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October 22, 2020

Filed Electronically

Canada Energy Regulator
Suite 210, 517 Tenth Avenue SW
Calgary, AB T2R 0A8

Attention: Mr. Jean-Denis Charlebois, Secretary of the Commission

Dear Mr. Charlebois:

**Re: NOVA Gas Transmission Ltd. (NGTL)
NGTL West Path Delivery 2023 Project (Project)**

Enclosed for filing with the Canada Energy Regulator (CER)¹ is an Application for approval to construct and operate the NGTL West Path Delivery 2023 Project (Application).

The Project is a proposed expansion of the NGTL System to meet incremental delivery requirements at the Alberta/British Columbia (ABC) Border Export Point and will satisfy the market demand to connect the Western Canada Sedimentary Basin (WCSB) supply with attractive long-term markets. Pending detailed design and final routing, the Project is expected to be slightly over 40 km of Nominal Pipe Size (NPS) 48 pipeline in three pipeline sections.

NGTL requests that the CER issue a report recommending approval of the Application in a timely manner that would allow for the Governor in Council to issue a Certificate of Public Convenience and Necessity (CPCN) no later than November 1, 2022. This timing would enable NGTL to fulfill any pre-construction conditions required under the CPCN and commence Project construction in time to meet the commercially required in-service date of November 2023.

Should the CER require additional information with respect to this Application, please contact the representatives listed in the Application.

Yours truly,
NOVA Gas Transmission Ltd.

Original signed by

Robert Tarvydas
Vice President
Regulatory and Business Planning

Enclosure

¹ For the purposes of this filing, CER refers to the Canada Energy Regulator or Commission, as appropriate.

CANADA ENERGY REGULATOR

IN THE MATTER OF the *Canadian Energy Regulator Act*,
S.C. 2019, c. 28, s. 10, as amended (CER Act), and the regulations
made thereunder;

IN THE MATTER OF the *Impact Assessment Act, 2019*, S.C.
2019, c. 28, s.1, as amended, and the regulations made thereunder;

IN THE MATTER OF an application by NOVA Gas
Transmission Ltd. for a Certificate of Public Convenience and
Necessity and other related approvals pursuant to Part 3 of the
CER Act.

NOVA GAS TRANSMISSION LTD.

NGTL WEST PATH DELIVERY 2023 PROJECT

October 2020

To: Secretary of the Commission
Canada Energy Regulator
Suite 210, 517 Tenth Avenue SW
Calgary, Alberta T2R 0A8

NGTL WEST PATH DELIVERY 2023 PROJECT

NOVA Gas Transmission Ltd. (NGTL) applies to the Canada Energy Regulator (CER or Commission), pursuant to section 183 of the CER Act, for a Certificate of Public Convenience and Necessity (CPCN) and related approvals for the NGTL West Path Delivery 2023 Project (Project).

Additionally, NGTL requests exemption from the requirements of sections 180(1)(b) and 213(1) of the CER Act to obtain leave to open (LTO) from the CER before installing tie-in assemblies to existing pipelines.

APPLICANT

1. NGTL is a “company” as the term is defined in the CER Act.
2. The NGTL System is an integrated natural gas pipeline system comprised of approximately 24,000 km of pipeline, associated compression and other facilities located in Alberta (AB) and British Columbia (BC) (NGTL System). The NGTL System gathers and transports natural gas produced in the WCSB for delivery to intra-basin and export markets.
3. The NGTL System is subject to federal jurisdiction and regulation by the CER.
4. NGTL is a wholly owned subsidiary of TransCanada PipeLines Limited (TCPL), an affiliate of TC Energy Corporation.
5. TCPL operates the NGTL System pursuant to an operating agreement between TCPL and NGTL. TCPL applies corporate policies in its operation of the NGTL System that are common to TCPL’s operation of its other federally regulated pipelines, including TCPL’s Canadian Mainline and the Foothills Pipe Lines Ltd. (Foothills) System.

NGTL WEST PATH DELIVERY 2023 PROJECT

6. NGTL seeks approval in this Application to construct and operate the Project. The Project consists of:
 - an expected 40.1 km of 1,219 mm (NPS 48) pipeline loop in three sections. This length may increase or decrease (on the order of meters to a few kilometers) within the assessed area as design progresses.
 - mainline valve (MLV) sites and associated piping
 - associated compressor station tie-in valves and pipe assemblies
 - launcher and receiver facilities to accommodate pipeline cleaning and in-line inspection (ILI)

- construction-related temporary infrastructure such as access roads, borrow pits/dugouts, slurry pits, stockpile sites, laydown yards, and contractor yards.
 - a cathodic protection (CP) system
 - miscellaneous works, such as pipeline warning signs and aerial markers
7. The Project is required to increase the NGTL System capacity to meet aggregate contractual obligations, and is underpinned by approximately 175 TJ/d of incremental Firm Transportation – Delivery (FT-D) service on the NGTL System.
8. Detailed maps of the Project are provided in Section 14 of the Application.
9. The Project is not an activity listed on the *Physical Activities Regulations* (SOR/2019-285) and therefore does not require an environmental assessment under the *Impact Assessment Act* (IAA) as the length of “new right-of-way”¹ is less than 75 km. However, one of the pipe sections (Longview Section) crosses Bar U Ranch National Historic Site, which is federal land managed by Parks Canada (see Section 1: Executive Summary and Section 13: Environmental and Socio-Economic Matters). Therefore, an assessment under Section 82 of the IAA is required by Parks Canada for the portion of the Longview Section that crosses Bar U Ranch National Historic Site.
10. Temporary construction-related infrastructure, such as access roads, borrow pits/dugouts, slurry pits, stockpile sites, laydown yards, and contractor yards.
11. NGTL seeks approval of the Project in time to meet a commercially required in-service date (ISD) of November 2023. To meet these dates, Project construction is scheduled to begin in Q3 2023, with clearing/temporary infrastructure work scheduled to begin in Q1 of 2023. All construction is subject to receipt of regulatory approvals and fulfillment of condition compliance.
- To achieve the proposed construction schedule and commercially required ISD for the Project, exemptions from the detailed route process are being sought as part of this Application. The exemptions are for temporary infrastructure required for construction of the pipeline.
12. The estimated cost of the Project is \$355.5 million.

¹ “New right-of-way” is defined under the *Physical Activities Regulation* as “means land that is to be developed for an international electrical transmission line, a pipeline, as defined in section 2 of the Canadian Energy Regulator Act, a railway line or an all-season public highway, and that is not alongside and contiguous to an area of land that was developed for an electrical transmission line, oil and gas pipeline, railway line or all-season public highway.”

PURPOSE AND JUSTIFICATION

13. The Project is required to increase delivery capability to meet aggregate transportation requirements, including incremental group 1 delivery point (FT-D1) contracts at the Alberta/British Columbia (ABC) Border Export Point. The Project was designed to meet incremental flow requirements at the ABC Border Export Point, with contracts that exceed capacity of the NGTL System beginning in November 2023.
14. The Project is supported by NGTL's forecasts of gas supply and demand for the NGTL System. The forecasted supply and demand growth, combined with aggregate contractual underpinnings, demonstrate that the applied-for facilities will be used and useful over their economic life.

TRANSPORTATION SERVICES AND TOLLS

15. NGTL will provide services that utilize the Project under the terms and conditions established in the NGTL Gas Transportation Tariff (Tariff), as amended from time to time.
16. NGTL proposes to treat the costs for the Project on a rolled-in basis, and to determine the tolls for services in accordance with the NGTL toll design methodology in effect, and as approved, at any given time.

APPLICATION CONTENT

17. NGTL provides in this Application information required for consideration of a CPCN and other approvals, in accordance with section 183 of the CER Act, and as outlined in the CER's Filing Manual (Filing Manual) (CER 2020).

SUPPORTING MATERIAL

18. In support of this Application, NGTL provides and relies on the information attached to this Application and any additional information that it might file, as directed or permitted by the CER.

RELIEF REQUESTED

19. NGTL requests that the CER:
 - issue a report recommending the issuance of a CPCN, pursuant to section 183 of the CER Act, authorizing construction and operation of the Project. In the event that the pipeline length is not 40 kilometres or more after design has progressed, NGTL reserves the right to amend its relief to request, pursuant to section 214 of

the CER Act, the CER issue an order approving the construction and operation of the Project.

- issue an exemption from the requirements of paragraph 180(1)(b) and 213(1) of the CER Act to obtain LTO from the CER before installing certain tie-ins for the Project.
- issue an order, pursuant to section 214 of the CER Act, exempting NGTL from the requirements of 214(1), subsection 198 (c), 198 (d) and section 199 of the CER Act in relation to:
 - temporary infrastructure required for construction of the pipeline
For clarity, these activities will only be undertaken after the CPCN has been issued for the entire Project and after any applicable conditions for the section 214 activities are satisfied.
- issue an order pursuant to Part II of the CER Act affirming that:
 - prudently incurred costs required to provide service on the applied-for facilities will be included in the determination of the NGTL System revenue requirement.
 - the tolls for services on the applied-for facilities will be calculated using the same methodology used to calculate tolls for services on the NGTL System, as determined through CER order from time to time.
- grant such further and other relief as NGTL might request or the CER might consider appropriate.

Respectfully submitted,

Calgary, Alberta
October 22, 2020

NOVA Gas Transmission Ltd.

Original signed by

Robert Tarvydas
Vice President
Regulatory and Business Planning

Please direct all communications related to this Application to:

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CHAPTER 3 – COMMON INFORMATION REQUIREMENTS

	Filing Requirements	In Application? References	Not in Application? Explanation
3.1 Action Sought by Applicant			
1.	Requirements of s.15 of the Rules.	Application	
3.2 Application or Project Purpose			
1.	Purpose of the proposed project.	Application and Section 2	
3.3 Management Systems and Programs under the OPR			
1.	An overview of its management systems, including a description of: <ul style="list-style-type: none"> • how programs required under the OPR are coordinated within the management system to promote safety and environmental protection; and • the process for any necessary modifications to the management system. 	Section 9.1	
3.4 Engagement			
3.4.1 Policies and Goals of Engagement			
1.	The corporate policy or vision.	Section 11.1	
2.	The principles and goals of engagement for the project.	Sections 10.9.1, 11.1 and 12.1	
3.	A copy of the Indigenous engagement policy and copies of policies and principles for collecting traditional use information, if available.	Section 12 and Appendix 11-8	
3.4.2 Designing Project-specific Engagement Activities			
1.	The description of the engagement activities and the factors that influenced the design.	Sections 11.2 and 12.2	
3.4.3 Implementation and Outcomes of Project-specific Engagement Activities			
1.	The outcomes of the engagement activities for the project.	Sections 10.9, 11.5 and 12.3	
3.4.4 Justification for Not Undertaking Engagement Activities			
1.	The application provides justification for why the applicant has determined that engagement activities were not required for the project.		N/A
3.5 Notification of Commercial Third Parties			
1.	Confirm that third parties were notified.	Section 5.3	
2.	Details regarding the concerns of third parties.		N/A. No concerns were received.
3.	List the self-identified interested third parties and confirm they have been notified.		N/A
4.	If notification of third parties is considered unnecessary, an explanation to this effect.		N/A

CHAPTER 4 – SECTIONS 4.1 AND 4.2: COMMON REQUIREMENTS FOR PHYSICAL PROJECTS

	Filing Requirements	In Application? References	Not in Application? Explanation
4.1 Description of the Project			
1.	The project components, activities and related undertakings.	Sections 1 and 7	
2.	The project location and criteria used to determine the route or site.	Section 7.1	
3.	How and when the project will be carried out.	Section 8	
4.	Description of any facilities, to be constructed by others, required to accommodate the proposed facilities.		N/A
5.	An estimate of the total capital costs and incremental operating costs, and changes to abandonment cost estimates.	Application, Section 1.7 and 6.3	
6.	The expected in-service date.	Application, Sections 1.6, 2.3, and 5.2	
4.2 Economic Feasibility, Alternatives and Justification			
4.2.1 Economic Feasibility			
1.	Describe the economic feasibility of the project.	Sections 2, 4 and 6.5	
4.2.2 Alternatives			
1.	Describe the need for the project, other economically-feasible alternatives to the project examined, along with the rationale for selecting the applied for project over these other possible options.	Sections 2 and 4.4	
2.	Describe and justify the selection of the proposed route and site including a comparison of the options evaluated using appropriate selection criteria.	Sections 4.4 and 7.1	
3.	Describe the rationale for the chosen design and construction methods. Where appropriate, describe any alternative designs and methods evaluated and explain why these other options were eliminated.	Sections 4.4, 7, and 8	
4.2.3 Justification			
1.	Provide a justification for the proposed project	Application, Sections 2 and 5	

GUIDE A – A.1 ENGINEERING

	Filing Requirements	In Application? References	Not in Application? Explanation
A.1.1 Engineering Design Details			
1.	Fluid type and chemical composition.	Section 7.3	
2.	Line pipe specifications	Section 7.4	
3.	Pigging facilities specifications.	Section 7.5.3	
4.	Compressor or pump facilities specifications.		N/A
5.	Pressure regulating or metering facilities specifications.	Section 7.5.4	
6.	Liquid tank specifications or other commodity storage facilities.		N/A
7.	New control system facilities specifications.	Section 7	
8.	Gas processing, sulphur or LNG plant facilities specifications.		N/A
9.	Technical description of other facilities not mentioned above.		N/A
10.	Building dimensions and uses.		N/A
11.	If project is a new system that is a critical source of energy supply, a description of the impact to the new system capabilities following loss of critical component.		N/A
A.1.2 Engineering Design Principles			
1.	Confirmation project activities will follow the requirements of the latest version of CSA Z662.	Sections 1.4, 7.2, 7.4 and 7.5	
2.	Provide a statement indicating which Annex is being used and for what purpose		N/A
3.	Statement confirming compliance with OPR or PPR.	Sections 1.4, 7.2, and 7.5	
4.	Listing of all primary codes and standards, including version and date of issue.	Sections 7.2 and 9	
5.	Confirmation that the project will comply with company manuals and confirm manuals comply with OPR/PPR and codes and standards.	Sections 1.4, 7.2 and 9	
6.	Any portion of the project a non-hydrocarbon commodity pipeline system? Provide a QA program to ensure the materials are appropriate for their intended service.		N/A
7.	If facility subject to conditions not addressed in CSA Z662: <ul style="list-style-type: none"> • written statement by qualified professional engineer; and • description of the designs and measures required to safeguard the pipeline 		N/A

	Filing Requirements	In Application? References	Not in Application? Explanation
8.	If directional drilling involved: <ul style="list-style-type: none"> preliminary feasibility report; and description of the contingency plan 		N/A. No directional drilling is expected.
9.	If new materials are involved, provide material supply chain information, in tabular format.	Section 7.2.4	
10.	If reuse of material is involved, provide an engineering assessment in accordance with CSA Z662 that indicates its suitability for the intended service.		N/A
A.1.3 Canadian Energy Regulator Onshore Pipeline Regulations			
1.	Designs, specifications programs, manuals, procedures, measures or plans for which no standard is set out in the OPR or PPR.	Sections 7, 8 and 9	
2.	A quality assurance program if project non-routine or incorporates unique challenges due to geographical location.	Section 7.6.1	
3.	If welding performed on a liquid-filled pipeline that has a carbon equivalent of 0.50% or greater and is a permanent installation: <ul style="list-style-type: none"> welding specifications and procedures; and results of procedure qualification tests 		N/A

GUIDE A – A.2 ENVIRONMENT AND SOCIO-ECONOMIC ASSESSMENT

	Filing Requirements	In Application? References	Not in Application? Explanation
A.2.5 Description of the Environmental and Socio-economic Setting			
1.	Identify and describe the current biophysical and socio-economic setting of each element (i.e., baseline information) in the area where the project is to be carried out.	ESA Sections 2.6, 5.2, 6.2, 7.2, 8.2, 9.2, 10.2, 11.2, 12.2, 13.2, 14.2	
2.	Describe which biophysical or socio-economic elements in the study area are of ecological, economic or human importance and require more detailed analysis taking into account the results of engagement (see Table A-1 for examples). Where circumstances require more detailed information in an ESA, see: <ul style="list-style-type: none"> Table A-2 – Filing Requirements for Biophysical Elements; or Table A-3 – Filing Requirements for Socio-economic Elements. 	ESA Section 4.2	

	Filing Requirements	In Application? References	Not in Application? Explanation
3.	<p>Provide supporting evidence (e.g., references to scientific literature, field studies, local and Indigenous knowledge, previous environmental assessment and monitoring reports) for:</p> <ul style="list-style-type: none"> • information and data collected; • analysis completed; • conclusions reached; and • the extent of professional judgment or experience relied upon in meeting these information requirements, and the rationale for that extent of reliance. 	ESA Sections 5 through 14; ESA Appendices e through g and i	
4.	Describe and substantiate the methods used for any surveys, such as those pertaining to wildlife, fisheries, plants, species at risk or species of special status, soils, heritage resources or traditional land use, and for establishing the baseline setting for the atmospheric and acoustic environment.	ESA Sections 4.1 and 5.1 through 14.1	
5.	Applicants must consult with other expert federal, provincial or territorial departments and other relevant authorities on requirements for baseline information and methods.	ESA Sections 5.1.2 through 14.1.2 and 5.2.1 through 14.2.1	
A.2.6 Effects Assessment			
Identification and Analysis of Effects			
1.	Describe the methods used to predict the effects of the project on the biophysical and socio-economic elements, and the effects of the environment on the project.	ESA Sections 4.1, 5.1 through 14.1 and 15.1	
2.	Predict the effects associated with the proposed project, including those that could be caused by construction, operations, decommissioning or abandonment, as well as accidents and malfunctions. Also include effects the environment could have on the project. For those biophysical and socio-economic elements or their valued components that require further analysis (see Table A-1), provide the detailed information outlined in Tables A-2 and A-3.	ESA Sections 5.5, 6.5, 7.5, 8.5, 9.5, 10.5, 11.5, 12.5, 13.5, 14.3, 15.3, 16.3 and ESA Appendix C	
Mitigation Measures for Effects			
1.	Describe the standard and project specific mitigation measures and their adequacy for addressing the project effects, or clearly reference specific sections of company manuals that provide mitigation measures. Ensure that referenced manuals are current and filed with the CER.	<p>ESA Sections 5.4, 6.4, 7.4, 8.4, 9.4, 10.4, 11.4, 12.4, 13.4, 14.4, 15.2 and 16.2</p> <p>ESA Appendices A and B</p>	ESA Appendices A and B to be filed by October 30, 2020

	Filing Requirements	In Application? References	Not in Application? Explanation
2.	Ensure that commitments about mitigative measures will be communicated to field staff for implementation through and Environmental Protection Plan (EPP).	ESA Appendices A and B	ESA Appendices A and B to be filed by October 30, 2020
3.	Describe plans and measures to address potential effects of accidents and malfunctions during construction and operation of the project.	Section 16.2	
Evaluation of Significance			
1.	After taking into account any appropriate mitigation measures, identify any remaining residual effects from the project.	ESA Section 5.7, 6.7, 7.7, 8.7, 9.7, 10.7, 11.7, 12.7, 13.7, 14.5, 15.3 and 16.3	
2.	Describe the methods and criteria used to determine the significance of adverse effects, including defining the point at which any particular effect on a valued component is considered "significant".	ESA Section 4.2.5, 5.1.7 through 14.1.7, 15.1 and 16.1	
3.	Evaluate the significance of residual adverse environmental and socio-economic effects against the defined criteria.	ESA Sections 5.7, 6.7, 7.7, 8.7, 9.7, 10.7, 11.7, 12.7, 13.7, 15.4 and 16.4	
4.	Evaluate the likelihood of significant residual adverse environmental and socio-economic effects occurring and substantiate the conclusions made.		
A.2.7 Cumulative Effects Assessment			
Scoping and Analysis of Cumulative Effects			
1.	Identify the valued components for which residual effects are predicted and describe and justify the methods used to predict any residual effects.	ESA Sections 5.6, 6.6, 7.6, 8.6, 9.6, 10.6, 11.6, 12.6, 13.6 and 14.6	
2.	For each valued component where residual effects have been identified, describe and justify the spatial and temporal boundaries used to assess the potential cumulative effects.	ESA Section 4.2.3	
3.	Identify other physical works or activities that have been or will be carried out within the identified spatial and temporal boundaries for the cumulative effects assessment.	ESA Section 4.7.1	
4.	Identify whether the effects of those physical works or activities that have been or will be carried out would be likely to produce effects on the valued components within the identified spatial and temporal boundaries.	ESA Sections 5.6, 6.6, 7.6, 8.6, 9.6, 10.6, 11.6, 12.6, 13.6 and 14.6	

	Filing Requirements	In Application? References	Not in Application? Explanation
5.	<p>Where other physical works or activities may affect the valued components for which residual effects from the applicant's proposed project are predicted, continue the cumulative effects assessment, as follows:</p> <ul style="list-style-type: none"> • consider the various components, phases and activities associated with the applicant's project that could interact with other physical work or activities; • provide a description of the extent of the cumulative effects on valued components; and • where professional knowledge or experience is cited, explain the extent to which professional knowledge or experience was relied upon and justify how the resulting conclusions or decisions were reached. 		
Mitigation Measures for Cumulative Effects			
1.	Describe the general and specific mitigation measures, beyond project-specific mitigation already considered, that are technically and economically feasible to address any cumulative effects.	ESA Sections 6.4, 7.4, 8.4, 10.4, 11.4, 12.4 and 13.4	
The Applicant's Evaluation of Significance of Cumulative Effects			
1.	After taking into account any appropriate mitigation measures for cumulative effects, identify any remaining residual cumulative effects.	ESA Sections 6.7, 7.7, 8.7, 10.7, 11.7, 12.7, 13.7	
2.	Describe the methods and criteria used to determine the significance of remaining adverse cumulative effects, including defining the point at which each identified cumulative effect on a valued component is considered "significant".		
3.	Evaluate the significance of adverse residual cumulative effects against the defined criteria.		
4.	Evaluate the likelihood of significant, residual adverse cumulative environmental and socio-economic effects occurring and substantiate the conclusions made.		
A.2.8 Inspection, Monitoring and Follow-up			
1.	Describe inspections plans to ensure compliance with biophysical and socio-economic commitments, consistent with sections 48, 53, and 54 of the OPR.	ESA Appendices A and D	ESA Appendices A to be filed by October 30, 2020

