOR SELECTION
Economy	Employment and Economy	Economy	• Government Revenue • Contracts and Procurement	Economy was selected as a VC to represent potential Project interactions with local and Regional economies. Government revenue and contracts and procurement were identified as KIs to practically measure economic activity generated in the Project area.
		Employment and Labour Force	• Employment Training • Labour Force	Employment and labour force was selected as a VC to represent potential Project interactions with the local and Regional labour market. Employment training and labour force were identified as KIs to practically measure the potential effects of the Project on the existing local and Regional employment base.
Social	Human Environment	Community Utilities and Services	• Emergency Services • Health Care Services • Recreation Sites and Facilities • Accommodations • Infrastructure • Waste Management • Social Conditions and Services	Community utilities and services were selected as a VC to represent potential interactions of the Project workforce with utilities and services offered by communities in the Project area. Community services including emergency, health, waste management and social services and recreational facilities, accommodation and other infrastructure were identified as KIs to practically measure potential changes to the VC. The KIs are utilities and services that may be accessed by the Project work force, or as part of construction activities.
		Transportation Infrastructure and Facilities	• Navigability of Waterways • Road Condition, Traffic and Safety • Airports, Trucking and Railways	Transportation infrastructure and facilities was selected as a VC to represent potential interactions of the Project and Project workforce with local and Regional infrastructure and facilities. Road condition, traffic and safety, navigability of waterways and airports, trucking and railway networks were identified as KIs to assess the potential effects of the movement of Natural Gas Liquids via truck and rail as well as personnel in the Project area.
		Community	• Community Quality of Life	Community was selected as a VC to represent potential interactions of the Project and Project workforce with local and Regional communities. Community quality of life was identified as a KI to assess a broad range of factors that may influence a community's quality of life.

Table B1-1. List of Candidate Valued Components, Key Indicators and Topics to be Considered in the Assessment of Adverse Environmental Effects

PILLAR	SUBJECT	VALUED COMPONENT	KEY INDICATOR	RATIONALE FOR VALUED COMPONENT AND KEY INDICATOR SELECTION
		Land and Resources	• Wilderness, Parks and Protected Areas • Outdoor Recreation (that is, camping, hiking and biking, etc.) • Recreational Hunting, Fishing and Gathering • Aesthetic Visual Resources • Forestry • Agriculture • Guide Outfitting • Trapping • Commercial Recreation and Tourism • Human Habitation • Land Use Plans	Land and resources was selected as a VC to represent potential interactions between the Project and existing or proposed land use and management plans. Known land uses in the Project area were selected as KIs and include human habitation, wilderness, parks and protected areas, recreational use, guide outfitting, recreational hunting, fishing, and gathering, trapping, agriculture, forestry and commercial recreation and tourism.
Heritage	Heritage	Heritage Resources	• Historic Sites • Archaeological Sites • Paleontological sites	Heritage resources was selected as a VC as the Project is located on Crown land, within Treaty 8 territory and has the potential to cause direct and indirect effects to heritage resources. Heritage resource sites were identified as KIs and include historic sites, archaeological sites and paleontological sites.
Health	Health	Human and Ecological Health	• Soil and Sediment Quality • Noise • Respiratory Health • Drinking Water and Recreational Water Quality • Traditional Diet	Human health was selected as a VC to represent Project interactions with the health of residents, communities and land users. Ecological health was selected to represent Project interactions with wildlife and vegetation that have consumptive value to humans. Other aspects of ecological health are captured in environmental VCs (such as, wildlife and wildlife habitat). KIs for human health were identified and include noise, respiratory health, drinking water quality and soil and sediment quality. Country foods quality was identified as a KI to evaluate the potential reduced availability or quality of wild plants or animals for food.