	Filing Requirements	In Application? References	Not in Application? Explanation
2.	Describe the surveillance and monitoring program for the protection of the pipeline, the public and the environment, as required by Section 39 of the OPR.	Section 9 ESA Appendices A and D	ESA Appendix A to be filed by October 30, 2020
3.	Consider any particular elements in the Application that are of greater concern and evaluate the need for a more in-depth monitoring program for those elements.	ESA Sections 5.4, 6.4, 7.4, 8.4, 9.4, 10.4, 11.4, 12.4, 13.4 and 14.4 ESA Appendices A and D	ESA Appendix A to be filed by October 30, 2020
Table A-1 Circumstances and Interactions Requiring Detailed Biophysical and Socio-economic Information			
	Physical and meteorological environment		Although not addressed as a VC, the physical and meteorological environment is discussed in other VC chapters. <ul style="list-style-type: none"> • The Project is not within areas of permafrost. • Potential effects associated with erosion potential and terrain are discussed as they relate to soil capability (Section 5). • Potential effects associated with acid rock drainage are discussed as they relate to soil capability and surface water quality (Section 8). • Potential effects associated with extreme weather events are discussed in the context of effects of the environment on the Project (Section 15).
	Soil and soil productivity	ESA Section 5	
	Vegetation	ESA Section 6	
	Water quality and quantity	ESA Section 8	
	Fish and fish habitat, including any <i>Fisheries Act</i> Authorization offsetting measures required	ESA Section 8	
	Wetlands	ESA Section 6	
	Wildlife and wildlife habitat	ESA Section 7	
	Species at Risk or Species of Special Status and related habitat	ESA Sections 6 (vegetation), 7 (wildlife) and 8 (fish)	

	Filing Requirements	In Application? References	Not in Application? Explanation
	Air emissions		<p>Although construction of the Project components will result in air emissions of criteria air contaminants (CACs) for example from construction equipment and limited burning, any change in air quality will be limited and short-term. CAC emissions associated with construction can be managed based on mitigation measures included in the EPP (Appendix A).</p> <p>CACs are not expected from Project operations because the Project does not include any operations-phase combustion sources other than maintenance vehicles.</p>
	Greenhouse gas (GHG) emissions and climate change	ESA Section 9	
	Acoustic environment		<p>The only sources of noise are from Project vehicles and equipment during construction activities. Any change in noise levels will be limited and short-term.</p> <p>Interactions will be addressed using codified practices, proven effective mitigation measures, and best management practices. Standard mitigation measures include maintaining noise abatement equipment on machinery.</p>
	Human occupancy and resource use	ESA Section 10	
	Heritage resources	ESA Section 12	
	Navigation and navigation safety	ESA Section 10	
	Traditional land and resource use	ESA Section 11	
	Social and cultural well-being	ESA Section 13	
	Human health and aesthetics	ESA Section 13	
	Infrastructure and services	ESA Section 13	
	Employment and economy	ESA Section 13	
	Environmental Obligations	Section 1 and 13	
	Rights of Indigenous Peoples	ESA Section 14	

GUIDE A – A.3 ECONOMICS AND FINANCING

	Filing Requirements	In Application? References	Not in Application? Explanation
A.3.1 Supply			
1.	A description of each commodity.	Section 3	
2.	A discussion of all potential supply sources.	Sections 3.1 and 3.2	
3.	Forecast of productive capacity over the economic life of the facility.	Sections 3.1 and 3.2	
4.	For pipelines with contracted capacity, a discussion of the contractual arrangements underpinning supply.	Section 5.2	
A.3.2 Transportation Matters			
Pipeline Capacity			
1.	In the case of expansion provide: <ul style="list-style-type: none"> • pipeline capacity before and after and size of increment; and • justification that size of expansion is appropriate. 	Sections 2, 3, 4 and 5	
2.	In case of new pipeline, justification that size of expansion is appropriate given available supply.	Sections 2, 3, 4 and 5	
Throughput			
1.	For pipelines with contracted capacity, information on contractual arrangements.	Section 5	
2.	For non-contract carrier pipelines, forecast of annual throughput volumes by commodity type, receipt location and delivery destination over facility life.		N/A
3.	If project results in an increase in throughput: <ul style="list-style-type: none"> • theoretical and sustainable capabilities of the existing and proposed facilities versus the forecasted requirements; and • flow formulae and flow calculations used to determine the capabilities of the proposed facilities and the underlying assumptions and parameters 	Section 4	
4.	If more than one type of commodity transported, a discussion pertaining to segregation of commodities including potential contamination issues or cost impacts.		N/A
A.3.3 Markets			
1.	Provide an analysis of the market in which each commodity is expected to be used or consumed.	Section 3.1	

	Filing Requirements	In Application? References	Not in Application? Explanation
2.	Provide a discussion of the physical capability of upstream and downstream facilities to accept the incremental volumes that would be received and delivered.	Sections 3.2 and 4.2	
A.3.4 Financing and Financial Resources			
1.	Evidence that the applicant has the ability to finance the proposed facilities.	Section 6.5	
2.	Evidence that the applicant can manage the potential costs associated with the risks and liabilities that arise during construction and operation, including a significant incident involving a product release.	Section 6.6	
3.	Estimated toll impact for the first full year that facilities are expected to be in service.	Section 6.3	
4.	Confirmation that shippers have been apprised of the project and toll impact, their concerns and plans to address them.	Section 5.3	
5.	Information on abandonment costs and the set-aside and collection of them.	Section 6.4	
6.	Additional toll details for applications with significant toll impacts.		N/A
A.3.5 Non-CER Regulatory Approvals			
1.	Confirm that all non-CER regulatory approvals, required to allow the applicant to meet its construction schedule, planned in-service date and to allow the facilities to be used and useful, are or will be in place.	Section 1.12	
2.	If any of the approvals referred to in 1 may be delayed, describe the status of those approval(s) and provide an estimation of when the approval is anticipated.	Section 1.12	All approvals will be in place before the start of the activity.

GUIDE A – A.4 LANDS INFORMATION

	Filing Requirements	In Application? References	Not in Application? Explanation
A.4.1 Land Areas			
1.	Width of right-of-way and locations of any changes to width	Sections 10.3 and 10.4 Appendix 7-3 Appendix 8-1 Appendix 10-1	
2.	Locations and dimensions of known temporary work space and drawings of typical dimensions	Sections 10.3 and 10.4 Appendix 7-3 Appendix 8-1 Appendix 10-1	

	Filing Requirements	In Application? References	Not in Application? Explanation
3.	Locations and dimensions of any new lands for facilities	Sections 10.3 and 10.4 Appendix 7-3 Appendix 8-1 Appendix 10-1	
A.4.2 Land Rights			
1.	The type of lands rights proposed to be acquired for the project.	Sections 10.1 and 10.5	
2.	The relative proportions of land ownership along the route of the project.	Sections 10.1 and 10.2	
3.	Any existing land rights that will be required for the project.	Section 10	
A.4.3 Land Acquisition Process			
1.	The process for acquiring lands.	Section 10.5	
2.	The timing of acquisition and current status.	Section 10.5.1	
3.	The status of service of section 322 notices.	Section 10.5.1	
A.4.4 Land Acquisition Agreements			
1.	A sample copy of each form of agreement proposed to be used pursuant to section 321(2) of the CER Act.	Appendices 10-4 and 10-5	
2.	A sample copy of any proposed fee simple, work space, access or other land agreement.	Appendices 10-4 and 10-5	
A.4.5 Section 322 Notices			
1.	A sample copy of the notice proposed to be served on all landowners pursuant to section 322(1) of the CER Act.	Appendices 10-2 and 10-3	
2.	Confirmation that all notices include a copy of the National Energy Board Landowner Guide.	Section 10.5	
A.4.6 Section 214 Application to Address a Complaint			
1.	The details of the complaint and describe how the proposed work will address the complaint.		N/A

AB	Alberta
ABC	Alberta/British Columbia
AC	Alternating Current
ACA	Annual Contribution Amount
ACE	Abandonment Cost Estimates
ACMSW	Alberta Culture, Multiculturalism and Status of Women
AEP	Alberta Environment and Parks
AFS	application for service
AFUDC	allowance for funds used during construction
AIA	Archaeological Impact Assessment
API	American Petroleum Institute
AQFN	Akisiq'nuk First Nation
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
BC	British Columbia
BT	Blood Tribe
CAN	Canada
CER or Commission	Canada Energy Regulator
CGA	Canadian Gas Association
CGSB	Canadian General Standards Board
CO₂	carbon dioxide
COP	Code of Practice

COS	cost of service
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CP	cathodic protection
CPCN	Certificate of Public Convenience and Necessity
CPVCOS	cumulative present value cost of service
CSA	Canadian Standards Association
DFO	Fisheries and Oceans Canada
EAS	environmental alignment sheets
ECCC	Environment and Climate Change Canada
ECN	Ermineskin Cree Nation
EGAT	East Gate
EPEA	<i>Environmental Protection and Enhancement Act</i>
EPP	Environmental Protection Plan
ERP	Emergency Response Plan
ESA	Environmental and Socio-economic Assessment
FBE	fusion-bonded epoxy
FDMD	Facility Design Methodology
Filing Manual	CER Filing Manual, as revised
Foothills	Foothills Pipe Lines Ltd.
FT-D	Firm Transportation – Delivery
FT-D1	group 1 delivery point
FT-D2	group 2 delivery point
FT-D3	group 3 delivery point

FTE	full time equivalent
FT-R	Firm Transportation – Receipt
GBA+	Gender-Based Analysis Plus
GDP	Gross Domestic Product
GHG	greenhouse gas
H₂O	water
H₂S	hydrogen sulphide
HDD	horizontal directional drill
HRA	<i>Historical Resources Act</i>
HRMB	Historic Resources Management Branch
HSE	Health, Safety and Environment
HVAC	high voltage alternating current
IAA	<i>Impact Assessment Act</i>
IAAC	Impact Assessment Agency of Canada
ILI	in-line inspection
IMP	Integrity Management Program
IOS	International Organization for Standardization
IPCC	Intergovernmental Panel on Climate Change
IRBE	Indigenous Relations Business Engagement
ISD	in-service date
ITP	Inspection and Test Plan
KNC	Ktunaxa Nation Council

LAA	Local Assessment Area
LBT	Louis Bull Tribe
LKFN	Lower Kootenay First Nation
LSA	Local Study Area
LTO	leave to open
MD	Municipal District
MFN	Montana First Nation
MLV	mainline block valve
MNAR3	Métis Nation of Alberta Region 3
MOP	maximum operating pressure
MOU	memorandum of understanding
MSS	Manufacturers Standardization Society
NACE	National Association of Corrosion Engineers
NEB or Board	National Energy Board
NDE	non-destructive examination
NGTL	NOVA Gas Transmission Ltd.
NIT	NOVA Inventory Transfer
NNC	Nakcowinewak Nation of Canada
NPS	nominal pipe size
OCC	TC Energy Operations Control Centre
OD	outside diameter
OHS	Occupational Health and Safety
OPP	overpressure protection

OPR	<i>Onshore Pipeline Regulations</i>
PA	Public Awareness
PC	pressure control
PCA	Parks Canada Agency
PCM	post-construction monitoring
PDA	Project Development Area
PEA	Project Expenditure Authorization
PIL	pipeline installation lease
PKN	Piikani Nation
PPE	personal protective equipment
Project	NGTL West Path Delivery 2023 Project
PRPA	Peace River Project Area
RAA	Regional Assessment Area
RAP	Restricted Activity Period
ROW	right-of-way or rights-of-way
RSA	regional study area
SARA	<i>Species at Risk Act</i>
SCADA	supervisory control and data acquisition system
SCN	Samson Cree Nation
SM	Specialized Municipality
SMIB	St. Mary's First Nation

SMP	Safety Management Plan
SN	Siksika Nation
SNN	Stoney Nakoda Nations
SSPC	Steel Structures Painting Council
SSSP	Site-Specific Safety Plan
Tariff	NGTL Gas Transportation Tariff
TBO	transportation by others
TC Energy	TC Energy Corporation
TCPL	TransCanada PipeLines Limited
TDR	technical data report
TEK	traditional ecological knowledge
TK	traditional knowledge
TLU	traditional land use
TOMS	TC Energy's Operational Management System
TOP	TC Energy Operating Procedure
TPIB	Tobacco Plains Indian Band
TSN	Tsuut'ina Nation
TTFP	Tolls, Tariff, Facilities and Procedures
TWS	temporary workspace
US	United States
WAS	Western Alberta System
WAS Mainline Loop No. 2 Longview Section	Longview Section
WAS Mainline Loop No. 2 Lundbreck Section	Lundbreck Section

WAS Mainline Loop No. 2 Turner Valley Section	Turner Valley Section
WCSB	Western Canada Sedimentary Basin
WGAT	West Gate

Units of Measurement

\$	dollars
%	percent
°C	degrees Celsius
Bcf/d	billion cubic feet per day
cf	cubic feet
cf/d	cubic feet per day
cf/s	cubic feet per second
cm	centimetre
GJ	gigajoule
ha	hectare
km	kilometre
km²	square kilometres
KP	kilometre post
kPa	kilopascal
kW	kilowatt
m	metre
M	million
m³	cubic metres
m³/d	cubic metres per day

m³/s	cubic metres per second
Mcf	thousand cubic feet
Mcf/d	thousand cubic feet per day
mm	millimetre
MMcf/d	million cubic feet per day
MMt	million metric tonnes
MPa	megapascal
MW	megawatt
Tcf	trillion cubic feet
TJ/d	Terajoules per day

1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION

In this section NGTL provides an overview description of the Project, including:

- main Project components
- engineering design considerations
- preliminary cost estimates and scheduling information
- the economic benefits of the Project
- engagement with stakeholders, landowners and Indigenous communities
- environmental and socio-economic assessment
- non-CER regulatory permits and authorizations
- future decommissioning and abandonment requirements

1.2 REQUIREMENT FOR NEW FACILITIES

The Project represents specific facilities that NGTL has determined are necessary to accommodate aggregate forecast requirements including incremental contract commitments with a commercially required in-service date of November 2023.

1.3 MAIN PROJECT COMPONENTS

The Project is comprised of the following main components:

Approximately 40.1 km¹ of 1,219 mm (NPS 48) pipeline loops in three sections:

- Western Alberta System (WAS) Mainline Loop No. 2 Turner Valley Section (Turner Valley Section) – approximately 23.7 km
- WAS Mainline Loop No. 2 Longview Section (Longview Section) – approximately 9 km
- WAS Mainline Loop No. 2 Lundbreck Section (Lundbreck Section) – approximately 7.4 km
- associated MLVs, compressor station tie-in valves and pipe assemblies, launcher and receiver facilities for cleaning and ILI, and a CP system
- miscellaneous works, such as pipeline warning signs and aerial markers

Temporary infrastructure, such as access roads, borrow pits/dugouts, slurry pits, stockpile sites, laydown yards, and contractor yards will be required during construction. See Section 1.5, for additional information on construction-related temporary infrastructure.

¹ The final route is expected to modestly exceed 40 km as NGTL progresses through detailed design.

For locations of the main Project components, see Figure 1-1.

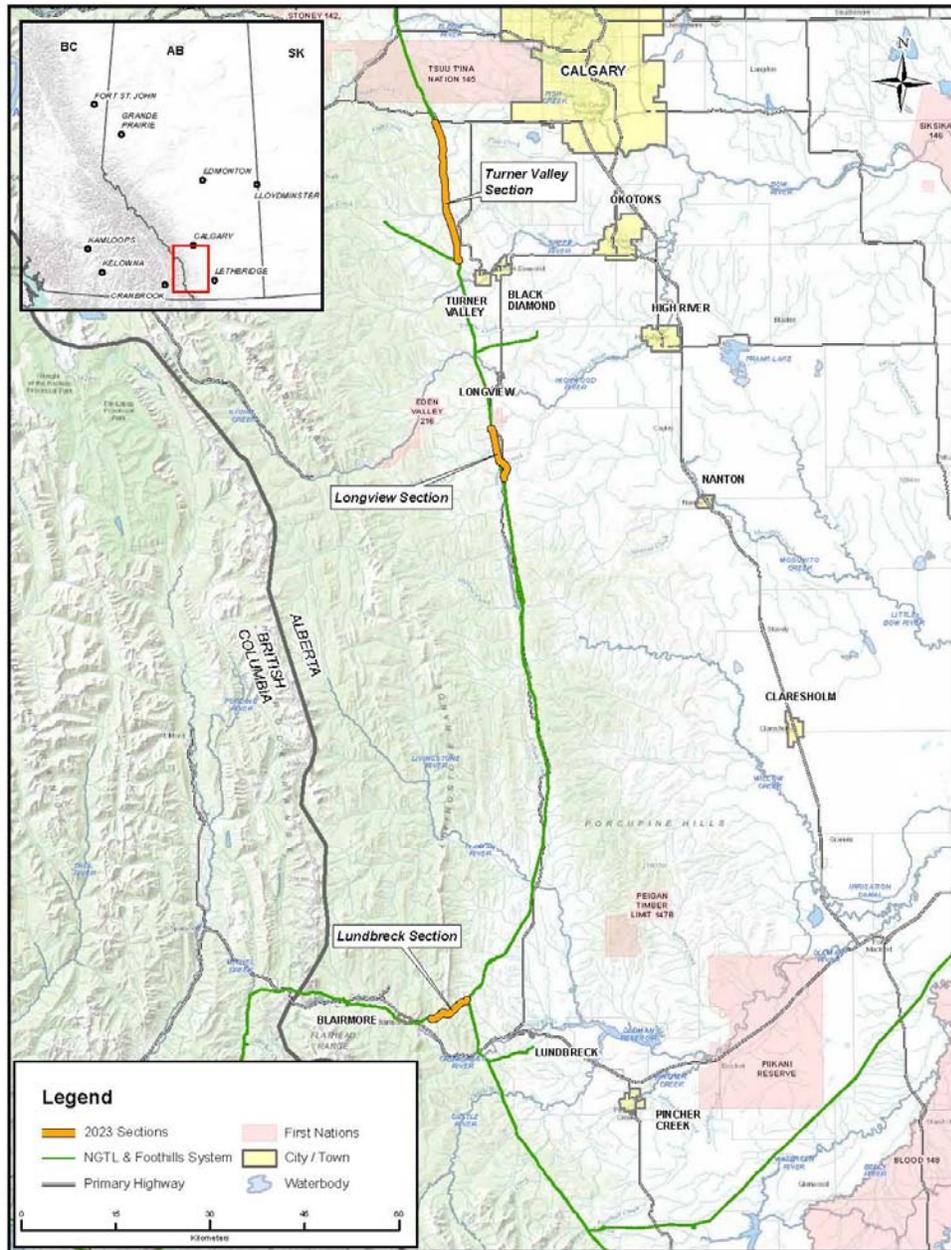


Figure 1-1: Locations of Main Project Components

For an overview map of the Project, and for the detailed pipeline route maps, see Section 14: Foldout Maps.

1.4 ENGINEERING DESIGN

The Project will be designed, constructed and operated in accordance with the requirements of the *Onshore Pipeline Regulations (OPR)* and *Canadian Standards Association (CSA) Z662-19*. If there are any inconsistencies between the OPR and CSA Z662-19, the OPR will govern. For more information, see Section 7: Pipeline (7.2 Engineering Design Standards).

1.5 SECTION 214 ACTIVITIES

In addition to infrastructure needed for the pipeline sections and MLV sites, NGTL proposes to commence construction of temporary infrastructure required for the Project under section 214 of the CER Act, subject to regulatory approvals. NGTL confirms that all activities contemplated under section 214 of the CER Act will not commence until after the CPCN has been issued for the entire Project and after any applicable conditions for the section 214 activities are satisfied.

The temporary infrastructure required could include access roads, borrow pits/dugouts, slurry pits, stockpile sites, laydown yards, and contractor yards.

1.6 PROJECT SCHEDULE

The commercially required ISD for the Project is November 2023, and NGTL anticipates delivery and stockpiling of pipe and other materials to take place in advance of construction. Subject to regulatory approval for the section 214 activities, work on temporary infrastructure is scheduled to begin in Q1 of 2023, prior to pipeline construction.

The proposed schedule takes environmental sensitivities into account, including migratory bird nesting periods, timing restrictions associated with watercourse crossings, and dry soil conditions.

Opportunities that arise to optimize construction scheduling will also be evaluated on an ongoing basis.

For the preliminary Project schedule, see Figure 1-2.

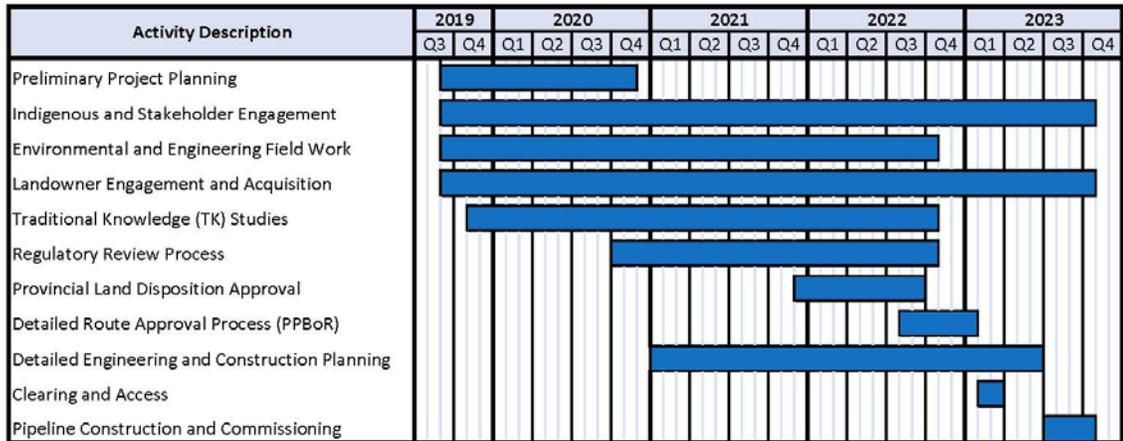


Figure 1-2: Preliminary Project Schedule

1.7 ESTIMATED CAPITAL COST

The estimate of the Project capital cost in 2023 dollars is \$355.5 million, including allowance for funds used during construction (AFUDC).

1.8 ECONOMIC ANALYSIS AND ENVIRONMENTAL OBLIGATIONS

The purpose of the Project is to provide additional capacity to the NGTL System to meet the aggregate transportation requirements, including the incremental contracted demand of approximately 175 TJ/day for delivery at the ABC Border Export Point. The Project will not be sourcing gas supply from a specific WCSB location or play, but rather will provide downstream markets access to growing supply sources from unconventional and tight conventional plays in the WCSB. The Project will allow WCSB producers seeking increased access to export markets the ability to compete for downstream market share. Many plays in the WCSB, such as the Montney and Deep Basin, compete favorably with other basins currently serving these downstream markets. The Project will provide the opportunity for the WCSB and NGTL customers to increase their market shares in the markets served through the ABC Border Export Point. The need for the Project does not change as a result of current climate change laws, regulations and policies.

TC Energy tracks energy supply and demand fundamentals on an ongoing basis and has analyzed the resiliency of its portfolio under several long-term energy scenarios, including a scenario that reflects a pathway to meeting the Paris Agreement (2°Celsius Scenario). This analysis is relied on in the assessment of the Project and related financial risks. NGTL expects demand for its transportation services, and the need for the Project, to remain robust over time, as illustrated by the long-term contractual commitments made in support of the Project. NGTL monitors and incorporates new information related to climate change laws, regulations and policies

as it becomes available in its economic analysis and related financial risk of new projects.

1.9 ECONOMIC BENEFITS

An economic effects analysis was prepared by Stantec Consulting Ltd. (Stantec) to understand the potential economic effects of the \$355.5 million Project capital expenditure in Canada (to commissioning in Q4 2023). This analysis was completed using the Statistics Canada Interprovincial Input-Output Model, data from the Project, and publicly available information on the economic activities in nearby communities (see Section 13.2.1.1 and 13.5.1 of the Environment and Socio-economic Assessment [ESA]).

During construction, the Project is estimated to directly increase Alberta's Gross Domestic Product (GDP) by approximately \$80 million. The total economic impact (direct, indirect and induced) on Alberta would be approximately \$181 million in GDP including \$117 million in labour income. In addition, the economic analysis estimated that the Project represents direct and indirect employment of about 1,161 full-time jobs during construction in Alberta. The Project is also estimated to generate approximately \$4.2 million in Federal and \$6.2 million in Provincial tax revenue during construction.

During operations, the Project is estimated to contribute annual property tax payments as follows:

- \$345,000 to Foothills County
- \$12,000 to the Municipal District (MD) of Pincher Creek
- \$10,000 to the MD of Ranchland
- \$90,000 to the Specialized Municipality (SM) of Crowsnest Pass

The Project will also implement several measures to support the potential economic benefits for local and Indigenous communities (see Section 13.4 of the ESA). These measures include encouraging the participation of local and Indigenous businesses and employees, and working with local Indigenous groups to identify opportunities for capacity development (see Section 12: Indigenous Engagement [12.2.3 Step 3: Implement Engagement Program Activities]).

1.10 STAKEHOLDER ENGAGEMENT

TC Energy's stakeholder engagement program will be used by NGTL for the Project. A description of the Program is provided in Section 11: Stakeholder Engagement. Stakeholder engagement activities to date have included:

- early and ongoing public notification of the Project
- identifying stakeholders, initiating dialogue, and attending meetings
- maintaining ongoing stakeholder engagement
- distributing Project updates and communication materials (including information on the process for providing the CER with comments)
- hosting public open houses to solicit feedback and questions from the public
- responding to questions and concerns

NGTL has contacted the following stakeholders as part of its public engagement efforts for the Project:

- landowners and land users
- key officials at all three levels of government (municipal, provincial and federal)
- community leaders
- business development officers in rural municipalities
- emergency response service organizations

Stakeholder feedback raised during consultation activities are summarized in Section 11: Stakeholder Engagement (11.5 Stakeholder Feedback).

Engagement activities will continue through the regulatory and construction phases of the Project, after this Application is filed. The primary focus will be on responding to specific questions or concerns and following up with previously engaged stakeholders.

During operations, ongoing engagement activities for the Project will be conducted in accordance with the provisions of TC Energy's Public Awareness (PA) Program. For a description of the PA Program, see Section 9: Operations (9.1.6 Public Awareness Program).

1.11 INDIGENOUS ENGAGEMENT

The Indigenous Engagement Program for the Project is guided by TC Energy's Indigenous Relations Policy and is designed to assist NGTL in planning the Project.

The goal of the Indigenous Engagement Program for the Project is to provide Project information and seek feedback from Indigenous groups in order to anticipate, prevent, mitigate and manage conditions that have the potential to affect Indigenous groups. NGTL strives to meet this goal by:

- establishing a practical approach for the implementation of Project-specific engagement activities
- initiating engagement activities as soon as possible in the planning of the Project

- providing clear, relevant and timely information to potentially affected Indigenous groups
- responsibly closing the loop in engagement activities and addressing, as appropriate, the concerns raised by each potentially affected Indigenous group

The design of NGTL's engagement program is consistent with the CER's guidance on consultation as set out in its Filing Manual and Early Engagement Guide.

For an outline of the Indigenous Engagement Program, the potentially affected Indigenous groups engaged on the Project, and outcomes of the engagement program up to October 9, 2020, see Section 12: Indigenous Engagement.

1.12 ENVIRONMENTAL AND SOCIO-ECONOMIC MATTERS

The ESA for the Project was prepared under the guidance provided by the Filing Manual, 2020-08 (CER 2020), the Interim Filing Guidance and Early Engagement Guide (NEB 2019) as well as input from regulators, stakeholders, landowners and Indigenous groups. The ESA is supported by existing data sets, publicly available literature, previous project experience in the region, environmental field studies and includes a Project specific Environmental Protection Plan (EPP). The EPP will be updated prior to construction, as warranted, if additional mitigation measures are identified during detailed design or through ongoing field work and engagement programs.

The ESA considered both residual project and residual cumulative effects to biophysical and socio-economic elements that interact with the Project. The conclusion of the ESA is that, with the implementation of standard and Project specific mitigation measures, adverse residual Project and residual cumulative environmental and socio-economic effects are predicted to be not significant.

NGTL accepts the findings of the ESA and will adhere to the recommendations and mitigation identified in the ESA. The ESA can be found as Volume 3 of this Application. Volumes 4 and 5 contain the supporting appendices to the ESA, including the EPP and the environmental alignment sheets (EAS).

1.13 NON-CER REGULATORY PERMITS AND AUTHORIZATIONS

All non-CER regulatory permits and authorizations are planned to be in place, as required, to meet the construction schedule and in-service dates for the Project.

For a preliminary list of federal non-CER regulatory permits and authorizations, see Table 1-1, and for Alberta regulatory authorities, see Table 1-2. NGTL will comply with relevant and applicable provincial and municipal laws, to the extent those laws

do not conflict with or frustrate the purpose and intention of any federal approval for the Project.

The information in these tables may be updated as design and planning for the Project progresses and to reflect the outcome of ongoing discussions with various regulators. The tables do not include other construction permits (that will be obtained by the construction contractors, as required).

Table 1-1: Preliminary List of Federal Regulatory Approvals and Authorizations

Department	Authority	Approval
Parks Canada Agency (PCA)	Section 82 of the <i>Impact Assessment Act</i>	PCA, under Section 82 of the IAA, must determine that the Longview Section of the Project is not likely to cause significant adverse effects to the Bar U Ranch National Historic Site.
PCA	<i>National Parks Act</i>	An Archaeological Impact Assessment (AIA) is required for all undisturbed portions of the Longview Section that pass through the Bar U Ranch National Historic Site in accordance with the Parks Canada Guidelines for the Management of Archaeological Resources (PCA 2005).
PCA; Fisheries and Oceans Canada (DFO)	Section 73(2) of the <i>Species at Risk Act</i> (SARA)	<p>SARA protects wildlife species (including aquatic species) at risk in Canada, listed in Schedule 1 of SARA, and their critical habitat. Under Sections 32 and 33 it is prohibited to kill, harm, harass, capture, or take individuals listed as extirpated, endangered, or threatened (Section 32) or to damage or destroy the residence of those individuals (Section 33). Under Section 58 it is also prohibited to destroy the defined critical habitat of a listed aquatic species anywhere in Canada. Where works affecting the species is incidental to the carrying out of the activity, a permit under Section 73(2) may be issued. Section 73(2) permits may be required for:</p> <ul style="list-style-type: none"> • Effects to bull trout and critical habitat, as it is anticipated that the Bull Trout (<i>Salvelinus confluentus</i>), Saskatchewan-Nelson Rivers: recovery strategy, 2020 (proposed) will be finalized prior to construction of the Project • Effects to westslope and critical habitat • Potential effects to little brown myotis potential maternity roost habitat (based on roost surveys during the active bat season, approximately May 1 to September 30, prior to vegetation clearing and pipeline construction activities) <p>A Memorandum of Understanding (MOU) between the National Energy Board (NEB) and DFO for “cooperation and administration of the <i>Fisheries Act</i> and the SARA related to regulating energy infrastructure” is in effect. Through this MOU, the CER is responsible to determine if proposed projects will impact aquatic species at risk and require permitting under the SARA. If the CER determines that a permit will be required, DFO shall be notified and will be responsible for issuing the permit.</p>

Table 1-2: Preliminary List of Provincial Regulatory Approvals and Authorizations

Department	Authority	Approval
Alberta Environment and Parks (AEP)	<i>Public Lands Act</i>	Surface dispositions for pipeline ROW and facility sites (e.g., Department License of Occupation, Department Pipeline Installation Lease), and Temporary Field Authorizations for workspace and access on Crown land.
	<i>Forest and Prairie Protection Act</i>	License approval to burn cleared debris.
	<i>Water Act</i>	Works in and around watercourses in Alberta are regulated by AEP under the Alberta <i>Water Act</i> . The <i>Water Act</i> Codes of Practice (COP), including the <i>COP for Pipelines and Telecommunication Lines Crossing a Water Body</i> (ESRD 2013a), the <i>COP for Watercourse Crossings</i> (AEP 2019a), and COPs for hydrostatic testing (AENV 1999a, 1999b) are incorporated in the Water (Ministerial) Regulation under the authority of the <i>Water Act</i> . Development affecting wetlands is regulated in Alberta under the provincial <i>Water Act</i> . Specific guidance for permitting of development affecting wetlands is provided in the Government of Alberta Wetland Policy Implementation directives and tools (GOA 2015a). Temporary effects on wetlands associated with pipeline construction require only a notification under the Alberta <i>Water Act</i> COP supported by a Wetland Assessment Impact Form.
	<i>Environmental Protection and Enhancement Act (EPEA) and Water Act – hydrostatic testing</i>	Hydrostatic testing must be completed in compliance with the COP for Temporary Diversion of Water for Hydrostatic Testing of Pipelines (AENV 1999a) under the <i>Water Act</i> and the COP for the Release of Hydrostatic Test Water from Hydrostatic Testing of Petroleum Liquid and Gas Pipelines (AENV 1999b) under EPEA (depending on the method of disposal of test water).
Alberta Culture, Multiculturalism and Status of Women (ACMSW)	<i>Historical Resources Act (HRA)</i>	In Alberta, heritage resources are regulated under the Alberta HRA and administered by the Historic Resources Management Branch (HRMB) of ACMSW. The need for, and scope of, historic resource impact assessments is determined by ACMSW based on their guidelines and requirements. ACMSW independently assesses the scientific value of historic resource sites and determines the need for any mitigation or avoidance measures. Project approval is required from ACMSW prior to construction and is received as clearance under the HRA.

1.14 DECOMMISSIONING OR ABANDONMENT

Prior approval from the CER and other applicable authorities will be required before any future decommissioning or abandonment activities are initiated. The decision to decommission or abandon pipelines or facilities will be influenced by future service requirements. In addition, it is expected that an ESA specific to decommissioning or abandonment activities would be required.

As specified in Section A.2.6.1 of the Filing Manual (CER 2020), a preliminary decommissioning or abandonment plan is required as part of the ESA; consequently, a preliminary assessment of typical decommissioning or abandonment activities is provided in Appendix C of the Project ESA.

1.15 APPLICATION STRUCTURE AND CONTENTS

The Application contains 14 sections, as follows:

Section 1: Executive Summary

Section 1 provides a description of the Project, including its location, scope, preliminary schedule, costs, stakeholder and Indigenous engagement programs, environmental and socio-economic assessment, non-CER regulatory authorizations, as well as decommissioning or abandonment activities.

Section 2: Need and Necessity

Section 2 describes the need for the Project and demonstrates its economic feasibility, based on supply, markets and transportation contracts.

Section 3: Markets and Supply

Section 3 provides an outlook for the gas markets that can be accessed through the Project and the NGTL System and connecting pipelines and an overview of the gas supply available to the Project.

Section 4: System Design

Section 4 provides an overview of the system design planning process that was used to determine the optimum facility set for the Project. Facility alternatives that were considered, but not selected are also identified and the rationale for NGTL's facility selection is explained.

Section 5: Transportation

Section 5 provides an overview of the transportation contracts supporting the Project and the transportation access and contracting process that was used for the Project. The commercial third-party notification process is also described, and presentation materials are provided.

Section 6: Tolls and Financing

Section 6 provides an analysis of the expected cost of service (COS) and toll impact of the Project on the NGTL System, including a discussion of the underlying assumptions. It includes cost estimates for future decommissioning or abandonment

of the Project, financing information with current credit rating reports for TCPL and a financial assurance plan.

Section 7: Pipeline

Section 7 provides the engineering design details, specifications and typical drawings for the pipeline components of the Project. Information is provided on routing, gas composition, valve locations, procurement, geotechnical data and watercourse crossings. Preliminary plans for early ROW preparation activities are also outlined, as is NGTL's approach to establishing pipeline integrity during design.

Section 8: Pipeline Construction

Section 8 provides pipeline construction information, including strategy, procedures, timing and sequencing. Information on personnel safety and accommodation is also provided.

Section 9: Operations

Section 9 describes the processes and procedures that will be employed to ensure the safe, reliable and efficient operation of the Project. In particular, Management Systems and Programs required under the OPR are outlined.

Section 10: Land Matters

Section 10 describes the permanent and temporary land requirements for the Project facilities and outlines the procedures and schedules for obtaining the land rights and temporary workspace (TWS) requirements. Landowner consultation activities and outcomes are also summarized.

Section 11: Stakeholder Engagement

Section 11 provides an overview of TC Energy's ongoing stakeholder engagement program for the Project. Sample copies of letters, information brochures and open house materials are also provided.

Section 12: Indigenous Engagement

Section 12 describes the Indigenous Engagement Program for the Project. It includes the principles and goals of the program, methodology for engagement, process for integrating appropriate mitigation in Project plans and future planned engagement activities. The approach to obtaining and incorporating Traditional Knowledge (TK) in the Project is described, and community engagement is summarized.

Section 13: Environmental and Socio-Economic Matters

Section 13 provides a summary of the need for and scope of the Project ESA, along with the approach, findings and conclusions of the ESA. A description of the consultation with environmental regulatory agencies is also included.

Section 14: Foldout Maps

Maps are provided in Section 14, including a wall-sized Project overview map and detailed route maps. The maps show the location of the pipeline sections and existing infrastructure, including public and private roads.

1.16 SUPPLEMENTAL INFORMATION

The information in this Application is supported by results of field investigations, plus feedback gathered to date through NGTL's engagement and consultation programs. Additional field studies are planned for spring to fall 2020, including studies related to:

- soils
- vegetation (e.g., wetlands, rare plants and ecological communities, weeds)
- wildlife (e.g., birds, amphibians, and habitat features including breeding habitat, leks, dens, and nests)
- fish and fish habitat
- Historical Resources Impact Assessments as required by ACMSW

The results of these studies, and any additional information gathered through NGTL's engagement and consultation programs, will be incorporated into Project planning. Any additional mitigation required as a result of these supplemental findings will be included in the final EASs and EPP, as appropriate.

2.0 NEED AND NECESSITY

This section provides the justification and need for the Project. To provide context, it is useful to first provide background on the commercial constructs that guide the daily operation of the NGTL System, as well as the design and planning processes that guide the long-term system requirements.

2.1 THE COMMERCIAL CONSTRUCT OF THE NGTL SYSTEM

NGTL currently provides a unique and high-value commercial feature referred to as the NOVA Inventory Transfer (NIT) (see Figure 2-1). The NIT construct aggregates all natural gas supplies, storage, intra-basin markets and interconnected pipelines to the NGTL System at a single, integrated transaction hub by contracting receipt and delivery functions separately with a balancing account situated between the functions.

NGTL receipt services allow shippers to bring natural gas on the NGTL System and aggregate those supplies into a single account referred to as the NIT account. Likewise, NGTL provides delivery services which allow shippers to remove gas from NIT accounts and off the NGTL System for deliveries to intra-basin markets, storage or interconnecting pipelines. Shippers can buy and sell inventories amongst NIT accounts at any time contingent upon daily account balances equalling zero¹ (receipts + NIT purchases = NIT sales + deliveries). This allows delivery shippers to source gas through NIT that is physically received from any receipt point on the NGTL System and for receipt shippers to commercially access any market. Balanced accounts result in a balanced System, meaning gas on the System equals gas off the System.

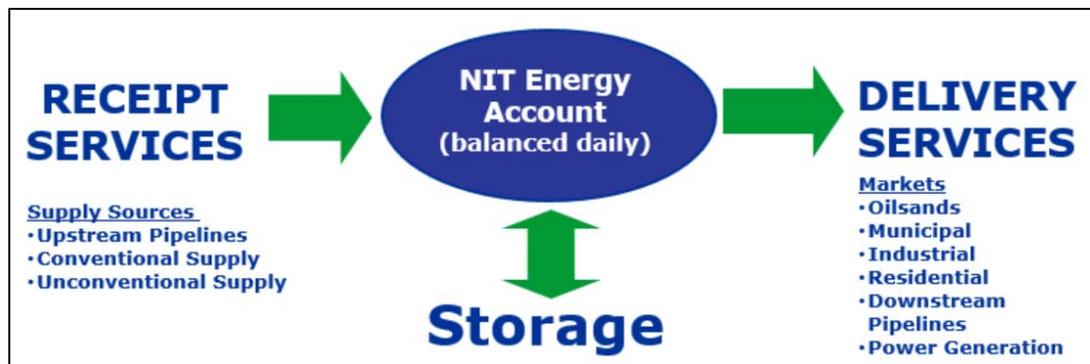


Figure 2-1: NIT Market on the NGTL System

The physical flows from one point on the NGTL System to another are based on the physical receipts and deliveries nominated by shippers and authorized by NGTL. The

¹ Shippers may hold small balances within a tolerance zone.

design of the NGTL System ensures that the overall flows on the System are able to meet aggregate requirements on a peak day.

2.2 THE NGTL SYSTEM DESIGN PROCESS

The NGTL System transports gas from many geographically diverse receipt points and moves it through pipelines that generally increase in capacity as they approach the major delivery points. The NGTL System is designed to meet the peak day design flow requirements of its customers.

NGTL's facility design must ensure facilities are appropriately sized to meet flow requirements. The system design methodology developed to achieve this objective is described further in Section 4: System Design.

2.2.1 Identifying and Triggering Facilities

On an annual basis, NGTL reviews its pipeline system based on supply and demand forecasts, as described in Section 4: System Design. When the forecast requirement exceeds the existing pipeline capability, facility solutions are identified to address the capability shortfall. These facility solutions are then compared using economic and operating criteria to determine the most appropriate facility solution. The selection of facilities is usually determined based on the lowest cumulative present value cost of service (CPVCOS).

NGTL develops a requirement list for facilities which may be required in the future for the entire NGTL System. By identifying the long-term facility requirements, NGTL is better able to minimize costs and place appropriate facilities into service when required. Long term planning is intended to minimize effects on stakeholders, landowners, Indigenous communities, and the environment, by reducing the need of having to return repeatedly to loop and expand facilities.

When assessing potential facility solutions, NGTL examines the options to lease capacity on existing facilities owned by others (through a Transportation by Others arrangement [TBO]), whether existing facilities owned by others can be purchased, or whether construction of new facilities is the most appropriate solution. If it is determined that a build option is the most appropriate, NGTL assesses what facilities are required to meet the forecast requirements.

The result of this annual process is consolidated into the NGTL annual plan document provided as Appendix 5-4. This information is shared with the Tolls, Tariff, Facilities and Procedures (TTFP) Committee, is posted on the NGTL customer express website, and ultimately informs subsequent applications for approval of new facilities.

When commercial arrangements that support the need for a project are finalized, NGTL files an application to construct the identified facilities. Future facilities

identified as part of the long-term planning process might or might not ultimately be required as the longer-term forecasts become more certain and commercial contracts requiring the capacity are executed. To determine the appropriate size of facilities, NGTL relies on its supply and demand forecast. NGTL sizes the proposed facilities to ensure that the pipeline system can transport the expected peak flow requirements.

2.3 NEED FOR THE PROJECT

The Project is commercially required to be in service by November 2023 to increase the pipeline capacity to meet incremental FT-D1 contracts at the ABC Border Export Point in addition to existing obligations. The Project facilities are designed following the processes described in Section 4: System Design, to accommodate the incremental delivery contract commitments, as well as aggregate forecast requirements.

Figure 2-2 illustrates the demand growth at the ABC Border Export Point on the NGTL System.

2.3.1 NGTL System Throughput Growth and Contracts

The Project will provide needed incremental capacity for the growing ABC Border Export market on the NGTL System, as described in Section 3: Markets and Supply and is supported by incremental FT-D1 contracts described in Section 5: Transportation.

2.3.2 Conclusion

The facilities applied for in this Application are commercially required to be in-service by November 2023 to provide transportation capability along the WAS to transport natural gas to the growing ABC Border Export market to meet aggregate transportation requirements. Based on NGTL's forecast of markets and supply, as well as the contractual commitments that underpin the Project, the applied for facilities will be used and useful throughout the economic life of the Project.

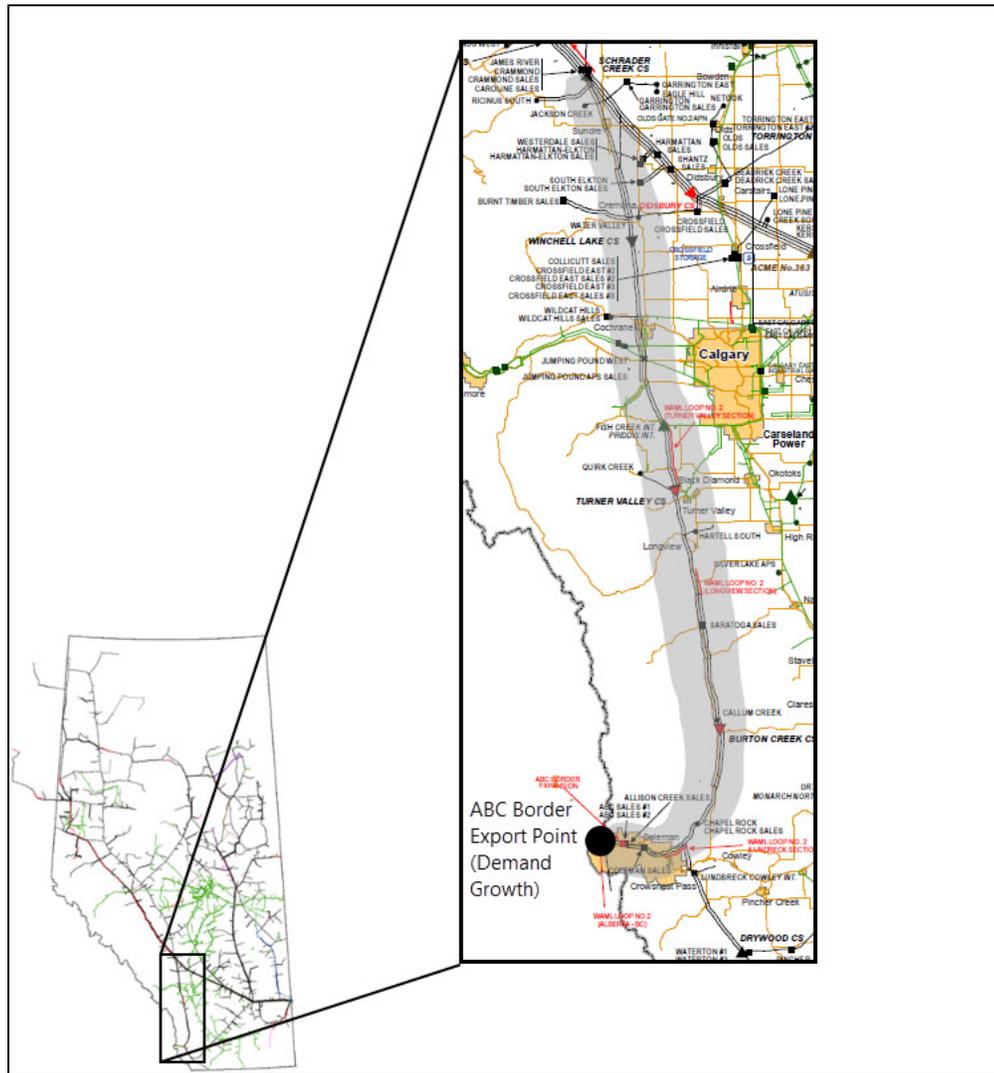


Figure 2-2: Overview of the ABC Border Export Point on the NGTL System

3.0 MARKETS AND SUPPLY

This section provides an overview of the supply and gas markets on the NGTL System to be served by the Project. The forecast provided here are annual averages, which, when adjusted to peak values, form the basis for the design flows that are used in facility design. Design flows are discussed in Section 4: System Design.