Appendix C

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Wildlife Species with Provincial or Federal Conservation Status

Table C1-1. Wildlife Species with Provincial or Federal Conservation Status That Have the Potential to Occur near the Enbridge Frontier Project

COMMON NAME	SCIENTIFIC NAME	HABITAT	PROVINCIAL DESIGNATION	FEDERAL DESIGNATION
MAMMALS				
American water shrew	*Sorex palustris*	Small streams, lakes, ponds, marshes, bogs, and other lentic habitats.	S2S4[a] Blue[b]	--
Fisher	*Pekania pennanti*	Dense coniferous forest.	S3[a] Blue[b] Priority 2[c] Goal 3[c]	--
Grizzly bear, western population	*Ursus arctos*	Open areas, river valleys, brush lands, alpine tundra, and subalpine forests.	S3?[a] Blue[b] Priority 2[c] Goal 2[c]	Special Concern[d,e]
Little brown myotis	*Myotis lucifugus*	Roosts in buildings, large decaying trees, and rock crevices/caves. Forages in a variety of habitats, especially wetlands.	--	Endangered[d,e]
Northern myotis	*Myotis septentrionalis*	Mature or old-growth deciduous/coniferous forest.	S3S4[a] Blue[b] Priority 2[c] Goal 3[c]	Endangered[d,e]
Wolverine, *luscus* subspecies	*Gulo gulo luscus*	Boreal forests, tundra, subalpine areas.	S3[a] Blue[b] Priority 2[c] Goal 2[c]	Special Concern[d,e]
Southern mountain caribou (Central Group), Moberly/Klinse-Za and Burnt Pine Ranges	*Rangifer tarandus caribou, population 18*	Windswept alpine ridges, old-growth parkland, and high elevation subalpine forests.	S1S2[a] Red[b] Priority 2[c] Goal 2[c]	Threatened[d] Endangered[e]
BIRDS				
American bittern	*Botaurus lentiginosus*	Freshwater sloughs, marshes, swamps, and shallow lakes.	S3B[a] Blue[b] Priority 2[c] Goal 2[c]	--

Table C1-1. Wildlife Species with Provincial or Federal Conservation Status That Have the Potential to Occur near the Enbridge Frontier Project

COMMON NAME	SCIENTIFIC NAME	HABITAT	PROVINCIAL DESIGNATION	FEDERAL DESIGNATION
Baltimore oriole	*Icterus galbula*	Deciduous forests or mixedwood forests dominated by deciduous trees. Nest typically associated with forest edges where tree density is low and water is near.	S3?B[a] Blue[b] Priority 2[c] Goal 2[c]	--
Bank swallow	*Riparia riparia*	Open areas, often near water. Nesting near the top of steep banks associated with inland water, gravel pits, and road embankments. Nesting in the same area in successive years is common.	--	Threatened[d,e]
Barn swallow	*Hirundo rustica*	Open areas near water. Often nest in overhangs of man-made structures (such as, barns and bridges), cliffs, or caves.	S3S4B[a] Blue[b] Priority 2[c] Goal 2[c]	Threatened[d,e]
Bay-breasted warbler	*Setophaga castanea*	Mature and old-growth stands of white spruce, interspersed with trembling aspen, paper birch, and balsam poplar.	S2B[a] Red[b] Priority 2[c] Goal 3[c]	--
Black-throated green warbler	*Setophaga virens*	Mature riparian coniferous or mixedwood forests.	S3B[a] Blue[b] Priority 1[c] Goal 2[c]	--
Broad-winged hawk	*Buteo platypterus*	Mixed deciduous forests.	S3?B[a] Blue[b]	--
Canada warbler	*Cardellina canadensis*	Mixed stands of paper birch, alder, white spruce, and occasionally trembling aspen and balsam poplar.	S3S4B[a] Blue[b] Priority 2[c] Goal 2[c]	Threatened[d,e]
Cape May warbler	*Setophaga tigrina*	Mature white spruce stands of coniferous mixedwood forests; open stands and edges.	S3S4B[a] Blue[b] Priority 2[c] Goal 3[c]	--
Common nighthawk	*Chordeiles minor*	Open forest and forest clearings (such as, logged or burned areas and natural woodland clearings), grasslands, rock outcrops, and flat gravel rooftops of buildings. Typically nest in open areas near logs, boulders, grassy clumps, and shrubs.	Priority 2[c] Goal 2[c]	Threatened[d] Special Concern[e]