The geographic locations on the NGTL System where supply and markets are growing are relevant considerations when designing the NGTL System. Figure 2-2 illustrates the area on the NGTL System where demand being served by the Project is growing. Supply is concentrated in the Peace River Project Area (PRPA), while markets are growing throughout the entire system; including in the WAS, which this Project is intended to serve.

The average annual outlooks of supply, markets and NGTL System throughput volumes reported in this section are understood to be within a range of outcomes due to factors such as changing market conditions and the pace of WCSB supply development. However, the facilities proposed in this Application are required to meet the aggregate peak day needs of NGTL shippers, which are based on firm service contracts, and are not expected to change. Average annual levels reported here assume that the proposed facilities are in place.

3.1 MARKETS

NGTL has prepared a long-term natural gas demand forecast of the integrated North American market, including the demand that the Project will serve. This demand outlook has been prepared considering all natural gas market sectors, which include residential, commercial, industrial and natural gas use within the electrical generation industry. The overall outlook was developed based on an internal assessment of factors including:

- historical growth rates
- new and/or anticipated trends
- government policy
- project announcements
- aggregate customer confidential information
- internal analysis and assessments

The NGTL System serves both intra-basin and export deliveries. In total, NGTL system deliveries are expected to grow from 346 $10^6\text{m}^3/\text{d}$ (12.2 Bcf/d) in 2018/19 to 525 $10^6\text{m}^3/\text{d}$ (18.5 Bcf/d) by 2029/30.

As described in Section 2: Need and Necessity, the Project is required to meet the aggregate transportation requirements, including the delivery requirements of the

growing ABC Border Export market on the NGTL System. As such, the following section focuses on the influences surrounding the ABC Border Export market growth in general and provides further details on the demands associated with the firm-service contracts discussed in Section 5: Transportation.

3.1.1 NGTL Export Demand

The Project is driven primarily by WCSB producers seeking increased access to export markets and the ability to compete for downstream market share. Many plays in the WCSB, such as the Montney and Deep Basin, can compete economically with other basins serving these markets. The Project will provide pipeline capacity allowing WCSB gas to compete and capture market share in the Pacific Northwest and California markets and will provide producers the needed ability to diversify their market portfolio beyond NGTL intra-basin demand. The Pacific Northwest and California markets have peak gas requirements in the spring and summer months, which compliment NGTL intra-basin demand that peaks in the winter, making these markets key for WCSB production. Annual average flow through the ABC Border Export point on the NGTL System is expected to increase from approximately 67.8 $10^6\text{m}^3/\text{d}$ (2.4 Bcf/d) in 2019, to approximately 85.8 $10^6\text{m}^3/\text{d}$ (3.0 Bcf/d) in 2030.

The Project will serve existing markets in the Pacific Northwest and California, which are in the Pacific census region of the United States (US). The power generation and industrial demand sectors combined account for over 60% of the total gas demand for the region. An estimated 900 MW of new gas additions to replace aging gas-fired units in the region and the retirement of the 2300 MW Diablo Canyon nuclear plant by the middle of the decade are expected to support gas-fired power generation in the short to intermediate term. In the long-term, legislation to increase renewable portfolio standard regulations set by state governments will lessen the gas demand in the region gradually over time. Pacific Northwest and California power and industrial gas demand is forecast to decrease from approximately 133.5 $10^6\text{ m}^3/\text{d}$ (4.7 Bcf/d) in 2019, to approximately 122.6 $10^6\text{ m}^3/\text{d}$ (4.3 Bcf/d) in 2030. Domestic residential and commercial markets in the Pacific Northwest and California markets are expected to remain relatively flat, from 76.5 $10^6\text{ m}^3/\text{d}$ (2.7 Bcf/d) in 2019, to approximately 75.0 $10^6\text{ m}^3/\text{d}$ (2.6 Bcf/d) in 2030. Figure 3-1 shows NGTL's sectoral demand forecast for the Pacific census region of the US.

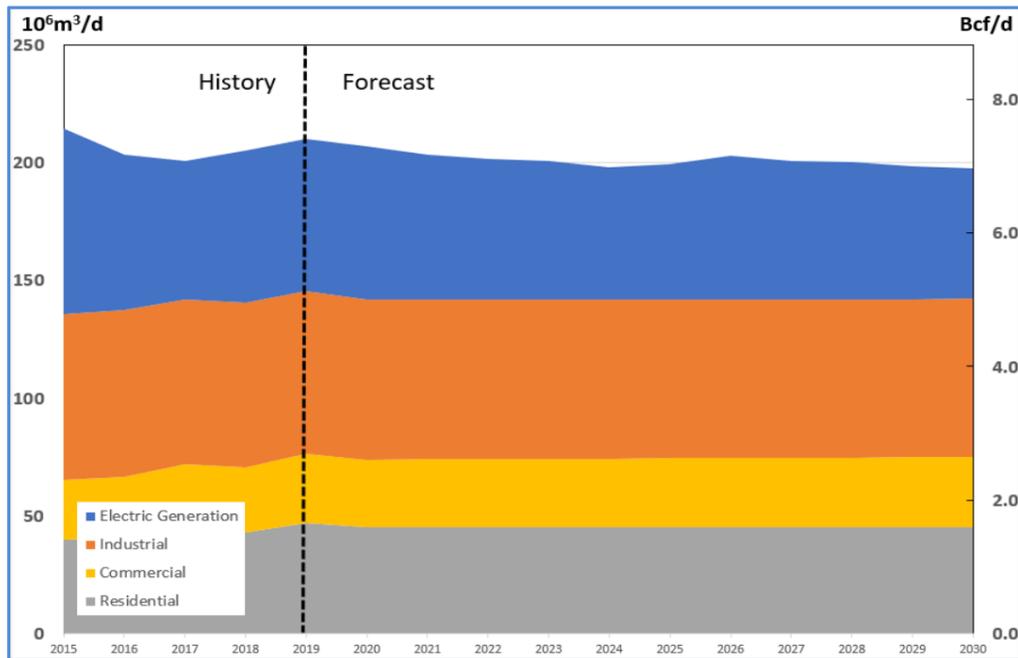


Figure 3-1: Pacific census region sectorial demand

3.1.2 Markets Summary

NGTL export flows to the Pacific census region of the US and are expected to increase over time as the WCSB is competitively priced to capture these markets from competing sources of supply. The long-term firm service contracts supporting this Project are reflective of that strength and diversity. These markets are expected to have sufficient demand to absorb supply from the applied-for facilities over the long-term.

3.2 WCSB SUPPLY FORECAST

NGTL has prepared a long-term WCSB supply forecast that incorporates conventional and unconventional gas resources. NGTL has also estimated the share of WCSB gas supply that will be transported on the NGTL System after considering total WCSB supply and the flows expected on other pipeline systems that transport gas production from the WCSB. Figure 3-2 illustrates the key WCSB gas supply areas situated relative to the NGTL System.

The Project will not be sourcing gas supply from a specific location or play, but rather will provide transportation access to growing supply sources from unconventional and tight conventional plays in the WCSB. These plays have attractive economics because of their higher liquids content than other plays within the WCSB, which enables economic supply, even in a lower gas price environment.

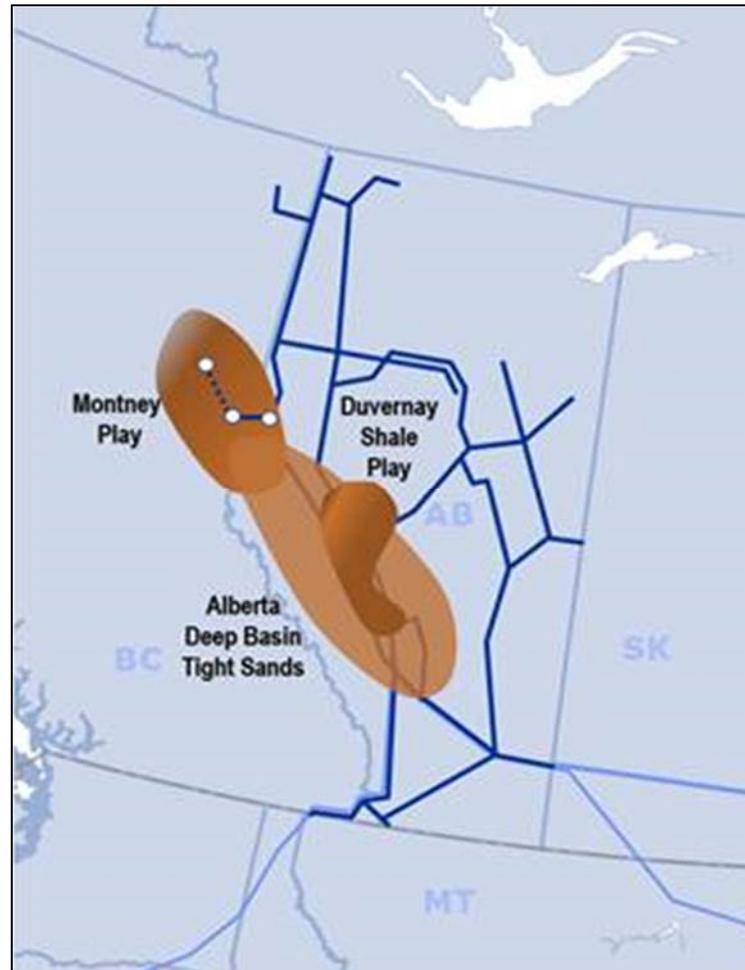


Figure 3-2: Key WCSB Gas Supply Areas

NGTL expects conventional supply to continue to decline over time, with supply contributions from unconventional plays to increase as shown in Figure 3-3. The total WCSB gas supply is expected to steadily grow from 442 $10^6\text{m}^3/\text{d}$ (15.6 Bcf/d) in 2018/19 to approximately 645 $10^6\text{m}^3/\text{d}$ (22.8 Bcf/d) by 2029/30. NGTL's supply forecast follows the WCSB forecast and increases from 343.8 $10^6\text{m}^3/\text{d}$ (12.1 Bcf/d) in 2018/19 to approximately 496.6 $10^6\text{m}^3/\text{d}$ (17.5 Bcf/d) by 2029/30. NGTL's forecast of WCSB and NGTL System supply is provided in Table 3-1.

Based on these forecasts, NGTL anticipates that there will be sufficient supply to accommodate the market demands driving the Project.

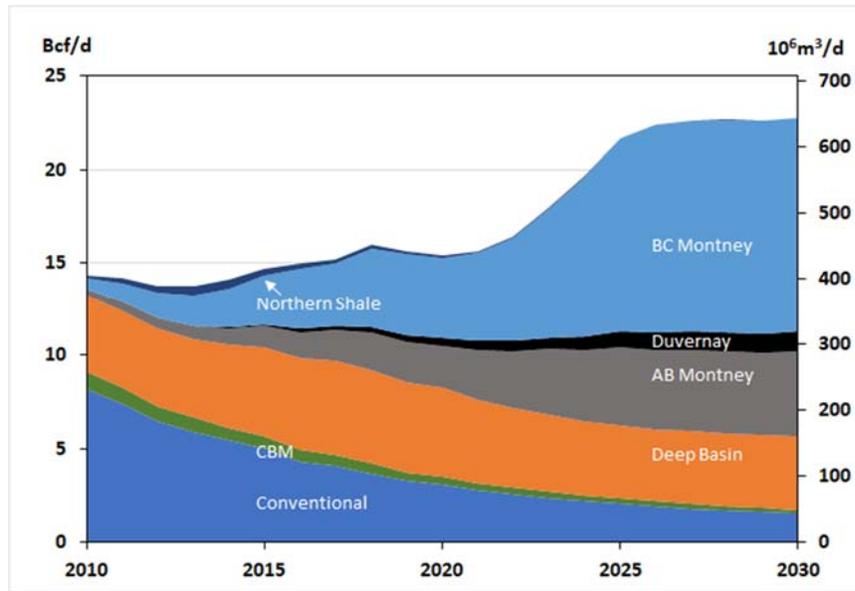


Figure 3-3: WCSB Supply Outlook

Table 3-1: WCSB Supply and NGTL System Supply

Gas Year	WCSB Supply		NGTL System Supply	
	10 ⁶ m ³ /d	Bcf/d	10 ⁶ m ³ /d	Bcf/d
2009/10	404.7	14.3	267.8	9.5
2010/11	402.0	14.2	272.3	9.6
2011/12	389.4	13.7	286.9	10.1
2012/13	388.8	13.7	285.0	10.1
2013/14	398.6	14.1	296.2	10.5
2014/15	414.8	14.6	312.1	11.0
2015/16	423.4	14.9	319.5	11.3
2016/17	430.8	15.2	320.1	11.3
2017/18	453.5	16.0	345.6	12.2
2018/19	442.4	15.6	343.8	12.1
2019/20	436.6	15.4	341.5	12.1
2020/21	443.0	15.6	348.5	12.3
2021/22	464.1	16.4	366.6	12.9
2022/23	509.0	18.0	374.6	13.2
2023/24	556.1	19.6	409.9	14.5
2024/25	614.0	21.7	469.3	16.6
2025/26	634.8	22.4	486.8	17.2
2026/27	641.4	22.6	492.5	17.4
2027/28	641.8	22.7	493.3	17.4
2028/29	640.4	22.6	492.4	17.4
2029/30	645.1	22.8	496.6	17.5

4.0 SYSTEM DESIGN

This section provides an overview of system design matters for the Project, including:

- a summary of the facilities selected to meet flow requirements
- the design basis for the facility selection
- the rationale for selecting the applied-for facilities
- an evaluation of alternatives that were examined

4.1 DESCRIPTION OF THE PROPOSED FACILITIES

As described in Section 2: Need and Necessity and Section 3: Markets and Supply, this Project is underpinned by 175 TJ/d (4,630 10³m³/d at an assumed heat value of 37.8 GJ/10³m³) of incremental FT-D1 contracts for a start date of November 1, 2023. The Project will increase NGTL System capability to meet the existing and incremental contractual obligations that result in the system's Design Flows.

The facilities consist of three NPS 48 pipeline section loops totalling approximately 40.1 km which have been designed to satisfy expected flow requirements (Design Flows), and are commercially supported by aggregate contractual commitments, including the incremental FT-D1 contracts, as described in Section 5: Transportation.

4.2 OVERALL PROJECT DESIGN

NGTL followed its established facility planning process in the design of the Project. For details on the process, see Appendix 4-1: Facility Design Methodology (FDMD).

The Project was designed to meet incremental flow requirements at the ABC Border Export Point, while also satisfying design conditions throughout the Project Design Area. The ABC Border Export Point and Project Design Area are shown in Figure 4-1. All existing facilities on the NGTL System outside the Design Area are able to meet Design Flows without the Project.

NGTL identified the Design Flows condition, when total system receipts and deliveries (total system throughput) are at their maximum level for the season, as the constraining design condition and used it to establish design flows for use in hydraulic simulations. The incremental facilities required to transport the Design Flows formed the basis for the Project components.

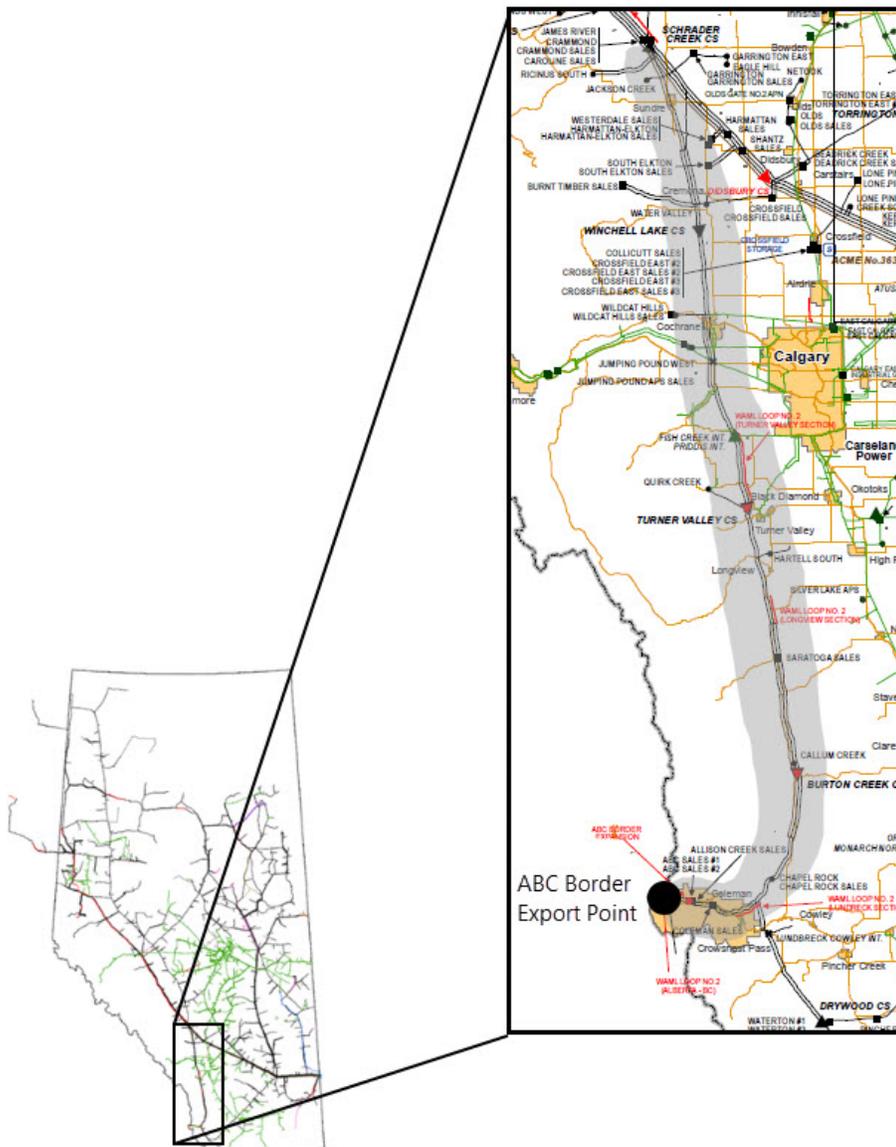


Figure 4-1: ABC Border Export Point and Project Design Area

4.2.1 Design Flows

Facility requirements are determined through analysis of hydraulic simulations. The key input for the simulations are the Design Flows, which represent flow conditions during peak days, when facility requirements are at their maximum. Since Design Flows dictate the facility requirements, it is important to discuss how they were developed for the Project.

The Design Flows used for hydraulic analysis were determined by setting the total Intra-Alberta system deliveries at their peak forecast and the export deliveries (e.g.,

ABC Border Export Point) to their corresponding firm contracts as per NGTL’s Design Criteria.

This approach ensures that the proposed facilities can transport the required flows from the most constrained location on the NGTL System to downstream markets, while not unnecessarily overbuilding the System.

4.3 DESIGN CONDITION ANALYSES

Hydraulic simulations identified capability shortfalls on the NGTL System with the Design Flows. The Project is therefore required to increase the NGTL System capacity to meet the contractual obligations that result in the system’s Design Flows.

The November 2023 Design Flows at the ABC Border Export Point increase to 3,337 TJ/d ($88.3 \times 10^6 \text{m}^3/\text{d}$), exceeding the system capability (without the Project) of 3,162 TJ/d ($83.7 \times 10^6 \text{m}^3/\text{d}$) by approximately 175 TJ/d ($4.63 \times 10^6 \text{m}^3/\text{d}$). This Design Flow increase is attributed to the increase in ABC evergreen contracts as shown in Figure 4-2. With the addition of the Project, the capability increases to 3,337 TJ/d ($88.3 \times 10^6 \text{m}^3/\text{d}$), meeting the design flow resulting from the contractual requirements throughout the gas year.

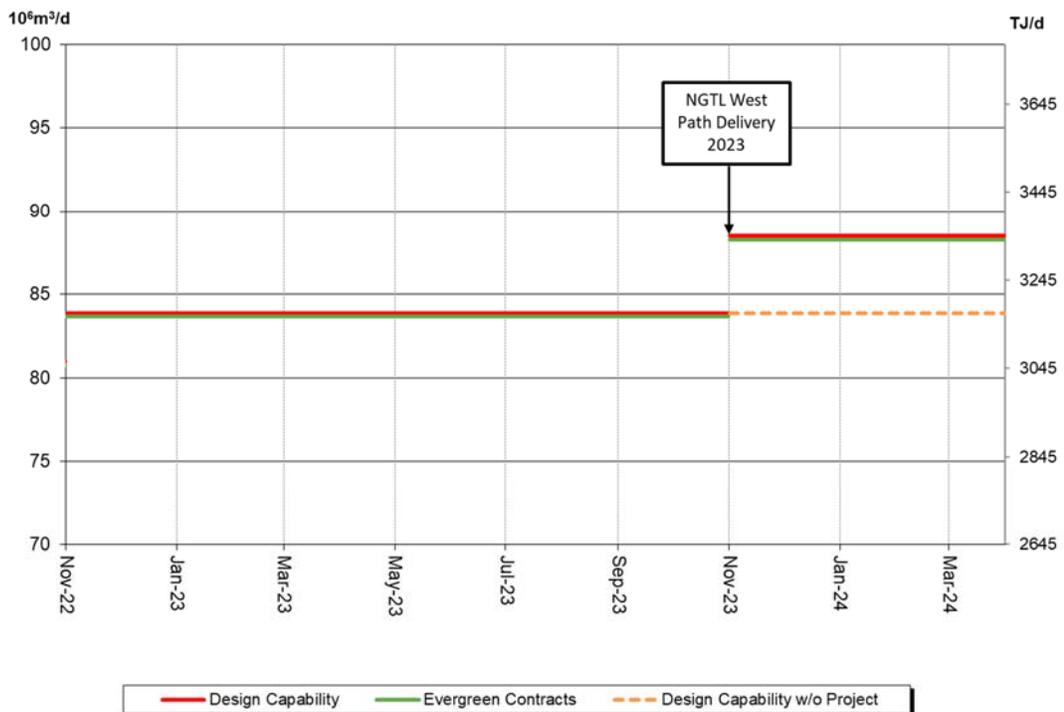


Figure 4-2: Delivery Design Flow

4.4 FACILITY ALTERNATIVES

The NGTL facility planning process includes the evaluation of facility alternatives. The most economically feasible alternative is compared with considerations such as Design Flow requirements over the long term and minimization of outage impacts as per section 5.4 and 5.5 of Appendix 4-1.

Transportation by others (TBO) arrangements or the purchase of existing assets were reviewed, and no feasible alternatives of this nature were identified. New build alternatives were therefore considered.

Pipe Size

As described in Appendix 4-1, the most efficient diameter for a pipeline loop is a diameter at least as large as the effective diameter of the existing pipeline or pipelines being looped. For the Project, an NPS 48 diameter pipe was selected for all three sections because it satisfied Design Flow requirements and was the same size as existing loops of the WAS.

Alternative to the Project

An alternative to the Project is a compression alternative, which would be required to provide the capacity to transport the Design Flow requirements.

Table 4-1 compares the facilities and costs associated with the proposed West Path Delivery 2023 Project and the compression alternative. The proposed facility set best addresses the existing system constraints on the NGTL System to satisfy the Design Flow requirements. This is reflected in Table 4-1, which compares the facility alternatives and associated costs. The proposed Project facility set results in the lower CPVCOS by approximately \$215 million.

Table 4-1: Alternative Comparison

	Pipeline Facilities	Compression Facilities	First Year Capital (\$M)	CPVCOS (\$M)
Project	40.1 km of NPS 48 pipe	N/A	356	352
Compression Alternative	N/A	1 x Greenfield 20 MW Station 2 x Greenfield 15 MW Stations	340	567

The facility alternative for each pipeline section is outlined below.

Turner Valley Section Alternative

An alternative to the Turner Valley Section is one greenfield 20 MW compressor station, which would be required to provide the capacity to transport the Design Flow requirements. This compressor station would be located between NGTL’s existing Winchell Lake and Turner Valley Compressor Stations.

Table 4-2 compares the facilities and costs associated with the Turner Valley Section and the compression alternative. The proposed facility set best addresses the existing system constraints on the NGTL System to satisfy the Design Flow requirements. This is reflected in Table 4-2, which shows the facilities and costs comparison of the alternatives. The Project pipeline and facility set was selected based on its lower CPVCOS.

Table 4-2: Alternative Comparison (Turner Valley Section)

	Pipeline Facilities	Compression Facilities	First Year Capital (\$M)	CPVCOS (\$M)
Turner Valley Section	23.7 km of NPS 48 pipe	N/A	209	204
Compression Alternative	N/A	Greenfield 20 MW Station	129	219

Longview Section Alternative

An alternative to the Longview Section is one greenfield 15 MW compressor station, which would be required to provide the capacity to transport the Design Flow requirements. This compressor station would be located between NGTL’s existing Turner Valley and Burton Creek Compressor Stations.

Table 4-3 compares the facilities and costs associated with the Longview Section and the compression alternative. The proposed facility set best addresses the existing system constraints on the NGTL System to satisfy the Design Flow requirements. This is reflected in Table 4-3 which shows the facilities and costs comparison of the alternatives. The Project pipeline and facility set was selected based on its lower CPVCOS.

Table 4-3: Alternative Comparison (Longview Section)

	Pipeline Facilities	Compression Facilities	First Year Capital (\$M)	CPVCOS (\$M)
Longview Section	9 km of NPS 48 pipe	N/A	72	72
Compression Alternative	N/A	Greenfield 15 MW Station	106	175

Lundbreck Section Alternative

An alternative to the Lundbreck Section is one greenfield 15 MW compressor station, which would be required to provide the capacity to transport the Design Flow requirements. This compressor station would be located between NGTL’s existing Burton Creek Compressor Station and ABC Border Meter Station.

Table 4-4 compares the facilities and costs associated with the Lundbreck and the compression alternative. The proposed facility set best addresses the existing system constraints on the NGTL System to satisfy the Design Flow requirements. This is reflected in Table 4-4 which shows the facilities and costs comparison of the alternatives. The Project pipeline and facility set was selected based on its lower CPVCOS.

Table 4-4: Alternative Comparison (Lundbreck Section)

	Pipeline Facilities	Compression Facilities	First Year Capital (\$M)	CPVCOS (\$M)
Lundbreck Section	7.4 km of NPS 48 pipe	N/A	75	76
Compression Alternative	N/A	Greenfield 15 MW Station	105	173

4.5 SCHEMATICS

A summary of the hydraulic analysis for the Project is represented schematically in Figure 4-3. To correlate the schematic with the NGTL System, the geographical locations of the pipeline corridors depicted in the schematic were highlighted previously in Figure 4-1.

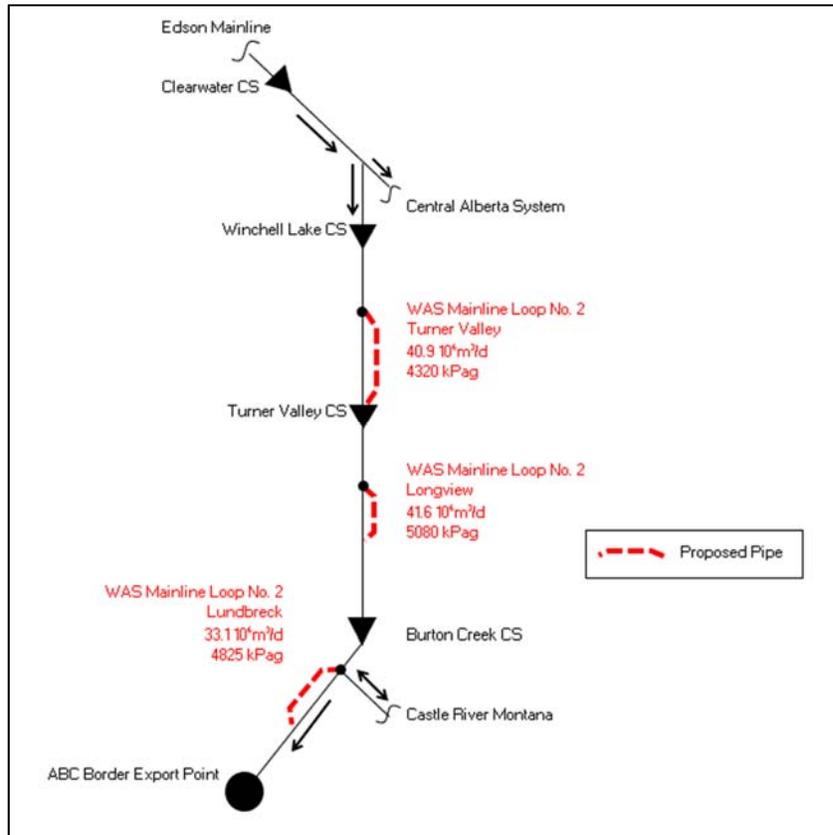


Figure 4-3: Schematic of NGTL System Flow-Within Design Flow Requirements

5.0 TRANSPORTATION

This section describes the transportation access processes, contractual transportation commitments that support the Project, and the Project notifications that were issued to industry and commercial third parties.

As described in Section 2: Need and Necessity, the NGTL System has been progressively growing in recent years to allow economic WCSB gas to access existing and new markets.

NGTL provides FT-D Service and Firm Transportation – Receipt (FT-R) Service, which are contracted separately and independent of one another within the NGTL System. FT-D Service or Delivery Service can be described as firm service moving gas off the NGTL System. FT-R Service or Receipt Service can be described as firm service moving gas on the NGTL System.

With respect to this application, the Project is required based on a market forecast supported by incremental FT-D1 contracts at the ABC Border Export Point. Group 1 Delivery Points are major interconnection points with major downstream pipeline systems transporting gas outside the WCSB.

As part of the NGTL System Design Annual Plan cycle, facilities were identified that would add incremental capacity to the NGTL System with a commercially required in-service date of November 2023.

The Project components will provide incremental capacity allowing WCSB gas sourced from the NGTL System to meet incremental export demand at the ABC Border Export Point. This is driven by requirements for more supply to be delivered to downstream markets.

The Project is supported by the aggregate transportation requirements of both existing and incremental demand at the ABC Border Export Point, with the incremental FT-D1 contracts executed with an average term in excess of 30 years.

5.1 TRANSPORTATION ACCESS

5.1.1 Group 1 Delivery Point (FT-D1) Transportation Access

When facility additions are required to support Group 1 (FT-D1) Service on the NGTL System, NGTL allocates and awards capacity through a binding Expansion Capacity Open Season process as outlined in Appendix A of the NGTL Tariff – Appendix A Bid Form. Consistent with Tariff specifications, the awarding of capacity is based on term length. Further details on this process are outlined in Section 5.2.1.

5.2 FIRM TRANSPORTATION COMMITMENTS

The Project is required to enable NGTL to serve existing firm transportation commitments and incremental firm transportation service contracts resulting from the processes described in Section 5.1 Transportation Access.

Figure 2-2 in Section 2: Need and Necessity, illustrates the geographical areas on the NGTL System that are relevant to the Project. The demand for incremental delivery service occurs at the West Gate (WGAT) on the NGTL System.

5.2.1 Firm Transportation Group 1 Alberta-BC Service

NGTL has executed contracts with four customers for an incremental 175 TJ/d of FT-D1 service commencing November 1, 2023, as commercial underpinning for the Project.

5.2.2 Firm Transportation Group 1 Delivery Point (FT-D1) Service

Following the prescribed allocation procedure for expansion capacity at FT-D1 locations as outlined in Appendix A of the NGTL Tariff, on July 31, 2019, NGTL posted a notice of Expansion Capacity Open Season for FT-D1 Service at the ABC Border Export Point (Open Season). The Open Season was held from July 31, 2019 to August 26, 2019. This Open Season was over-subscribed by customers, thus demonstrating the need and strong commercial support for the Project. The export expansion capacity offered in the Open Season and underpinned by the Project totals 175,000 GJ/d with a commercially required in-service date of November 1, 2023. For a depiction of the ABC Border Export Point Contracts Profile see Figure 5-1.

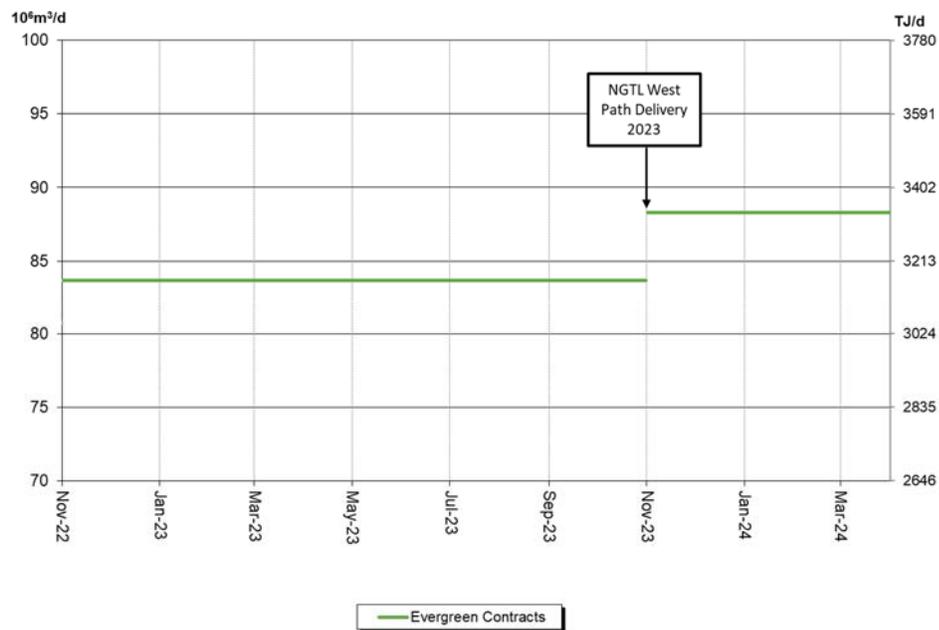


Figure 5-1: ABC Border Export Point Contracts

While the minimum term for expansion capacity is 8 years, the Open Season posting stated that company approvals to proceed with the expansion facilities would include consideration of contract term length of 15 years or more.

Individual open season bids are considered commercially sensitive and confidential to both NGTL and NGTL customers, and therefore, NGTL has aggregated the information on awarded bids. A total of four bids were allocated and awarded capacity through the Open Season with a weighted average term of 30.5 years.

As a part of the Open Season, NGTL also solicited early confirmation of non-renewal and turnback of existing contracts requests to assess the extent to which existing contract holders may be interested in relinquishing contracts that could reduce the need for expansion facilities. No existing customers expressed an interest in relinquishing their contracts, confirming that the Project is required to meet existing and new FT-D contracts.

In addition, NGTL held a Capacity Optimization Open Season from May 8, 2020 to May 25, 2020 to assess whether any parties with pending contracts may be interested in advancement or deferral of contract commencement dates, as well soliciting turnback requests or early confirmations of non-renewal of existing contracts. No interest was expressed for any of these options for FT-D contracts at the ABC Border Export Point, thus reaffirming that the Project is required in the proposed time frame.

5.3 THIRD-PARTY NOTIFICATION

5.3.1 Tolls, Tariff, Facilities and Procedures (TTFP) Committee

The TTFP Committee includes over 130 members and facilitates the effective, efficient and timely exchange of information among involved parties, and proactively addresses issues related to the tolls, Tariff, facilities and operating procedures of the NGTL System. As an integral part of the process, NGTL provides notice of capacity capital projects to the TTFP on an on-going basis.

On October 16, 2019, NGTL presented the NGTL System design process and design criteria to the TTFP Committee (see Appendix 5-2).

On November 12, 2019, NGTL presented the 2019 Annual Plan, which included the preliminary design of the Project, to the TTFP Committee (see Appendix 5-3). The presentation included discussion of capacity shortfall, capital cost estimates and the date required for service.

The 2019 Annual Plan was posted on the NGTL Customer Express website on December 11, 2019, and all TTFP Committee members were notified of the posting at that time (see Appendix 5-4).

On May 29, 2020, NGTL filed the Project Notification for the Project with the CER.¹

On September 15, 2020, NGTL provided an update regarding the Project to the TTFP Committee (see Appendix 5-5).

5.3.2 Other Parties

In addition to the TTFP Committee communications, NGTL has notified other commercial third parties about the Project using a variety of communication tools, including a news release dated November 1, 2019 as well as postings to the TC Energy and NGTL Customer Express websites.

5.3.3 Industry Communication

NGTL posted notice of the Open Season on the NGTL Customer Express website on July 31, 2019 (see Appendix 5-6). This approach ensured all prospective customers had access to the same information to allow them to make decisions regarding their incremental transportation requirements on the NGTL System. NGTL provided notice of the results of the Open Season in the form of an NrG Expressway notification (see Appendix 5-7), as well as a TC Energy media advisory on November 1, 2019.

NGTL also provided industry notification through a posting of the NGTL 2019 Annual Plan (see Appendix 5-4) on the NGTL Customer Express website in December 2019.

5.4 CREDIT AND FINANCIAL ASSURANCES

This section describes the creditworthiness of customers and financial assurance requirements.

5.4.1 Creditworthiness Determination

NGTL assesses the creditworthiness of customers to determine if financial assurances are required to support their contractual obligations.

To determine the creditworthiness of customers on this Project, NGTL followed its creditworthiness assessment process. This process is based on a review of information including, but not limited to:

- financial statements, both audited year-end and quarterly
- geographic and operational diversity of company assets and cash flows
- corporate family structure
- credit rating agency opinions

¹ CER Filing ID: C06556-1.

In addition, NGTL assesses the adequacy of financial assurances, if required, which may change over time as a result of changes in the creditworthiness of a customer and/or a change in its financial assurance provider.

5.4.2 Financial Assurances

NGTL's financial assurance requirements are prescribed in the NGTL Tariff. NGTL may require a customer to provide financial assurances of up to 70 days' of all rates, tolls, charges and other amounts payable to NGTL for receipt service. For delivery service, NGTL may require a customer to provide financial assurances up to 70 days' worth of all rates, tolls, and charges, plus an additional one month for each remaining year of term up to a maximum of 12 months' worth of all rates, tolls, charges and other amounts payable to NGTL.

6.0 TOLLS AND FINANCING

This section addresses tolling, and financial matters associated with the Project, including the proposed tolling treatment of the Project as part of the NGTL System. Estimated Cost of Service (COS) and impacts of the Project on the NGTL System tolls, Abandonment Cost Estimates (ACE) for the Project, financing capacity and the financial assurances plan are also provided.

6.1 TOLL METHODOLOGY

As part of the NGTL Rate Design and Services Settlement approved by the CER in the RH-001-2019 Decision and Order TG-001-2020, NGTL and its stakeholders agreed that NGTL will apply rolled-in tolling and the rate design as applicable to the existing System as a default methodology for expansions and extensions conditional on an assessment of the degree of integration, nature of service and satisfactory determination that there is no excessive cross-subsidization having regard to project costs and associated contract revenues. Having regard to these factors, including the fact that the Project will be fully integrated with the existing NGTL System, that the Project will be used to serve existing and incremental standard FT-D contracts, and the long-term contractual underpinning for the Project, NGTL concluded that the default tolling methodology should apply to the Project.

The Project is an expansion of the NGTL System that is required to meet the aggregate transportation requirements, including incremental demand for export delivery service. The Project facilities will be fully integrated with the rest of the NGTL System and used to provide transportation services pursuant to NGTL's Tariff. As a result, NGTL proposes to roll in the cost of the Project's facilities to the rate base for the rest of the NGTL System and to apply the existing NGTL System toll methodology, which may change from time to time, to the Project.

The NGTL System tolling methodology is a cost-based toll methodology that reflects the integrated nature of the NGTL System where all system facilities are collectively used to provide service. As such, the capital costs associated with the Project will be added to the rate base of the NGTL System, and that rate base and the prevailing toll design will be used as the basis for setting the revenue requirement and tolls.

The NGTL System existing toll methodology was considered by the Board in the RH-001-2019 proceeding¹ and approved through Orders TG-001-2020 and TG-002-2020.² This tolling methodology begins with the calculation of the annual revenue requirement for the NGTL System. From this, revenue for non-transportation and full

¹ NGTL application seeking amendments to the rate design of the NGTL System on March 14, 2019 (NEB Filing ID: A98318).

² CER Filing ID: C05448.

path transportation services are deducted, producing a net transportation revenue requirement. This net transportation revenue requirement is split into two functions: transmission and metering. As part of the toll design, the net transmission revenue requirement is allocated (50%/50%) between receipt and delivery services.

This allocation of transmission costs between Receipt and Delivery customers underscores the importance of both services and highlights the fundamental framework of the NGTL System – that receipt customers put gas onto the NGTL System as a whole (i.e., gas received on the system is considered to be at the NIT hub) and delivery customers take gas off the System as a whole (i.e., gas delivered off the system is considered to be from the NIT hub). For more information on the NIT hub see Section 2: Need and Necessity.

6.2 TARIFF

There are no Tariff amendments associated with the Project. The Project, in conjunction with the rest of the NGTL System, will be used to provide transportation services in accordance with the Tariff in effect.

6.3 ESTIMATED IMPACT ON COST OF SERVICE AND TOLLS

NGTL undertook an analysis of the costs and revenues associated with the Project to determine the incremental cost to provide service as contracted, as well as the estimated impact to tolls on the NGTL System.

The estimated Project COS and toll impacts are based on the capital costs, contract demand, and economic assumptions summarized in Section 6.3.1 through 6.3.3. A summary of this information was provided to the TTFP Committee on September 15, 2020 (see Appendix 5-5). This information was prepared and shared in accordance with recent CER guidance.³

6.3.1 Estimated Capital Cost for the Project

For the estimated capital cost for the Project, see Table 6-1. The estimated costs are Class 5 which typically has a variability range of -20/+30%.

Table 6-1: Estimated Capital Cost (2023\$)

Component	Capital Cost (\$ millions)
Pipeline	\$355.5
Total	\$355.5
Note: Estimated AFUDC is included in these costs.	

³ GH-002-2019 (CER Filing ID: C08154-1-pdf page 41 of 348).

6.3.2 Economic Parameters

The overall impact of the Project on the existing COS is evaluated using the economic parameters shown in Table 6-2. The cost of service parameters are consistent with NGTL’s 2020 Final Rates.

Table 6-2: Cost of Service Parameters

Parameter	Value (%)
Return on Equity	10.1
Deemed Common Equity	40.0
Return on Debt	4.9
Income Tax Rate	25.0
OM&A as a Percentage of Capital	1.0
Municipal Tax as a Percentage of Capital	0.5
Emissions Compliance	Based on forecast emissions and federal carbon pricing
Depreciation Rates	
Pipeline	3.3
Escalation Rate for OM&A and Municipal Tax	2.0

6.3.3 Cost of Service and Toll Impacts

The results of the annual COS analysis related to the capital costs in Table 6-1 are presented for the years 2023 through 2027 in Table 6-3, which summarizes the capital cost, incremental rate base, and COS associated with the Project capital expenditures. The parameters used to generate this estimated cost of service are found in Table 6-2.

The expected increase in NGTL’s annual revenue requirement due to the Project expenditures is approximately \$43 million in 2024, the first full year the Project is expected to be in-service.

Table 6-3: Cost of Service (\$000s)

NGTL 2023 West Path Delivery Project	2023	2024	2025	2026	2027
Month in Service	November				
Project Capital Cost (2023\$)	355,513				
Average Incremental Rate Base	58,331	348,053	336,433	324,814	313,195
OM&A	592.5	3,626.2	3,698.8	3,772.7	3,848.2
Emissions Compliance	163.8	1,006.1	1,029.3	1,052.4	1,075.2
Depreciation	1,937.5	11,625.3	11,625.3	11,625.3	11,625.3

Table 6-3: Cost of Service (\$000s) (cont'd)

NGTL 2023 West Path Delivery Project	2023	2024	2025	2026	2027
Municipal Taxes	296.3	1,813.1	1,849.4	1,886.4	1,924.1
Return	4,068.0	24,273.2	23,462.9	22,652.5	21,842.2
Income Tax	(12,789.2)	219.5	730.4	1,188.0	1,596.4
Total COS	(5,731.1)	42,563.4	42,396.1	42,177.3	41,911.3

The incremental FT-D1 contracts related to the Project are a total of 175 TJ/d starting November 2023. Along with the incremental COS outlined in Table 6-3 and assumed indirect receipt contract demand, toll impact estimates were determined. NGTL has provided a range of illustrative toll impacts assuming both the full supply response and no supply response.