Table C1-1. Wildlife Species with Provincial or Federal Conservation Status That Have the Potential to Occur near the Enbridge Frontier Project

COMMON NAME	SCIENTIFIC NAME	HABITAT	PROVINCIAL DESIGNATION	FEDERAL DESIGNATION
Connecticut warbler	*Oporornis agilis*	Edges of old-growth and younger stands of trembling aspen and white spruce.	S3B[a] Blue[b] Priority 2[c] Goal 3[c]	--
Eared grebe	*Podiceps nigricollis*	Marshes, ponds, and lakes.	S3B[a] Blue[b]	--
Evening grosbeak	*Coccothraustes vespertinus*	Coniferous (primarily spruce and fir) and mixed coniferous-deciduous woodland, second growth, and occasionally parks; in migration and winter in a variety of forest and woodland habitats, and around human habitation.	--	Special Concern[e]
Great blue heron, herodias subspecies	*Ardea herodias*	Mature deciduous, coniferous, or mixed forests near water.	S3B,S4N[a] Blue[b] Priority 2[c] Goal 2[c]	--
Horned grebe	*Podiceps auritus*	Shallow ponds and marshes. Nest along edge of emergent vegetation near open water.	--	Special Concern[d,e]
Nelson's sparrow	*Ammodramus nelsoni*	Marshes and wet meadows with stands of emergents and willows.	S2B[a] Red[b] Priority 2[c] Goal 3[c]	--
Northern Goshawk, atricapillus subspecies	*Accipiter gentilis atricapillus*	Mature mixedwood forest with high canopy closure.	S3S4[a] Blue[b] Priority 3[c] Goal 3[c]	--
Olive-sided flycatcher	*Contopus cooperi*	Forests and woodlands, burned areas with standing dead trees, taiga, subalpine coniferous forest, and mixed coniferous-deciduous forest, especially near wetland areas.	S3S4B[a] Blue[b] Priority 2[c] Goal 2[c]	Threatened[d] Special Concern[e]
Peregrine falcon, anatum subspecies	*Falco peregrinus anatum*	River canyons and cliffs bordering large lakes.	S2?B[a] Red[b] Priority 2[c] Goal 3[c]	Special Concern[d]
Ruby-throated hummingbird	*Archilochus colubris*	Both heavily-wooded and open deciduous, mixed pine-hardwood, or pine forests.	S3B[a] Blue[b]	--

Table C1-1. Wildlife Species with Provincial or Federal Conservation Status That Have the Potential to Occur near the Enbridge Frontier Project

COMMON NAME	SCIENTIFIC NAME	HABITAT	PROVINCIAL DESIGNATION	FEDERAL DESIGNATION
Rusty blackbird	*Euphagus carolinus*	River groves, wooded swamps, and muskeg.	S3S4B[a] Blue[b] Priority 2[c] Goal 2[c]	Special Concern[d,e]
Short-eared owl	*Asio flammeus*	Rangelands, grasslands, near dry marshes, farmlands, low Arctic tundra, brushy fields, and forest clearings.	S3B, S2N[a] Blue[b] Priority 2[c] Goal 2[c]	Special Concern[d,e]
Swainson's hawk	*Buteo swainsoni*	Rangeland, pastures, farmland, and marshes.	S2B[a] Red[b] Priority 2[c] Goal 3[c]	--
Upland sandpiper	*Bartramia longicauda*	Open, grassy uplands, hay fields, pastures, wet meadows, and old fields with minimal shrub or tree growth.	S2B[a] Red[b] Priority 1c Goal 3[c]	--
Winter wren	*Troglodytes hiemalis*	Coniferous and mixedwood forests with dense understory.	S3S4B[a] Blue[b]	--
AMPHIBIANS				
Western toad	*Anaxyrus boreas*	Forested areas, wet shrublands, avalanche slopes, meadows, clearcuts, streamsides, shallow pond edges; often with dense shrub cover.	S3S4[a] Yellow[b] Priority 2[c] Goal 2[c]	Special Concern[d,e]
INVERTEBRATES[f]				
Yellow-banded Bumble Bee	*Bombus terricola*	Diverse habitat types including open coniferous, deciduous and mixed-wood forests, agricultural lands, urban areas, meadows, and prairie grasslands.	S3S4[a] Blue[b]	Special Concern[d,e]

Sources: Banfield 1974; BC Breeding Bird Atlas 2016; BC CDC 2019; BC MoE 2009, 2011b; Campbell et al. 1990; COSEWIC 2019; Corkran and Thoms 1996; GoC 2019a; Matsuda et al. 2006; NatureServe 2018; Stebbins 1966.