NGTL recognizes the potential range in supply response resulting from the proposed Project. Market dynamics often result in temporary supply/demand imbalances, which are reflected through NGTL’s FT-R and FT-D contracting levels over time. The range of potential outcomes reflect the reality that there is no direct link between a specific receipt-focused project and a specific delivery-focused project due to the commercial framework of the NGTL system.

See Table 6-4 and Table 6-5 below which show the range of indirect supply response and the corresponding range of illustrative toll impacts. Table 6-4 provides the toll impacts with the indirect supply response at 100% of the incremental delivery contract demand while Table 6-5 provides the toll impacts with zero supply response. The illustrative toll impacts provided do not differ significantly from each other as the full path toll impacts is less than 0.5 ¢/mcf/d in both cases.

The toll impacts in both tables are calculated by comparing tolls inclusive and exclusive of the costs and contract quantities of the Project facilities. In Table 6-4, the toll impacts reflect an assumption that delivery quantities off the NGTL System will be brought on the System and attract a receipt charge. In order to determine the indirect supply response NGTL used historical FT-R contract utilization levels to calculate the FT-R contract demand. The results are a small increase to both the FT-R and FT-D rates of approximately 0.1cent/mcf/d each, for a full path impact of 0.2cents/mcf/d. The incremental revenue is determined by multiplying the incremental billing determinants by the illustrative rate for the particular year. If a 100% indirect supply response was to occur the incremental revenue would be approximately \$30 million annually. This incremental revenue could potentially be offset by increased cost if additional facilities or costs are required to enable the supply response.

The toll impacts in Table 6-5 reflect no supply response or no additional supply billing determinants responding to the incremental market. The results are a small

increase to the FT-D rates of approximately 0.1cent/mcf/d each and a 0.3 cent/mcf/d increase to the average FT-R rate, for a full path impact of 0.4 cents/mcf/d.

Table 6-4: Project COS and Toll Impacts with 100% Supply Response

	2023	2024	2025	2026	2027
Incremental COS (\$Millions)	(5.7)	42.6	42.4	42.2	41.9
Incremental Delivery Contract Demand (TJ/d) ¹	29	175	175	175	175
Indirect Receipt CDQ (Mmcf/d)	34	199	194	194	194
Illustrative Toll Impacts (¢/Mcf/d)					
Average Firm Receipt	(0.1)	0.0	0.1	0.1	0.1
Average Firm Delivery ²	(0.1)	0.1	0.1	0.1	0.1
Firm Delivery - FTD-1 EGAT	(0.1)	0.1	0.1	0.1	0.1
Firm Delivery - FTD-1 WGAT	(0.1)	0.1	0.1	0.1	0.1
Firm Delivery - FTD-2	(0.1)	0.1	0.1	0.1	0.1
Total Toll Impact	(0.2)	0.1	0.2	0.2	0.1
Illustrative Toll Impacts (\$/10³m³/d)					
Average Firm Receipt	(0.03)	0.01	0.02	0.02	0.02
Average Firm Delivery ²	(0.03)	0.03	0.03	0.04	0.03
Firm Delivery - FTD-1 EGAT	(0.02)	0.03	0.04	0.03	0.03
Firm Delivery - FTD-1 WGAT	(0.02)	0.04	0.04	0.04	0.04
Firm Delivery - FTD-2	(0.03)	0.05	0.05	0.05	0.05
Total Toll Impact	(0.06)	0.05	0.05	0.05	0.05
Illustrative Revenue \$Millions					
Incremental Delivery Revenue	2.1	12.6	11.7	11.3	11.3
Indirect Receipt Revenue	3.3	19.4	18.2	17.7	17.7
Note:					
1. Contract Demand amounts are annual averages.					
2. Average Firm Delivery toll impact represents the average of all three FT-D groups.					

Table 6-5: Project COS and Toll Impacts with no Supply Response

	2023	2024	2025	2026	2027
Incremental COS (\$Millions)	(5.7)	42.6	42.4	42.2	41.9
Incremental Delivery Contract Demand (TJ/d) ¹	29	175	175	175	175
Indirect Receipt CDQ (Mmcf/d)	-				
Illustrative Toll Impacts (¢/Mcf/d)					
Average Firm Receipt	(0.0)	0.3	0.3	0.3	0.3
Average Firm Delivery ²	(0.1)	0.1	0.1	0.1	0.1
Firm Delivery - FTD-1 EGAT	(0.1)	0.1	0.1	0.1	0.1
Firm Delivery - FTD-1 WGAT	(0.1)	0.1	0.1	0.1	0.1
Firm Delivery - FTD-2	(0.1)	0.1	0.1	0.1	0.1
Total Toll Impact	(0.1)	0.4	0.4	0.4	0.4

Table 6-5: Project COS and Toll Impacts with no Supply Response (cont'd)

	2023	2024	2025	2026	2027
Illustrative Toll Impacts (\$/10³m³/d)					
Average Firm Receipt	(0.02)	0.12	0.12	0.11	0.11
Average Firm Delivery ²	(0.03)	0.03	0.03	0.03	0.03
Firm Delivery - FTD-1 EGAT	(0.02)	0.03	0.03	0.03	0.03
Firm Delivery - FTD-1 WGAT	(0.02)	0.04	0.04	0.04	0.04
Firm Delivery - FTD-2	(0.03)	0.05	0.05	0.05	0.05
Total Toll Impact	(0.05)	0.15	0.15	0.15	0.14
Illustrative Revenue \$Millions					
Incremental Delivery Revenue	2.1	12.6	11.7	11.3	11.3
Indirect Receipt Revenue	-	-	-	-	-
Note:					
1. Contract Demand amounts are annual averages.					
2. Average Firm Delivery toll impact represents the average of all three FT-D groups.					

NGTL also considered the impact of the Project on fuel and determined that the change in the NGTL System fuel ratio would be negligible.

6.4 ABANDONMENT COST ESTIMATE

As required by the Filing Manual,⁴ NGTL provides an ACE for the Project as calculated in accordance with the methodology prescribed in the Board's MH-001-2012 Decision. The estimated ACE for the Project is \$4.1 million,⁵ which represents less than 1.0% of the ACE for the entire NGTL System.

There will also be a commensurate impact on the Annual Contribution Amount (ACA) and abandonment surcharge calculations on the NGTL System. These impacts will be reflected in periodic updates of ACE filed with the Board, as required by the MH-001-2012 Decision, and in annual ACA calculation filings. The ACA and abandonment surcharge for the NGTL System reflect a collection period of 30 years, which was implemented in compliance with the MH-001-2013 decision.⁶

6.5 FINANCING CAPACITY

NGTL is funded through its parent companies TC Energy and TCPL through a combination of predictable cash flows generated from operations, new senior debt, as well as subordinated capital in the form of additional preferred shares and hybrid securities, the issuance of common shares and portfolio management.

⁴ CER Filing Manual, Guide A.3.4 Financing and Financial Resources.

⁵ The Board approved all Group 1 companies' revised ACEs, as filed in September 2016, by Letter Decision on April 18, 2018 (NEB Filing ID: A91357). NGTL's total ACE expressed in 2016 dollars was \$2,535.3 M.

⁶ NEB Filing ID: A60676-1.

TC Energy's liquidity, access to capital markets and strong financial position provide significant financial flexibility. As of December 31, 2019, TC Energy and other subsidiaries of TC Energy had approximately \$1,343 million of cash on hand, \$10.1 billion of undrawn committed credit facilities and three well supported commercial paper programs.

Over the past five years ending December 31, 2019, TC Energy has generated \$28 billion in cash from operations and raised \$39 billion in the debt and equity capital markets to support a \$33 billion capital program, \$6 billion in net acquisitions, repay \$23 billion in debt maturities and pay \$9 billion in dividends.

As of December 31, 2019, TC Energy's consolidated capital structure consisted of 49% senior debt (net of cash), 11% junior subordinated debt, 5% preferred shares and 35% common equity.

TCPL, as the primary operating entity and debt issuer under TC Energy has been assigned "A-" level investment grade credit ratings by Fitch Ratings (Fitch) and DBRS Limited (DBRS), with a negative outlook, and a stable outlook, respectively. Moody's Investor Service, Inc. (Moody's) has assigned a "Baa1" rating with negative outlook and Standard and Poor's (S&P) Global Ratings has assigned a "BBB+" with stable outlook.

Refer to the following appendices for copies of the recent rating agency reports issued by the four credit rating agencies:

- Appendix 6-1 – Moody's Investor Service Credit Opinion report on TransCanada PipeLines Limited dated June 18, 2020.
- Appendix 6-2 – S&P Global Ratings report on TC Energy and TransCanada PipeLines Limited dated March 31, 2020.
- Appendix 6-3 – Fitch Ratings report on TransCanada PipeLines Limited and TC Energy dated March 31, 2020.
- Appendix 6-4 – DBRS report on TC Energy and TransCanada PipeLines Limited dated June 11, 2020.

For a copy of TC Energy's 2019 Annual Report, see Appendix 6-5.

TC Energy's strong credit metrics and corporate reputation allow for continuous access to capital markets providing ample liquidity when required.

6.6 FINANCIAL RESOURCES PLAN

NGTL will have the financial resources to ensure that it can financially sustain management of all potential risks including those liabilities that may arise from an accident or malfunction during the construction or operation of the Project.

The *Pipeline Financial Requirements Regulations* of the CER Act specifies that federally regulated companies that operate natural gas pipelines of certain sizes and maximum operating pressures are subject to certain levels of absolute financial liability and must demonstrate that they have sufficient financial resources to meet these requirements. NGTL falls within the definition of a Gas Class 1 Absolute Liability Class under these Regulations. NGTL is therefore required to maintain access to \$200 million in financial resources effective July 11, 2019.⁷ NGTL filed its Financial Resources Plan with the NEB on May 14, 2019⁸ and approval was received on August 26, 2019.⁹ The Financial Resources Plan will apply to the NGTL System as a whole, including the Project.

For a description of the safety features engineered into the design of the Project's facilities, refer to Sections 7: Pipeline and 8: Pipeline Construction. For a description of how potential risks associated with the operation of the Project's facilities will be managed, see Section 9: Operations.

⁷ National Energy Board Draft Pipeline Financial Requirements Guidelines (<http://www.neb-one.gc.ca/bts/ctrg/gnnb/pplnfnncrlqrmnts/drftpplnfnncrlqrmntgdln-eng.pdf>).

⁸ NEB Filing ID: A99408-1.

⁹ NEB Filing ID: C01213-1.

7.0 PIPELINE

This section provides Project information on pipeline routing, design, engineering and integrity management. This information is based on preliminary design and is supported by initial results from field investigation and engagement programs. Refinements may be made as additional data is collected and assessed, and as engineering progresses through detailed design. Section 8: Pipeline Construction provides information on pipeline construction.

7.1 ROUTING OVERVIEW

The Project includes the addition of new pipeline sections that loop the existing WAS Mainline and WAS Mainline Loop. In some cases, locating the proposed route adjacent to these existing pipelines was not always feasible and as a result, will require new non-parallel ROW at some locations.

The design method described in Section 4: System Design (4.4 Facility Alternatives) and based on locations of the existing mainline facilities, such as MLVs, was used to determine the sections of the WAS Mainline Loop No. 2, and the location of connections of each loop section. Adding loop sections, therefore, generally limits the area for routing consideration to the areas on either side of the existing pipelines, as well as constraining the locations where connections to the existing NGTL System can be made. A summary of the routing considerations for each section is included in Section 7.1.3.

For a general overview map and detailed pipeline route maps, see Section 14: Foldout Maps (Section 14-1 Overview Map and Section 14-2 Detailed Route Maps).

7.1.1 Route Selection Criteria

NGTL's route selection process considers and balances several criteria when evaluating route options, including the following, where practical or feasible:

- minimizing length to reduce overall environmental and socio-economic footprint
- ensuring pipeline sections and facilities are economical to construct and operate
- paralleling existing linear disturbances to:
 - minimize the fragmentation of land parcels by introduction of infrastructure to areas in which it currently does not exist
 - maximize the amount of TWS on existing ROWs
 - minimize the amount of new (non-parallel and non-overlapping) ROW required
 - minimize potential effects on environmental resources (e.g., native plant communities and wildlife habitat) and agricultural operations

- ensuring public safety
- minimizing the number, and ensuring the construction feasibility, of watercourse, road, rail and utility crossings
- considering and avoiding sensitive environmental features (e.g., wetlands, riparian areas, and watercourse crossings) and sites with known occurrences of provincially or federally listed wildlife and plant species (habitat features for species of management concern, provincially listed species at risk, species and habitats for species listed under the Committee on the Status of Endangered Wildlife in Canada [COSEWIC] or SARA)
- avoiding terrain subject to geotechnical issues such as areas of unstable slopes, problem soils, or known seismic activity
- avoiding lands of designated status, such as parks, protected areas, cemeteries and historic, archaeological or heritage sites
- avoiding concentrated areas of rural residences and urban developments
- considering input received from potentially affected landowners, stakeholders and Indigenous groups through various engagement activities

7.1.2 Pipeline Route Selection

A description of the proposed routing for each section is included in Section 7.1.3. At this stage in Project planning, approximately 34.3 km (86%) of the proposed pipeline route parallels existing NGTL ROW or other existing linear disturbances such as pipelines, roads and electrical power lines. As the Project is currently in the development phase, revisions and refinements to the routes are expected as additional data are collected and assessed.

7.1.3 Project Component Tie-Ins and Routing

Turner Valley Section

The Turner Valley Section is an approximately 23.7 km, 1,219 mm (NPS 48) outside diameter (OD) pipeline loop between NGTL's existing Priddis Sales Meter Station and Turner Valley Compressor Station. The proposed route for the Turner Valley Section will parallel the existing NPS 36 WAS Mainline Airdrie Section and NPS 42 WAS Mainline Loop Turner Valley Section to the greatest extent possible, which will maximize the amount of TWS on the existing ROW, except for the following required deviations:

- Avoidance of existing infrastructure and third-party dispositions
- Allowance for spatial requirements and alignment needed for the proposed crossing of Threepoint Creek
- Response to landowner concerns and feedback
- Ensure constructability and avoid certain environmental features

The Turner Valley Section will tie into:

- the existing NPS 36 WAS Mainline and NPS 42 WAS Mainline Loop through a series of crossovers in NE 20-022-03 W5M
- the existing Turner Valley Compressor Station suction and discharge piping through a series of crossovers in SE 15-020-03 W5M

For the approximate lengths of both parallel and non-parallel ROW, see Table 7-1.

Longview Section

The Longview Section is an approximately 9 km, 1,219 mm (NPS 48) OD pipeline loop section between Valve Site WAS70 and Valve Site WAS67, which ties into the NPS 48 WAS Mainline Loop Saratoga Section. There is a launcher at Valve Site WAS70 and a receiver barrel at Valve Assembly WAS60, at the end of the NPS 48 WAS Mainline Loop Saratoga Section. The proposed route for the Longview Section will parallel the existing NPS 36 WAS Mainline Airdrie Section and NPS 42 WAS Mainline Loop Longview section to the greatest extent possible, which will maximize the amount of TWS on the existing ROW, except for the following required deviations:

- avoidance of existing infrastructure and third-party dispositions
- allowance for spatial requirements and alignment needed for the proposed crossing of Highway 22 in NE 05-017-02 W5M to NW 04-017-02 W5M
- response to landowner concerns and feedback
- ensure constructability and avoid certain environmental features

The Longview Section will tie into:

- the existing WAS Mainline Airdrie Section and WAS Mainline Loop through a series of crossovers in NE 19-017-02 W5M
- the existing WAS Mainline Loop Saratoga Section in NW 28-016-02 W5M
- the existing WAS Mainline Loop Saratoga Section in NE 22-014-02 W5M

For the approximate lengths of both parallel and non-parallel ROW, see Table 7-1.

Lundbreck Section

The Lundbreck Section is an approximately 7.4 km, 1,219 mm (NPS 48) OD pipeline loop section between Valve Site CM10 and the Bellevue Tap tie-in. The proposed route for the Lundbreck Section will parallel the existing NPS 36 WAS Mainline Brooks Section and NPS 42 WAS Mainline Loop Lundbreck Section to the greatest extent possible, which will maximize the amount of TWS on the existing ROW, except for the following required deviations:

- Avoidance of existing infrastructure and third-party dispositions
- Response to landowner concerns and feedback
- Ensure constructability and avoid certain environmental features

The Lundbreck Section will tie into:

- the existing NPS 36 WAS Mainline and NPS 42 WAS Mainline Loop through a series of crossovers located in NE 11-008-03 W5M
- the existing NPS 36 WAS Mainline and NPS 42 WAS Mainline Loop through a series of crossovers located in NW 32-007-03 W5M

For the approximate lengths of both parallel and non-parallel ROW, see Table 7-1.

Table 7-1: Parallel ROW and Non-Parallel ROW

	Approximate Total Length (km)	Approximate ROW Contiguous with Existing Disturbance* (km)			Approximate ROW Non-Contiguous with Existing Disturbance* (km)		
		Crown Land	Private Land	% of Total Length	Crown Land	Private Land	% of Total Length
Turner Valley Section	23.7	0.1	21.2	90%	0	2.4	10%
Longview Section	9.0	0.9	4.7	62%	0	3.4	38%
Lundbreck Section	7.4	4.4	3.0	100%	0	0	0
Total	40.1	5.4	28.9	86%	0	5.8	14%
Note *: Existing NGTL pipeline ROWs, third-party pipeline ROWs, powerline easements and/or road allowances							

7.2 ENGINEERING DESIGN STANDARDS

The Project will be designed, constructed and operated in accordance with CSA Z662-19, the OPR and the TC Energy specifications listed in Section 7.2.2.

7.2.1 Industry Standards

For current industry standards applicable to the Project, see Table 7-2. The final list of applicable specifications and standards will evolve as Project planning progresses through detailed design and as individual specifications and procedures are added, updated or replaced to incorporate legislative and regulatory changes, and technological advances.

Table 7-2: Industry Standards for Pipeline and Facilities

Standard ^{1,2}	Title
Canadian Gas Association (CGA) OCC-1-2013 (June 2013)	Recommended Practice, Control of External Corrosion on Buried or Submerged Metallic Piping Systems
CSA Z662-19 (June 2019)	Oil and Gas Pipeline Systems
CSA Z245.1-18 (10 th edition)	Steel Pipe
CSA Z245.11-17 (8 th edition)	Steel Fittings
CSA Z245.12-17 (8 th edition)	Steel Flanges
CSA Z245.15-17 (9 th edition)	Steel Valves
CSA Z245.20-18 (8 th edition)/Z245.21-18 (7 th edition)	External Fusion Bond Epoxy Coating for Steel Pipe/ External Polyethylene Coating for Pipe
CSA S16-14 (8 th edition)	Steel Structures
CSA G40.20-13/G40.21-13 (R2018)	Structural Quality Steel
CSA C22.1-18 (24 th edition)	Canadian Electrical Code Part I
Note: 1. The standards in this table are current to October 2020. 2. The CSA standards in this table often incorporate other CSA standards and publications from other organizations, e.g., American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM), American Petroleum Institute (API), International Organization for Standardization (IOS), Canadian General Standards Board (CGSB), National Association of Corrosion Engineers (NACE), Steel Structures Painting Council (SSPC), and Manufacturers Standardization Society (MSS).	

7.2.2 TC Energy Specifications and Standards

The Project will be designed, constructed and operated in accordance with the TC Energy specifications and standards listed in Table 7-3. All TC Energy specifications comply with the OPR and industry codes and standards.

The specifications listed are subject to change as Project planning progresses through detailed design, and as individual specifications are added, updated or replaced to incorporate legislative and regulatory changes, and technological advances.

TC Energy has established internal processes that monitor external and internal standards, codes, specifications and procedures to ensure its facilities are constructed and operated in compliance with industry standards. Where there is no existing Canadian standard that applies to the product, equipment or facility, TC Energy bases the internal specifications on recognized industry standards, such as API, ASTM or ASME. If discrepancies exist between TC Energy and industry standards, the more stringent requirements will be followed.

Table 7-3: Preliminary List of Company Specifications and Standards*

Name	EDMS No.
TES-FITG-CIF Contoured Insert Fittings Specification (CDN-US-MEX)	4424021
TES-MA-SAWPI-GL Double Submerged Arc Welded Pipe Specification (CAN-US-MEX)	3776714
TES-MA-EWPI-GL Electric-Welded Pipe Specification (CAN-US-MEX)	3670788
TEN-MATL Materials Standard (CAN-US-MEX)	1001755803
TES-ME-STRTN-GL Design and Fabrication of Butt-Welded Transition Joints Specification (CAN-US-MEX)	6256
TES-WELD-PL Welding of Pipelines and Tie-ins Specification (CAN)	3670960
TES-MA-FITG-GL Carbon Steel Butt-Welding Fittings Specification (CAN-US-MEX)	3671270
TES-NDT-RT Radiographic Examination of Welds Specification (CDN)	3671368
TES-CO-EPU-GL Field-Applied External Liquid Coating Systems for Steel Pipe Specification (CAN-US-MEX)	3671710
TES-MA-FLGEC-GL Carbon Steel Butt-Welding Flanges Specification (CAN)	3671966
TES-CO-CAD-GL Thermite Weld Coating on Steel Pipelines Specification (CAN-US-MEX)	3672126
TES-CT-BLAST-GL Pipeline and Construction Blasting Specification (CAN-US-MEX)	3672450
TES-COAT-EP External Polyethylene Coating for Steel Pipe (CDN-US-MEX)	3678529
TES-CO-PAINT-GL Paint Systems For Above Ground Facilities (Coastal And Non-Coastal) Specification (CAN-US-MEX)	3694704
TES-CO-HSS-G Heat Shrink Sleeve Installation Specification (CAN-MEX)	3735848
TES-CT-GEN-GL Pipeline Construction Specification (CAN)	3745282
TES-FITG-EC1 End Closures Specification (CDN-US-MEX)	3779256
TES-FITG-SAD Full Encirclement Reinforcing Saddles Specification (CDN-US-MEX)	3779258
TES-COAT-HPPC High Performance Powder Coating (CDN-US-MEX)	3845380
TES-WL-ISW-GL Welding on In-Service Pipelines Specification (CDN)	3886791
TES-CT-EXC-GLE Excavation Specification (CAN-US-MEX)	5890120
TES-CT-COMPC-GL Compaction Control Measures for Pipeline Excavations Specification (CAN-US-MEX)	5974567
TES-PROJ-ROW Right of Way Specification (CDN)	6363243
TES-COAT-3PE Three Layer Polyethylene Coating (CDN-US-MEX)	6699972
TES-STRS-TFITTING Threaded Pipe Fittings (CDN-US-MEX)	7600548
TES-ME-STRPA-GL Pipe Stress Engineering Analysis and Design of Pipeline Assemblies Specification (CAN-US-MEX)	7808806

Table 7-3: Preliminary List of Company Specifications and Standards* (cont'd)

Name	EDMS No.
TES-ME-STRHO-GL Pipe Stress Engineering Analysis and Design of Hot Tap Branch Connections	7913244
TES-MATL-COMP Materials Requirements of Pressure Containing Equipment Components Specification (CDN-US-MEX)	8071725
TES-CT-SLOPE-GL Slope Work Specification	9199892
TEN-PRES Pressure Testing Standard (CDN)	1001810598
TEN-NDT NDT Standard (CDN-US-MEX)	1001828336
TES-NDT-UT Ultrasonic Examination of Girth Welds Specification (CDN)	1001829033
TES-MA-VALV-G Steel Valves for Gas Service Specification (CAN-US-MEX)	1001891682
TEP-ME-OPPMS-G-Engineering Review and Assessment of Customer PC and OPP Procedure (CAN)	1003076570
TEN-ME-HDD-GL HDD Design and Construction Standard (CAN-US-MEX)	1003103090
TEN-CP-BUILD-GL Corrosion Prevention Construction Standard (CAN-US-MEX)	1003439376
TEN-CP-DESGN-GL Corrosion Prevention Design Standard (CAN-US-MEX)	1003455877
TES-ME-STRPI-GL Pipeline Stress Analysis Specification (CAN-US-MEX)	1005882376
TEN-ME-OPPPL-G Pipeline OPP Standard (CAN-US-MEX)	1006170305
TEN-ME-TH-GL Test Head Assemblies Design Standard (CAN-US-MEX)	1008074465
TES-ME-BRCH-GL Liquid and Gas Pipeline Branch Connection Design Specification	1008074477
TEN-ME-VENT-G Blowdown Sizing and Venting Times Standard (CAN-US-MEX)	1008095242
TEN-ME-PWT-GL Pipe Wall Thickness Design Standard (CAN-US-MEX)	1009372841
TES-MA-SMLS-GL Seamless Pipe Specification	1009942909
TEN-ME-BUOY-GL Buoyancy Control Design and Construction Standard (CAN US MEX)	1011213988
TES-CO-FBE-GL External Fusion Bond Epoxy For Steel Pipe Specification (CAN-US-MEX)	3670892
TES-WL-AS-GL Welding of Assemblies and Station Piping Specification (CAN)	3670962
TES-CO-INT-G Internal Coating of Line Pipe for Non-Corrosive Gas Transmission Service Specification (CAN US MEX)	6282
TES-CO-PET-GL Application of Petrolatum Tape Coating Specification (CAN-US-MEX)	7756
<p>Note *: Specifications and Standards last provided to the CER on September 15, 2020. This table provides a list of the preliminary TC Energy standards and specifications that will be used for the Project. A final list of applicable standards and specifications will evolve as Project planning progresses through detailed design, and as individual specifications and procedures are added, updated or replaced to incorporate legislative and regulatory changes, and technological advances.</p>	

7.2.3 Quality Management Program

TC Energy has developed and implemented a Quality Management System, which defines the processes used to control and monitor quality throughout the life cycle of a project. This includes a project execution plan, quality management plan and other relevant documents, procedures, work instructions, forms, templates and associated records identified by the processes as requiring control.

Quality management ensures a consistent quality approach in design, procurement of materials and services, and construction of pipeline projects. The quality objectives established for this Project are as follows:

- engineering designs are clearly documented, consistent with acceptable design standards in accordance with operating performance requirements
- all work complies with applicable legislation, permitting requirements and generally accepted engineering practices
- equipment and materials procured and installed are consistent with the engineering design
- documentation providing objective evidence of conformance to the requirements is maintained and records retained

To comply with TC Energy's proprietary Quality Management System and the requirements specified by the CER where appropriate, TC Energy will provide technical oversight for pipeline engineering and technical activities, and will also ensure coordination with prime contractors and other third-party engineering consultants to ensure that TC Energy's engineering specifications and Project requirements are met.

All purchased items and contracted services will be obtained from suppliers and contractors of assessed capabilities who have been pre-qualified in accordance with TC Energy's internal supplier management and pre-qualification procedures or have been pre-qualified by a prime contractor to TC Energy. Documentation received for each purchase will be recorded and reviewed by the applicable subject matter expert to ensure they meet Project requirements. Evidence of this review will be retained as part of the permanent Project records.

During construction, each prime contractor will be responsible for ensuring the work performed is in accordance with contract documents, Project design, applicable standards, specifications and procedures, and the Project-specific quality plan. TC Energy inspectors will monitor all construction activities to ensure compliance.

Design changes during construction will be managed in accordance with the appropriate change management procedures and in accordance with TC Energy's standard engineering practices. Supplier surveillance will be in accordance with the

approved quality plan and Inspection and Test Plan (ITP), which defines the levels of inspection required based on the criticality of materials/equipment purchased. The quality plan/ITP will define the applicable material/equipment specification surveillance checklists to be used for surveillance activities. Before purchase order execution, NGTL will identify the preferred inspection agency, and as necessary, the qualified company representative to conduct the inspection.

7.2.4 Pipe Procurement

TC Energy has an established line pipe supply base with more than 20 qualified mills in North America and overseas. TC Energy has long term pipe purchase agreements with direct or indirect suppliers that cover approximately half of those pipe mills. TC Energy has qualified the pipe mills and coating plants based on technical merit. Pipe procurement is complemented with technical pre-production meetings and an onsite quality surveillance program during pipe manufacturing and coating application.

7.3 GAS TYPE AND COMPOSITION

The composition of the natural gas to be transported by the Project will meet the specifications listed in NGTL’s Tariff. For expected average composition of the sweet natural gas to be transported by the Project, see Table 7-4.

Table 7-4: Typical Composition of Gas

Element	Symbol	Percentage
Nitrogen	N ₂	0.817 %
Helium	He	0.026 %
Carbon Dioxide	CO ₂	0.629 %
Methane	C1	94.102 %
Ethane	C2	3.815 %
Propane	C3	0.488 %
iso-butane	C4I	0.044 %
n-butane	C4N	0.054 %
iso-pentane	C5I	0.01 %
n-pentane	C5N	0.008 %
n-hexane	C6N	0.005 %
n-heptane	C7N	0.001 %
n-octane	C8N	0.001 %
Total		100 %

7.4 PIPELINE SECTION COMPONENTS

Project pipeline components include pipeline, valves, launcher and receiver sites, CP facilities, and communications and controls equipment, as required (see Table 7-5). No metering facilities are required for the Project.

For the preliminary process flow diagrams for the Project components, see Appendix 7-1. The diagrams show the major components, including interconnections to existing pipelines, piping, valves, launcher and receiver sites, and compressor stations.

Table 7-5: Pipeline Description

Pipeline Section	Class Location*	NPS	Pipe Diameter (mm)	Approximate Pipe Length (km)	MOP (kPa)
Turner Valley Section	Class 1	48	1,219	7.8	8,690
	Class 2	48	1,219	15.2	8,690
	Class 3	48	1,219	0.7	8,690
Longview Section	Class 1	48	1,219	8.5	8,690
	Class 2	48	1,219	0.5	8,690
Lundbreck Section	Class 1	48	1,219	7.4	8,690

Note *: Final class location determination will be completed during detailed design. Extents noted are minimum Class requirements identified based on preliminary class assessment. Class Location Area Maps indicating the location of populated areas relative to the proposed pipeline sections are provided in Appendix 7-2.

For the estimated pipe specifications for the Project, see Table 7-6.

Table 7-6: Preliminary Line Pipe Lengths by Wall Thickness*

Pipeline Section	Estimated Length (m)	Pipe Diameter (mm)	Material Grade (MPa)	Minimum Wall Thickness (mm)
Turner Valley Section				
Class 1 Line pipe	7,300	1,219	483	13.7
Class 2 Line pipe	13,600	1,219	483	15.2
Class 3 Line pipe	550	1,219	483	19.6
Class 1 Heavy wall pipe	500	1,219	483	18.3
Class 2 Heavy wall pipe	1,600	1,219	483	21.9
Class 3 Heavy wall pipe	150	1,219	483	21.9
Longview Section				
Class 1 Line pipe	8,200	1,219	483	13.7
Class 2 Line pipe	400	1,219	483	15.2
Class 1 Heavy wall pipe	300	1,219	483	18.3
Class 2 Heavy wall pipe	100	1,219	483	21.9

Table 7-6: Preliminary Line Pipe Lengths by Wall Thickness* (cont'd)

Pipeline Section	Estimated Length (m)	Pipe Diameter (mm)	Material Grade (MPa)	Minimum Wall Thickness (mm)
Lundbreck Section				
Class 1 Line pipe	6,600	1,219	483	13.7
Class 1 Heavy wall pipe	800	1,219	483	18.3
Note *: Final selection of materials for valves, fittings and assembly piping will be determined during detailed design in accordance with NGTL specifications. Material grade will meet or exceed minimum requirements. Other CSA Z662-19 compliant or higher grades of steel could be used depending on material availability and in accordance with NGTL specifications. All values, including but not limited to pressure, length, grade, coating and wall thickness, are based on preliminary design and are subject to change.				

7.4.1 Valve Locations

Block valves are typically spaced at 32 to 40 km intervals within Class 1 locations, 25 to 31 km intervals within Class 2 locations and 13 to 16 km intervals within Class 3 locations along the pipeline to facilitate operational and isolation activities. Valve locations are typically positioned near existing facilities and/or near roadways where using existing access is possible. Crossover valves are typically located upstream and downstream of block valves. These crossover valves connect two parallel pipelines and/or adjacent facilities and are used to manage flow on the NGTL System. For preliminary valve locations, see Table 7-7. Valve locations will be finalized in the detailed design phase to optimize the location based on accessibility and areas used for pre-existing facilities. Final mainline block valve spacing will adhere to TC Energy specifications, as well as to applicable industry standards.

Table 7-7: Preliminary Mainline Block and Crossover Valve Locations*

Valve Type	Preliminary Northing	Preliminary Easting	UTM	LSD
Turner Valley Section				
One NPS 48 MLV assembly (WAS90-2-BV) with NPS 12 blowdown valves	684127	5641086	11U	NE 20-022-03 W5M
One NPS 48 launcher valve assembly (WAS90-2-ST) and NPS 16 kicker line assembly				
Two NPS 36 crossover valve assemblies to the NPS 42 WAS Mainline Loop Turner Valley Section (WAS90-1-D1, WAS90-1-D2)				
Two NPS 36 crossover valve assemblies to the NPS 36 WAS Mainline Airdrie Section (WAS90-0-D2, WAS90-2-D0)	684127	5641086	11U	NE 20-022-03 W5M
One NPS 48 MLV assembly (WAS85-2-BV) with NPS 12 blowdown valves	686160	5630622	11U	SE 21-021-03 W5M

Table 7-7: Preliminary Mainline Block and Crossover Valve Locations* (cont'd)

Valve Type	Preliminary Northing	Preliminary Easting	UTM	LSD
Turner Valley Section (cont'd)				
One NPS 48 MLV assembly (WAS80-2-BV) with NPS 12 blowdown valves	688711	5619234	11U	SE 15-020-03 W5M
One NPS 48 receiver valve assembly (WAS80-2-RT) and NPS 16 kicker line assembly				
Two NPS 42 crossover valves to the Turner Valley Compressor Station (WAS80-2-CSS-TRNR; WAS80-2-CSD-TRNR)				
Longview Section				
One NPS 48 MLV assembly (WAS70-2-BV) with NPS 12 blowdown valves	694817	5592588	11U	NE 19-017-02 W5M
One NPS 48 launcher valve assembly (WAS70-2-ST) and NPS 16 kicker line complete with two NPS 16 valves				
Two NPS 42 crossover valve assemblies to the NPS 42 WAS Mainline Loop Longview Section (WAS70-1-D2, WAS70-2-D2)				
Two NPS 36 crossover valve assemblies to the NPS 36 WAS Mainline Airdrie Section (WAS70-0-U2, WAS70-2-U2)				
One NPS 48 MLV assembly (WAS67-2-BV) with NPS 12 blowdown valves	697263	5584822	11U	NW 28-016-02 W5M
One NPS 48 receiver valve assembly (WAS60-2-RT) and NPS 16 kicker line complete with two NPS 16 valves	700997	5563785	11U	NE 22-014-02 W5M
Lundbreck Section				
One NPS 48 MLV assembly (WAS35-2-BV) with NPS 12 blowdown valves	694543	5501693	11U	NE 11-008-03 W5M
One NPS 48 launcher valve assembly (WAS35-2-ST) and NPS 16 kicker line complete with two NPS 16 valves				
Two NPS 42 crossover valve assemblies to the NPS 42 WAS Mainline Loop Lundbreck Section (WAS35-2-D01, WAS35-1-D2)				
One NPS 36 crossover valve assembly to the NPS 36 WAS Mainline Brooks Section (WAS35-0-D2)				

Table 7-7: Preliminary Mainline Block and Crossover Valve Locations* (cont'd)

Valve Type	Preliminary Northing	Preliminary Easting	UTM	LSD
Lundbreck Section (cont'd)				
One NPS 48 MLV assembly (WAS30-2-BV) with NPS 12 blowdown valves	689001	5498402	11U	NW 32-007-03 W5M
One NPS 48 receiver valve assembly (WAS30-2-RT) and NPS 16 kicker line complete with two NPS 16 valves				
Two NPS 42 crossover valve assemblies to the NPS 42 WAS Mainline Loop Lundbreck Section (WAS30-2-U01, WAS30-1-U2)				
One NPS 36 crossover valve assembly to the NPS 36 WAS Mainline Brooks Section (WAS30-0-U2)				
Note *: All locations are preliminary and will be confirmed during detailed design.				

7.4.2 Minimum Depth of Cover

The proposed pipeline sections will generally have a minimum depth of cover of 0.9 m. Depth of cover will vary in the following circumstances:

- agricultural lands will have a minimum depth of cover of 1.2 m
- valve site locations will have a minimum depth of cover of 1.1 m
- road crossings will have a minimum depth of cover of 1.5 m
- buried utility and foreign pipeline crossings, above or below the pipeline, will have a minimum clearance of 0.3 m
- the minimum depth of cover for pipeline crossings of watercourses with defined beds and banks will be 1.8 m. Increased depth of cover might be required at locations where there is a potential for scouring of the watercourse bed. The requirement for increased depth of cover will be evaluated as engineering design and construction planning progresses.
- the minimum depth of cover on the Lundbreck Section may be as shallow 0.6 m, as allowed per CSA Z662-19 Section 4.11 and Table 4.9, in sections of ditchline that require rock excavation requiring blasting or comparable means.

For typical depth of cover drawings and typical engineering drawings, see Appendix 7-3 which include:

- minimum requirements for pipe ditches
- foreign pipeline and utility crossings
- road crossings
- watercourse crossings

7.5 PIPELINE CORROSION CONTROL ELEMENTS AND FACILITIES

7.5.1 Pipe Coatings

The primary coating for the external surface of the below ground pipe will be fusion-bonded epoxy (FBE). Field girth welds will be protected with a liquid applied coating.

An additional mechanical protection system, such as sand padding or rock shield will be used if large and/or angular backfill material is encountered. Abrasion-resistant coating will be used where pipe is installed using boring, horizontal directional drill (HDD) or other methods that could cause abrasion to the coating during installation.

Below-ground assembly piping will be protected with a liquid applied coating. Above-ground piping will be primed and painted.

7.5.2 Cathodic Protection

In addition to the pipe coating, CP will be provided through impressed current CP systems, which may consist of existing CP systems as well as new CP systems if required, and will include ground beds and rectifiers as determined during detailed design.

Where practicable, the rectifiers and ground beds will be located at sites where a convenient source of electrical power exists. Sacrificial anodes may also be used at specific locations, which will be identified during detailed design.

CP test leads will be installed, where required, along the pipeline and at road, foreign pipeline and utility crossings. This will allow the effectiveness of the operation of the CP system to be monitored through operations and demonstrate compliance to applicable code requirements.

Where the pipeline route crosses or is in close proximity to parallel high voltage alternating current (HVAC) power lines, studies will be conducted to characterize the likely impacts and determine the necessary measures required to mitigate the effects.

7.5.3 Launcher and Receiver Facilities

NGTL will install launchers and receivers on the pipeline sections, for the purposes of pipe cleaning and ILI. For facility specifications on launcher and receiver facilities for ILI of Project pipeline sections, see Table 7-8.

Table 7-8: ILI Facilities Specifications*

Item	Pipe	Barrel Piping
Turner Valley Section		
Pipe Outside Diameter	NPS 48 (1,219 mm)	NPS 56 (1,422 mm)
Pipe Material Type and Grade	Grade 483 (per TES-MA-SAWPI-GL)	Grade 483 (per TES-MA-SAWPI-GL)
Pipe Wall Thickness, Class 3 location (Launcher Trap location)	26.2 mm	25.6 mm
Pipe Wall Thickness, Class 1 location (Receiver Trap location)	18.3 mm	25.4 mm
Maximum Operating Pressure	8,690 kPa	
Pig Trap Locations	Launcher – NE 20-022-03 W5M, to be installed near WAS90-2-BV Receiver – SE 15-020-03 W5M to be installed near Turner Valley Compressor Station	
Pig Trap Pressure Rating	8,690 kPa	
Description of Pig Trap Closure Device	End Closure, Horizontal, NPS 56, PN 100, M45C, To Match 25.4/25.6 mm Wall Thickness and Grade 483	
Description of Corrosion Control Elements and Facilities	Launcher and receiver facilities are located above ground and will be primed and painted to prevent atmospheric corrosion.	
Longview Section		
Pipe Outside Diameter	NPS 48 (1,219 mm)	NPS 56 (1,422 mm)
Pipe Material Type and Grade	Grade 483 (per TES-MA-SAWPI-GL)	Grade 483 (per TES-MA-SAWPI-GL)
Pipe Wall Thickness	18.3 mm	25.4 mm
Maximum Operating Pressure	8,690 kPa	
Pig Trap Locations	Launcher – NE 19-017-02 W5M, to be installed near existing valve assembly WAS70 Receiver – NE 22-014-02 W5M to be installed near existing valve assembly WAS60 at the downstream end of NGTL's existing WAS Mainline Loop Saratoga Section	
Pig Trap Pressure Rating	8,690	
Description of Pig Trap Closure Device	End Closure, Horizontal, NPS 56, PN 100, M45C, To Match 25.4 mm Wall Thickness and Grade 483	
Description of Corrosion Control Elements and Facilities	Launcher facilities are located above ground and will be primed and painted to prevent atmospheric corrosion.	
Lundbreck Section		
Pipe Outside Diameter	NPS 48 (1,219 mm)	NPS 56 (1,422 mm)
Pipe Material Type and Grade	Grade 483 (per TES-MA-SAWPI-GL)	Grade 483 (per TES-MA-SAWPI-GL)
Pipe Wall Thickness	18.3 mm	25.4 mm
Maximum Operating Pressure	8,690kPa	
Pig Trap Locations	Launcher – NE 11-008-03 W5M to be installed near existing valve assembly CM10 Receiver – NW 32-007-03 W5M to be installed near the existing Bellevue Sales Tap (Sales Tap No. 2300)	

Table 7-8: ILI Facilities Specifications* (cont'd)

Item	Pipe	Barrel Piping
Lundbreck Section (cont'd)		
Pig Trap Pressure Rating	8,690 kPa	
Description of Pig Trap Closure Device	End Closure, Horizontal, NPS 56, PN 100, M45C, To Match 25.4 mm Wall Thickness and Grade 483	
Description of Corrosion Control Elements and Facilities	Launcher and receiver facilities are located above ground and will be primed and painted to prevent atmospheric corrosion.	
Note *: ILI facility specifications and locations are preliminary and will be confirmed during detailed design. For typical Launcher/Receiver drawings, see Appendix 7-4.		

7.5.4 Pressure Control and Overpressure Protection Philosophy

The Turner Valley, Longview and Lundbreck Sections of the Project will have a MOP¹ of 8,690 kPa. The pressure control (PC) and overpressure protection (OPP) design of all Sections of the Project will comply with the requirements of the OPR and CSA Z662-19, including Clause 4.18: Pressure Control and Overpressure Protection of Piping, and Clause 10.9.5: Pressure Control, Pressure Limiting and Pressure Relieving Systems of CSA Z662-19.

PC and OPP systems at NGTL facilities meet CSA Z662-19 design, operation and maintenance requirements. Procedures are in place to ensure regular inspection, assessment and testing at the required intervals in order to meet capacity and reliability requirements. The procedures also ensure that all facilities' PC and OPP systems are in good operating condition, and set to function at the determined pressure. The PC and OPP systems monitor and act independently, automatically and continuously.

TC Energy's Gas Control Centre operates 24-hour/7-days a week to monitor and control real-time pipeline pressures through a supervisory control and data acquisition (SCADA) system. System pressures are proactively monitored and trended by the Control Centre Operators to manage pressures and ensure operational efficiency.

The Canadian Pipeline Abnormal Pressure Management Procedure describes the actions TC Energy's Gas Control Center should implement if an overpressure condition occurs or is imminent on the pipeline. The procedure describes actions to be taken to control the pipeline operating pressure or reduce the pipeline operating pressure below MOP, should an abnormal operating condition occur.

A summary of PC and OPP for the Project is provided below.

¹ MOP considered the maximum pressure at which a pipeline is qualified to be operated. Also referred to as certified/authorized/granted by the CER as per the Schedule A attached to the pipeline's Order or Certificate.

Turner Valley Section

The proposed Turner Valley Section will have a MOP of 8,690 kPa.

The following systems (pipelines and facilities) will be connected to the proposed Turner Valley Section:

- NPS 42 Western Alberta System Mainline Loop Turner Valley Section (MOP 5,826 kPa)
- NPS 36 Western Alberta System Mainline Airdrie Section (MOP 5,826 kPa)
- Turner Valley Compressor Station (MOP of 5,825 kPa)

Within the Turner Valley Section area, two types of possible pressure sources exist, which are the Turner Valley Compressor Station and spec breaks where MOP of the proposed Turner Valley Section differ at an intersection with the systems listed above.

The Turner Valley Compressor Station has PC and OPP systems designed to ensure that the downstream pipelines are not subject to excess pressure. The compressor speed automatically adjusts to maintain the station discharge pressure equal to or less than the station's MOP (5,825 kPa). The station shuts down automatically before the compressor discharge pressure exceeds 110% of the MOP. In addition, each compressor station will have pressure relief devices (or other suitable protective devices) of sufficient capacity and sensitivity to ensure MOP of the station piping is not exceeded by more than 10%.

The existing operation plan is to operate the proposed pipeline and its connecting systems up to pressure of 5,825 kPa and therefore, there is no possibility of the proposed pipeline to overpressure connecting systems with MOP of 5,825 kPa at spec break locations. However, overpressure protection (pressure-limiting) devices will be installed at the spec break locations to accommodate any future change to the operation plan.

The evaluation of PC and OPP Systems considered:

- All the sources of overpressure, including potential failure scenarios of components.
- Collateral effects of failure and whether one failure event can affect operation of the other components or the entire overpressure protection systems.
- How redundancy of the components can be improved or implemented if not already in place.
- Whether pipeline and facility modifications affect the operation or reliability of the overpressure protection system.

Based on a review of pressure sources in the area, PC and OPP systems are in place that meet the OPR and the CSA Z662-19 requirements.