[a] Provincial (S) ranks are assigned by BC CDC (2019). Only Ranks S1 to S3 or a combination involving S1 to S3 (such as, S3S4) are included in this table. All definitions below are adapted from NatureServe (2018).

S1 = Critically Imperiled: at high risk of extirpation in the province due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.

S2 = Imperiled: at risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.

S3 = Vulnerable: at moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.

Table C1-1. Wildlife Species with Provincial or Federal Conservation Status That Have the Potential to Occur near the Enbridge Frontier Project

COMMON NAME	SCIENTIFIC NAME	HABITAT	PROVINCIAL DESIGNATION	FEDERAL DESIGNATION

S4 = Apparently Secure: at a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.

S#S# = Range Rank: a numeric range rank (such as, S2S3) is used to indicate the range of uncertainty about the status of the species (such as, S2S3) is used to indicate the range of uncertainty about the status of the species.

S#? = Inexact numeric rank: denotes inexact numeric rank.

N = Nonbreeding: refers to the nonbreeding population.

B = Breeding: refers to the breeding population.

[b] BC Provincial Lists (BC CDC 2019). Only Red- and Blue-listed designations are included in this table.

Red List = includes any Indigenous species and subspecies that is Extirpated, Endangered, or Threatened in BC.

Blue List = includes any Indigenous species and subspecies considered to be of special concern in BC. Elements are of special concern because of characteristics that make them particularly sensitive to human activities or natural events.

[c] Conservation goals and priorities established under the BC Conservation Framework (BC MoE 2009, 2011b). This table only includes priorities 1 and 2.

Goal 1 = to contribute to global efforts for species and ecosystem conservation. This goal has a strong emphasis on global status, assigning higher priority to species that are globally at risk. Species that have disjunct populations in BC or are collapsing in BC also get higher priority.

Goal 2 = to prevent species and ecosystems from becoming at risk. This goal emphasizes species of moderate conservation concern, which are currently not at risk but are exhibiting downward trends and are likely to become at risk in the future if preventable measures are not taken.

Goal 3 = to maintain the full diversity of native species and ecosystems. This goal bases priority on Provincial status alone to ensure that Provincially at-risk species facing significant threats or declines are given the highest priority.

[d] The *SARA* establishes Schedule 1 as the list of species to be protected on all Federal lands in Canada. The *Act* also applies to all lands in Canada for Schedule 1 bird species cited in the *Migratory Birds Convention Act*. This table only includes designations of Endangered, Threatened, and Special Concern.

Endangered = a species that is facing imminent extirpation or extinction.

Threatened = a species that is likely to become an Endangered species if nothing is done to reverse the factors leading to its extirpation or extinction.

Special Concern = a species that may become a Threatened or an Endangered species because of a combination of biological characteristics and identified threats.

[e] COSEWIC (2019). This table only includes designations of Endangered, Threatened, or Special Concern.

Endangered = a species facing imminent extirpation or extinction.

Threatened = a species that is likely to become an Endangered species if nothing is done to reverse the factors leading to its extirpation or extinction.

Special Concern = a species that may become a Threatened or an Endangered species because of a combination of biological characteristics and identified threats.

[f] Invertebrate species that are listed on *SARA* Schedule 1 are included.

Notes:

BC = British Columbia
BC CDC = British Columbia Conservation Data Centre
COSEWIC = Committee on the Status of Endangered Wildlife in Canada
SARA = *Species at Risk Act*

Appendix D

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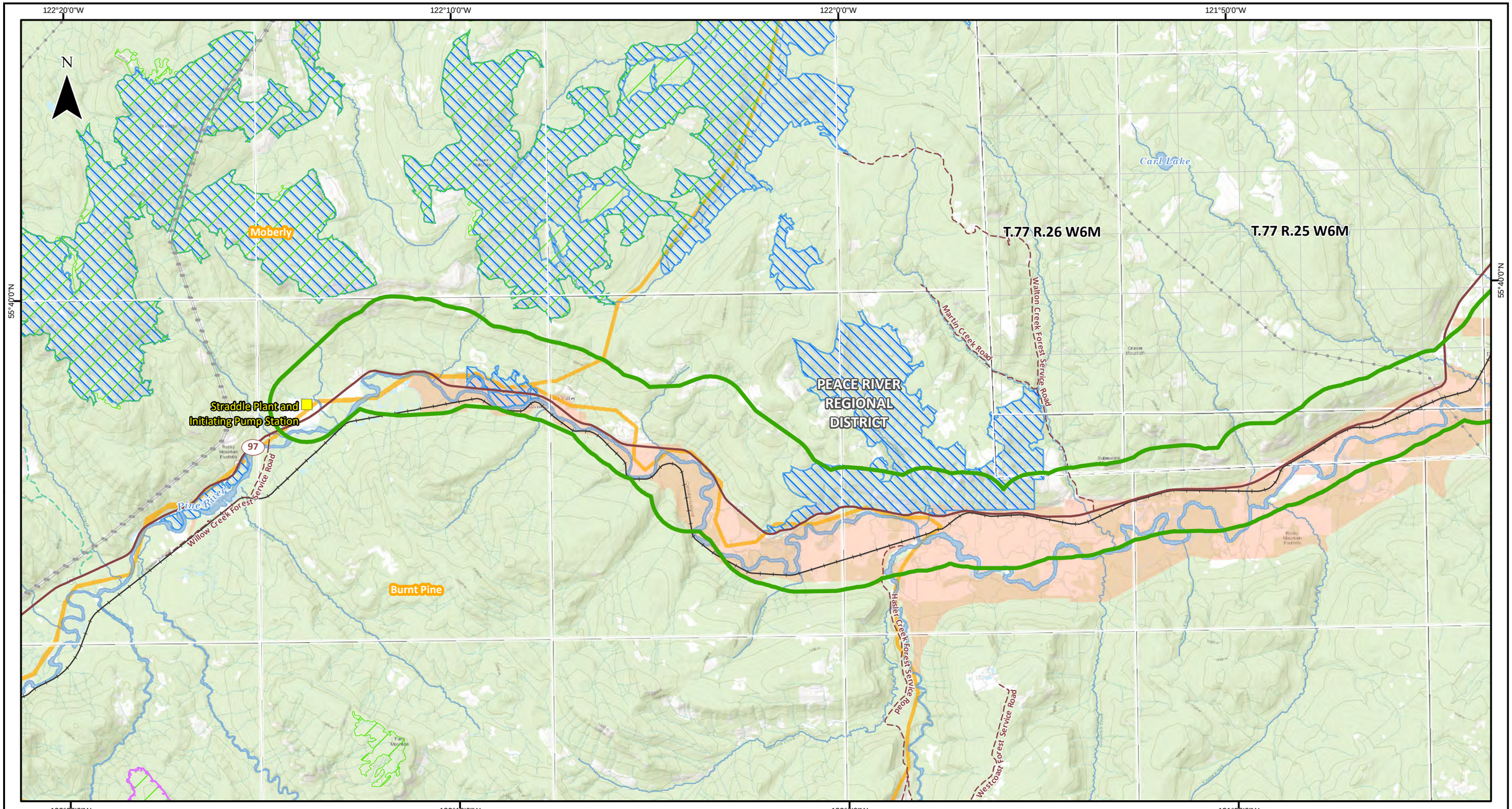
Project Constraints Mapping



- Straddle Plant and Initiating Pump Station
- Potential Corridor
- Highway
- Road
- Railway
- Transmission Line
- Recreational Line
- Watercourse
- Waterbody
- Regional District
- Municipality
- Indian Reserve
- Park/Protected Area
- Old Growth Management Area (Legal)
- Agricultural Land Reserve
- Ungulate Winter Range
- Caribou Herd Boundary
- Critical Habitat - South Mountain Caribou
- Critical Habitat - Northern Myotis

ENBRIDGE

JACOBS

July 2019	Reference: D3135600
Mapped By: MJP	Checked By: MM

SCALE: 1:100,000

0 1 2 3 4 km

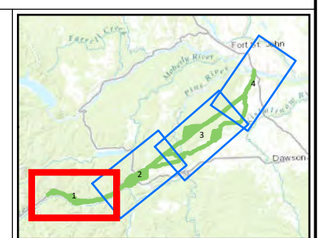
(All Locations Approximate)

NAD83 UTM Zone 10N
Basemap: ESRI World Topographic Map, Natural Resources Canada 2010. BC Grid: TERA Environmental Consultants 2010; Roads/Highways: Geobase 2008; Railways: NRCan 2012; Hydrography: BC FLNRO 2008; Parks/Protected Areas, Recreation Lines: BC MFLNRO 2008; Municipalities, Regional Districts: BC MFLNRO 2007; Indian Reserves: Government of Canada 2018; ALRs: Agricultural Land Commission 2015; Transmission Lines: BC Hydro 2011; Ungulate Winter Range: BC MOE 2005; Caribou Herds: BC MOE 2008; Old Growth Management Areas: BC MFLNRO 2011; Critical Habitat: Government of Canada 2015; Project Components: Enbridge 2019; Conceptual Corridors: Jacobs 2019.

FIGURE D1-1
SHEET 1 OF 4

PROJECT CONSTRAINTS FOR THE PROPOSED CONCEPTUAL CORRIDORS

THE FRONTIER PROJECT



Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

\\ch2mhill\common\Shares\CNR\GIS_Proj3\Enbridge_Frontier\MAPPING\CONSTRAINTS\Constraints_AllCorridors_South_100k_rev00.mxd

121°50'0"W
121°40'0"W
55°50'0"N
121°30'0"W
55°40'0"N
121°50'0"W
121°20'0"W
55°50'0"N
121°40'0"W
121°30'0"W
55°40'0"N
121°20'0"W

N

East Moberly Lake I.R. 169

Carl Lake

T.78 R.24 W6M

Halfmoon Lake

Jackfish Lake

T.79 R.22 W6M

Jackfish Lake Road

29

T.77 R.25 W6M

Chetwynd

PEACE RIVER REGIONAL DISTRICT

T.78 R.23 W6M

T.77 R.24 W6M

Wellland Road

T.78 R.22 W6M

97

T.77 R.23 W6M

Sundance Lakes

Curtis Road

Pine River

Lone Prairie Road

Straddle Plant and Initiating Pump Station
Potential Corridor
Highway
Road
Railway
Transmission Line
Recreational Line
Watercourse
Waterbody
Regional District
Municipality
Indian Reserve
Park/Protected Area
Old Growth Management Area (Legal)
Agricultural Land Reserve
Ungulate Winter Range
Caribou Herd Boundary
Critical Habitat - South Mountain Caribou
Critical Habitat - Northern Myotis

ENBRIDGE

JACOBS

July 2019	Reference: D3135600
Mapped By: MJP	Checked By: MM

SCALE: 1:100,000

0 1 2 3 4 km

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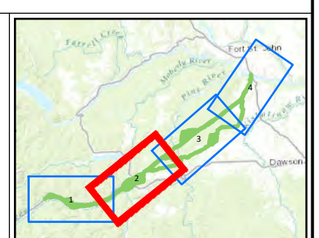
FIGURE D1-1
SHEET 2 OF 4

PROJECT CONSTRAINTS
FOR THE PROPOSED
CONCEPTUAL CORRIDORS

THE FRONTIER PROJECT



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121°20'0"W 121°10'0"W 56°0'0"N 121°0'0"W

55°50'0"N

T.79 R.22 W6M

N

Pine River

Stewart Lake

T.81 R.19 W6M

T.80 R.20 W6M

T.79 R.21 W6M

PEACE RIVER REGIONAL DISTRICT

T.80 R.19 W6M

PDR 239

T.79 R.20 W6M

Favels Lake

T.78 R.21 W6M

Scott Lake

Norrie Lake

Willow Valley Road

275 Road

267 Road

T.79 R.19 W6M

Braden Road

97

Murray River

121°20'0"W

121°10'0"W 121°0'0"W 55°50'0"N 120°50'0"W 56°0'0"N

- Straddle Plant and Initiating Pump Station
- Potential Corridor
- Highway
- Road
- Railway
- Transmission Line
- Recreational Line
- Watercourse
- Waterbody
- Regional District
- Municipality
- Indian Reserve
- Park/Protected Area
- Old Growth Management Area (Legal)
- Agricultural Land Reserve
- Ungulate Winter Range
- Caribou Herd Boundary
- Critical Habitat - South Mountain Caribou
- Critical Habitat - Northern Myotis

ENBRIDGE

JACOBS

July 2019	Reference: D3135600
Mapped By: MJP	Checked By: MM

SCALE: 1:100,000

0 1 2 3 4 km

(All Locations Approximate)

NAD83 UTM Zone 10N

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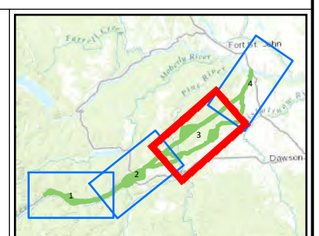
FIGURE D1-1
SHEET 3 OF 4

PROJECT CONSTRAINTS FOR THE PROPOSED CONCEPTUAL CORRIDORS

THE FRONTIER PROJECT



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121°0'0"W
120°50'0"W
56°10'0"N
120°40'0"W
56°0'0"N
120°30'0"W

N

T.81 R.19 W6M
T.82 R.18 W6M
T.83 R.17 W6M
T.81 R.18 W6M
T.80 R.18 W6M
T.81 R.17 W6M
T.82 R.17 W6M
T.83 R.16 W6M

Pine River
Taylor
Taylor Landing Provincial Park
Campground
PEACE RIVER REGIONAL DISTRICT
Peace River
Beatton River
Tower Lake
Kiskatinaw River

230 Road
255 Road
249 Road
Baldonnel Road
PDR 229
257 Road
Braden Road
97

- Straddle Plant and Initiating Pump Station
- Potential Corridor
- Highway
- Road
- Railway
- Transmission Line
- Recreational Line
- Watercourse
- Waterbody
- Regional District
- Municipality
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ENBRIDGE

JACOBS

July 2019	Reference: D3135600
Mapped By: MJP	Checked By: MM

SCALE: 1:100,000

0 1 2 3 4 km

(All Locations Approximate)

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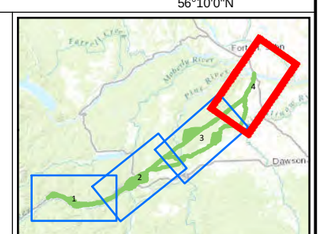
Basemap: ESRI World Topographic Map, Natural Resources Canada 2010. BC Grid: TERA Environmental Consultants 2010; Roads/Highways: Geobase 2008; Railways: NRCan 2012; Hydrography: BC FLNRO 2008; Parks/Protected Areas, Recreation Lines: BC MFLNRO 2008; Municipalities, Regional Districts: BC MFLNRO 2007; Indian Reserves: Government of Canada 2018; ALRs: Agricultural Land Commission 2015; Transmission Lines: BC Hydro 2011; Ungulate Winter Range: BC MOE 2005; Caribou Herds: BC MOE 2008; Old Growth Management Areas: BC MFLNRO 2011; Critical Habitat: Government of Canada 2015; Project Components: Enbridge 2019; Conceptual Corridors: Jacobs 2019.

FIGURE D1-1
SHEET 4 OF 4

PROJECT CONSTRAINTS FOR THE PROPOSED CONCEPTUAL CORRIDORS

THE FRONTIER PROJECT



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