Longview Section

The proposed Longview Section will have a MOP of 8,690 kPa.

The following systems (pipelines) will be connected to the proposed Longview Section:

- NPS 42 WAS Mainline Loop Longview Section (MOP 5,826 kPa)
- NPS 48 WAS Mainline Loop Saratoga Section (MOP 8,690 kPa)
- NPS 36 WAS Mainline Airdrie Section (MOP 5,825 kPa)

Within the Longview Section area, one type of possible pressure source exists, which are spec breaks where MOP of the proposed Longview Section differ at an intersection with the systems listed above. The existing operation plan is to operate the proposed pipeline and its connecting systems up to a pressure of 5,825 kPa and therefore, there is no possibility of the proposed pipeline to overpressure connecting pipelines with MOP of 5,825 kPa at the spec break locations. However, overpressure protection (pressure-limiting) devices will be installed at spec break locations to accommodate any future change to the operation plan.

The evaluation of PC and OPP Systems considered:

- All the sources of overpressure, including potential failure scenarios of components.
- Collateral effects of failure and whether one failure event can affect operation of the other components or the entire overpressure protection systems.
- How redundancy of the components can be improved or implemented if not already in place.
- Whether pipeline and facility modifications affect the operation or reliability of the overpressure protection system.

Based on a review of pressure sources in the area, PC and OPP systems are in place that meet the OPR and the CSA Z662-19 requirements.

Lundbreck Section

The proposed Lundbreck Section will have a licensed MOP of 8,690 kPa.

The following systems (pipelines) will be connected to the proposed Lundbreck Section:

- NPS 42 Western Alberta System Mainline Loop Lundbreck Section (MOP 5,825 kPa)
- NPS 36 Western Alberta System Mainline Brooks Section (MOP 5,825 kPa)

Within the Lundbreck Section area, one type of possible pressure source exists, which are spec breaks where MOP of the proposed Lundbreck Section differ at an intersection with the systems listed above. The existing operation plan is to operate the proposed pipeline and its connecting systems up to pressure of 5,825 kPa and therefore, there is no possibility of the proposed pipeline to overpressure connecting pipelines with MOP of 5,825 kPa at the spec break locations. However, overpressure protection (pressure-limiting) devices will be installed at spec break locations to accommodate any future change to the operation plan.

The evaluation of PC and OPP Systems considered:

- All the sources of overpressure, including potential failure scenarios of components.
- Collateral effects of failure and whether one failure event can affect operation of the other components or the entire overpressure protection systems.
- How redundancy of the components can be improved or implemented if not already in place.
- Whether pipeline and facility modifications affect the operation or reliability of the overpressure protection system.

Based on a review of pressure sources in the overall Project area, PC and OPP systems are in place that meet the OPR and the CSA Z662-19 requirements.

7.5.5 Pipeline Integrity

In developing its projects, NGTL considers and designs for potential pipeline integrity threat categories as defined by ASME B31.8S Managing System Integrity of Gas Pipelines.

NGTL conducts initial threat identification before detailed design. Pipeline threat identification considers the following nine threat categories managed by TC Energy's Integrity Management Program (IMP).

1. Time-dependent threats:
 - a. external corrosion
 - b. internal corrosion
 - c. stress corrosion cracking
2. Static or resident threats:
 - a. manufacturing related defects

- b. welding or fabrication related
 - c. equipment failures
3. Time-independent threats:
- a. mechanical damage
 - b. incorrect operations
 - c. weather-related and outside force

During the hazard identification process, a qualitative assessment of potential threats, including those listed above, is conducted using the design basis and route selection criteria. Potential Project specific issues identified for threat management during the hazard identification process are used to inform recommendations for design, construction and management of operating concerns.

Mitigation of integrity concerns are considered during route selection, detailed design, fabrication, construction and pre-commissioning of the pipeline. This process allows operational management and performance experience to be incorporated in the early stages of the project development.

Specific threat management measures to be employed on the Project include the following:

- installing launcher and receiver facilities to allow ILI of the pipeline. A high-resolution commissioning caliper tool will be used during Project pre-commissioning to inspect for construction related defects and indications of dents or ovalities in the pipeline.
- conducting above ground CP surveys to identify areas of pipe coating damage
- performing baseline ILI using magnetic flux leakage and high-resolution caliper tool as per TED-INT-LR Launcher and Receiver Installation and Initial Assessment Technical Directive. Thereafter, the pipeline will be managed according to the IMP.

Before the Project transitions to operations, the threat identification will be updated to incorporate Project development data. The updated threat identification will provide input for integration of the asset in the IMP. The terms and conditions of the transfer of care and control of the pipeline to operations are documented through a project turnover memorandum.

7.6 TERRAIN, GEOHAZARDS, GEOTECHNICAL AND HYDROTECHNICAL ASSESSMENTS

Terrain mapping, geohazard, hydrotechnical and geotechnical assessments and field investigations have been and will continue to be conducted along the alignment of each of the pipeline sections (see Table 7-9). The assessments are based on mapping

and interpretation of LiDAR-derived topography, selected air photos, satellite imagery and published surficial and bedrock geology maps.

Table 7-9: Location and Preliminary Timing of Geotechnical Investigations

Project Pipeline Section	Geotechnical Assessment Details	Timing for Geotechnical Investigation
Turner Valley Section	Assess, proposed valve site locations, fitting locations, major road crossings and subsurface conditions for potential trenchless crossings	Q3-Q4 2020
Longview Section	Assess, proposed valve site locations, fitting locations, major road crossings and subsurface conditions	Q3-Q4 2020
Lundbreck Section	Assess, proposed valve site locations, fitting locations, major road crossings and subsurface conditions	Q1-Q3 2020

The terrain mapping provides the delineation and classification of the landscape based on landforms, surficial materials and geomorphic processes that may affect the terrain units and rates the ability of various landforms and their materials to support different types of activities during engineering construction and development.

The geohazard assessment consisted of a desktop identification of credible geohazard threats to the buried pipeline, the trench, the ROW or the above-ground infrastructure, assigning a preliminary and qualitative hazard rating to each credible threat. The hazard rating indicates the level to which each credible geohazard is expected to impact the design, construction and operation of the project. The desktop study is followed by a second phase that will consist of a site-specific field verification to refine the preliminary assessment. The term geohazard includes geological conditions and processes that could threaten the integrity of the project.

The geotechnical and hydrotechnical assessments focus on the following key design issues:

- stability of significant slopes along the proposed pipeline routes (geotechnical assessments will include a review of the history of landslides and the potential for reactivation of old slides along the route)
- scour and erosion potential at watercourse crossings
- areas of potential stress concentrations, such as areas of thick organic deposits

7.6.1 Geohazards

NGTL commissioned Stantec Consulting Ltd. and BGC Engineering Inc. to conduct the Geohazards Assessments for the Turner Valley, Longview, and Lundbreck Sections.

A Phase I Desktop Level Geohazards Assessment was completed for all sections. A field assessment (Phase II Geohazard Evaluation) was performed for the Lundbreck

Section and will be performed for the Turner Valley and Longview sections to verify the completed desktop assessments. Further field-based assessments and field verifications have and will be conducted on those segments defined as moderate and high hazards during the desktop study, to review the initial classification, re-evaluate the hazard as required and define the need for potential monitoring and mitigation plans.

Geohazard ranking confirmed in the field along the proposed pipeline section ROWs will be addressed through site-specific mitigation where required.

For areas with confirmed slope instabilities, the mitigation measures for design and construction may include:

- micro re-routes to avoid unstable slopes
- detailed geotechnical investigation to understand the nature of instability if it is not possible to avoid the area
- implementation of engineered grade plans
- slope stabilization measures, including horizontal drains and/or toe buttress, where applicable
- implementation of erosion protection measures, particularly at toe areas of watercourse crossings
- diligent effort during construction to avoid reactivating old slides
- selection of heavy wall pipe to accommodate additional strains potentially induced by slides where they cannot be avoided
- selection of low friction backfill, where required and applicable, to minimize the impact of potential hill slides
- selection of reduced depth of cover to minimize the impact of potential slides and to facilitate strain relief if necessary

Once in operation, potential landslide hazard areas still of concern would be included within TC Energy's IMP for routine monitoring and inspection activities. The monitoring program can include:

- detailed geotechnical investigation and engineering assessment to understand the nature of the slides and their potential impact on pipe integrity
- monitoring ground movement and/or pipe strains during pipeline operation
- assessment of pipeline deformation using ILI data
- implementation of slope stabilization measures, including horizontal drains and/or toe buttress, where applicable
- strain relief, where necessary
- pipe realignment

Turner Valley Section

The Terrain Mapping for the Turner Valley Section (see Appendix 7-5a) indicates that approximately 65% of the proposed section crosses flat-lying to gentle slopes underlain by glaciolacustrine materials. Approximately 19% crosses undulating to gentle slopes underlain by till, 14% cross fluvial materials, with the remaining 2% crossing organic, colluvial and anthropogenic materials. Bedrock was not observed on surface and it is anticipated to be covered by thick surficial materials along most of the alignment.

The desktop Geohazard Assessment criteria for the Turner Valley Section used the slope steepness, surficial material and evidence of landslides to classify the landslide initiation and/or reactivation hazard for each terrain mapping unit with respect to pipeline construction activities along the proposed project. The study indicates that most of the Turner Valley alignment (98%) cross terrain with Low Hazard Class, suggesting level to moderate sloping till or glaciofluvial slopes with no evidence of previous natural or construction-related landslide activity. Two percent of the project is expected to cross Moderate Hazard Class terrain, comprising moderately steep to steep slopes on till or glaciofluvial materials with no visible evidence of landslides. No segment with High Hazard Class was identified in the study. Field investigation is planned to verify the Terrain Mapping and the Geohazard Assessment to confirm the preliminary moderate hazard sites and define mitigation requirements, if required.

No active faults were identified crossing the proposed alignment. The seismic hazard classified the area as Class D Site. Potential seismically liquefiable soils were mapped along the major watercourses; however, the hazard is considered low based on the regional seismic hazard.

An abandoned underground mine (No. 1516) was identified immediately east of the Turner Valley Section between KP 17+900 and KP 18+100 and was classified as having potential ground subsidence hazard. Detailed field investigation is planned to characterize the hazard and define if monitoring or mitigation requirements are required. No ground subsidence related to groundwater withdrawal or karst was identified and, therefore, the hazard is considered as low.

Longview Section

The Assessment for the Longview Section (see Appendix 7-5a) indicates that approximately 49% of the proposed section crosses flat-lying to gentle slopes underlain by glaciolacustrine materials. Approximately 35% crosses undulating to gentle slopes underlain by till, 16% cross fluvial materials and the remaining one percent crosses organic and colluvial materials. Bedrock was not identified on the surface and it is anticipated to be covered by thick surficial materials along the alignment.

The Geohazard Assessment criteria for the Longview Section used the slope steepness, surficial material and evidence of landslides to classify the landslide initiation and/or reactivation hazard for each terrain mapping unit with respect to pipeline construction activities along the proposed project. The study indicates that most of the alignment (99%) crosses terrain with Low Hazard Class, suggesting level to moderate sloping till or glaciofluvial slopes with no evidence of previous natural or construction-related landslide activity. One percent of the project is expected to cross Moderate Hazard Class terrain, comprising moderately steep to steep slopes on till or glaciofluvial materials with no visible evidence of landslides. No segment with High Hazard Class was identified in the study. Field investigation is planned to verify the Terrain Mapping and the Geohazard Assessment to confirm the preliminary moderate hazard sites and define mitigation requirements, if required.

No active faults were identified crossing the proposed Longview Section alignment. Potential seismically liquefiable soils were mapped along the major watercourses; however, the hazard is considered low based on the regional seismic hazard.

No ground subsidence related to groundwater withdrawal or karst was identified for the Longview Section and therefore, the hazard is considered as low.

Lundbreck Section

The Terrain Mapping for the Lundbreck Section indicates that the majority of the alignment is crossing terrain with Stability Class I to III, suggesting no, very low or low likelihood of landslide initiation following the ROW clearing, pipeline and road construction. Glaciofluvial, fluvial, till, colluvial, organic and bedrock are the predominant materials identified during the terrain mapping.

The Geohazard Assessment for the Lundbreck Section (see Appendix 7-5b) identified three main areas with probable exposure to landslide hazards. An earth slide located almost 150 m from the east end of the section (KP 0+000 to KP 0+250), an earth slide located where the alignment deviates south of the existing right of way (KP 2+625 to 2+725) and a rockfall area near the Livingstone Ridge (KP 4+200 to 5+700). They were classified as low to very low landslide hazards. The study also mentioned a potential snow avalanche zone associated to a steep terrain around the pass over the Livingstone range (KP 4+200 to KP 5+200). No segment was classified as medium or high landslide hazard.

The geohazards study also identified thirteen stream crossings with potential hydrotechnical hazards; four were classified as low and nine were classified as moderate hazards, including one potential encroachment. No sites with high hydrotechnical hazard were observed in the Lundbreck Section.

The Lundbreck Section is located within a region considered with the highest seismic hazard in AB and Western Canada, outside of the west coast of BC. Historical

earthquakes are clustered around Flathead Lake (Montana), approximately 165 km from the Lundbreck Section. The Rocky Mountain Foothills, east of the Lundbreck Section, have experienced induced and localized seismicity that has been associated to oil and gas production. The magnitude of those events ranged between M 2.5 and M 3.5. No Quaternary faults were identified in the vicinity of the section. The seismic hazard assessment also indicates that the Lundbreck section crosses terrain with low or no-liquefaction susceptibility; therefore, liquefaction hazards are deemed non-credible.

The geohazards assessment identified two subsidence areas associated to potential soluble bedrocks (karst) and mine activities. Potentially soluble, generally shallowly buried calcareous bedrock underlies a portion of the Lundbreck Section between KP 4+450 and KP 5+200. No karst features were identified in the desktop study or in the field, and therefore the karst subsidence hazard was classified as low. The study identified a segment of potential mine subsidence associated with historic coal mining and underground workings of the Bellevue mine (KP 6+110 to KP 7+300). Several subsidence features adjacent to the proposed alignment were noted and visited in the field. The largest of these exceeded 50 m across and showed various levels of activity. No voids or surface deformation were observed during the field visit on the existing ROW, however this segment was subdivided and classified as high subsidence hazard (KP 6+110 to 6+415) and moderate subsidence hazard (KP 6+415 to KP 7+300). Detailed field investigation is planned to characterize the hazard and define the monitoring and mitigation requirements, if required. No potential subsidence due to fluid withdrawal were identified.

The proposed Lundbreck Section will intersect eight different geological units (subdivided in 16 geological formations), some of them with an estimated high permissive likelihood of geochemical hazards. The hazard classification was based on the lithologic descriptions presented in the bedrock geological maps. The study concluded that 56% of the section would cross over low or very low geochemical-prone hazards, 41% over moderate and 3% on high hazard.

7.6.2 Organic Terrain and Muskeg

The preliminary terrain analysis identifies the areas of organic terrain, muskeg terrain, general soil units and drainage conditions. This information is used to determine the requirements for buoyancy control in areas of potential muskeg along the pipeline routes. Further field investigations may be undertaken to verify and assess in more detail the organic terrain along the alignment in order to determine constructability through the area. Investigation might be required to characterize and delineate the limits and thicknesses of organic units at identified locations of concern. This investigation will include sample collection for laboratory testing to provide detailed information about the thickness and lateral extent of organic deposits along the routes. Mitigation measures will be implemented in organic terrain locations that pose risk to the pipeline sections.

If required, ground truthing studies may be undertaken starting in Q3 2020 and potentially extending into 2021. These studies may include ground penetrating radar and sample collection to provide more detailed information about the thickness and lateral extent of organic deposits along the pipeline routes. These studies will supplement information from previous pipeline construction in these sections.

Buoyancy control requirements for the pipeline sections will be determined during the detailed engineering design phase. NGTL expects that standard buoyancy control measures will be used for the Project, which can include:

- continuous concrete coating
- swamp (saddle) weights
- river (bolt-on) weights
- screw anchors

7.7 PIPELINE WATERCOURSE CROSSINGS

Watercourse crossings for each proposed pipeline section were identified through a desktop review and subsequently verified on the ground. Trenched crossing methods will be used; isolated or open cut will be selected based on the flow conditions at the time of construction.

An isolated crossing method will be used for watercourses with open water or under-ice flow that can be handled by isolation equipment. Isolation methods, such as using dams and pumps or flumes, divert flow around or across a construction zone to allow trench excavation, pipe installation and backfilling to occur away from flowing water. Open cut crossings are generally used if flow is not present (i.e., dry or frozen to the bottom).

A trenchless crossing method may be used as a contingency if unexpected flow conditions are encountered at the time of construction or to meet Project needs.

For more information on watercourse crossing construction, see Section 8: Pipeline Construction (8.8.4 Temporary Vehicle and Pipeline Watercourse Crossing Construction). For a full inventory of watercourses crossed on the Project, see Appendices A (Table 2A to Table 2C) and B of the Project ESA.

8.0 PIPELINE CONSTRUCTION

This section provides a description of the pipeline construction plans for the Project, including:

- construction procedures and execution
- construction schedule
- safety
- quality
- inspection and monitoring

The information in this section is based on preliminary design. Construction plans will be further developed during detailed design and will incorporate input from the selected construction prime contractors.

8.1 PIPELINE CONSTRUCTION STRATEGY

It is anticipated that one construction spread will be required for the Turner Valley and Lundbreck Sections; and two construction spreads will be required for the Longview Section.

The final number of construction spreads will be confirmed following the completion of detailed engineering and constructability studies. A preliminary schedule was determined based on constructability, logistics, terrain characteristics, safety and environmental considerations, as discussed in Section 8.2.

8.1.1 Construction Contracts

Depending on the availability and capacity of qualified construction contractors, up to four prime contractors could be retained for Project construction.

NGTL will award separate contracts for portions of the Project work outside the scope of the prime contractor construction contracts, such as construction surveying, inspection and non-destructive examination (NDE).

8.2 CONSTRUCTION SCHEDULE

To meet the construction schedules and commercially required in-service date, NGTL proposes to commence construction of temporary infrastructure required for the Project as early as Q1 2023 before pipeline construction, subject to regulatory approval and compliance with applicable conditions. The temporary infrastructure required includes access roads, borrow pits/dugouts, slurry pits, stockpile sites, laydown yards, and contractor yards. Existing cleared areas and established sites will be used where feasible and practicable depending on proximity to each Project component.

Clearing and pipeline construction activities will progress in a manner that will avoid applicable wildlife timing restrictions where feasible. If this is not feasible, NGTL will work with the applicable agencies to develop mitigation.

Construction activities are anticipated to be carried out in both potentially frozen and unfrozen conditions. The timing of final cleanup and reclamation activities will depend on seasonal access to the pipeline ROWs and will typically be completed within 12 months of construction. The pipeline ROW will be assessed during spring/summer following construction to evaluate reclamation requirements. For a discussion of NGTL’s post-construction monitoring program, see the Project ESA Appendix D.

For a preliminary construction schedule, see Figure 8-1

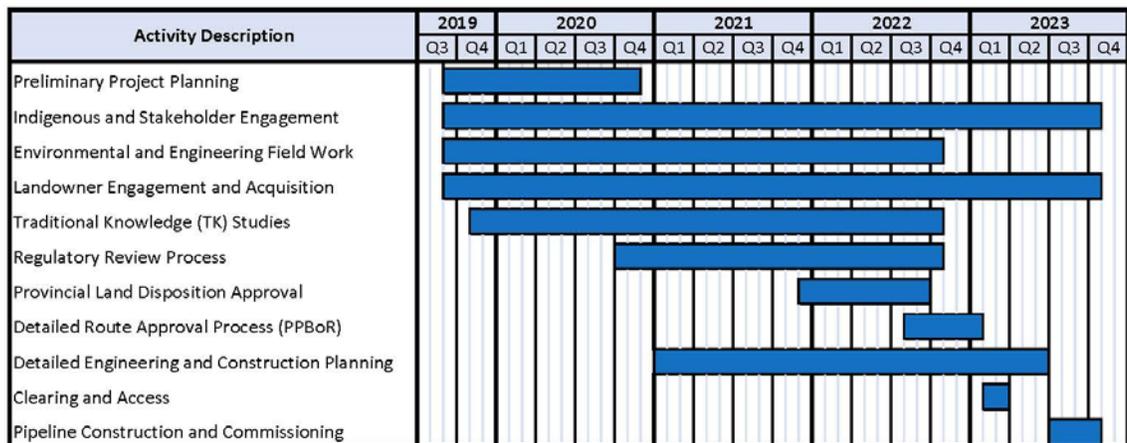


Figure 8-1: Preliminary Project Schedule

8.3 CONSTRUCTION RESOURCES

Construction will require personnel with various skills, ranging from entry level-labourers to highly skilled trades, and include inspection and project management staff. Table 8-1 provides a summary of the estimated construction workforce and employment timing based on the Project construction schedule.

Table 8-1: Estimated Construction Workforce and Employment Timing

Project Component	Approximate Peak and Average Construction Workforce	Employment Timing
Turner Valley Section	<ul style="list-style-type: none"> 600 workers – peak 400 workers – average 	Clearing/Access: Q1 2023 to Q2 2023 Construction: Q3 2023 to Q4 2023
Longview Section	<ul style="list-style-type: none"> 400 workers – peak 300 workers – average 	Construction: Q3 2023 to Q4 2023
Lundbreck Section	<ul style="list-style-type: none"> 400 workers – peak 300 workers – average 	Clearing/Access: Q1 2023 to Q2 2023 Construction: Q3 2023 to Q4 2023

Additional information on the potential socio-economic effects from the construction workforce and mitigation measures for these potential effects is provided in Section 13 of the Project ESA.

The demand for personnel and equipment will provide contracting and employment opportunities for qualified local and Indigenous businesses and individuals. For the preliminary Project schedule, see Figure 8-1.

8.3.1 Project Workforce Accommodations

Based on preliminary construction planning, NGTL will utilize local accommodations within the following communities and temporary camps are currently not expected to be required:

Turner Valley Section

Calgary, Okotoks and High River, AB

Longview Section

Okotoks and High River, AB

Lundbreck Section

High River and Pincher Creek, AB; and Sparwood, BC

The ESA prepared for the Project has assessed the potential environmental and socio-economic effects from utilizing camps, if required, and commercial accommodations. In addition, the ESA has also provided mitigation and management measures for these potential effects. If camps should be required, NGTL, in consultation with prime contractors, will determine the camp locations based on ease of access to the facility or major roads, and avoidance of, to the extent economically and technical feasible:

- areas of native vegetation
- wildlife habitat
- archaeological or heritage resources
- other environmentally, socially or culturally sensitive areas and preference for previously disturbed sites

8.4 CONSTRUCTION ACCESS

Construction access will maximize the use of existing public roads as well as privately owned and maintained all-season and seasonal industry roads. New temporary access to the pipeline section ROWs will be minimized to the greatest

extent possible, at this time, it is not anticipated that any new temporary access will be required.

Neither highways nor publicly or privately owned all-season roads are expected to require timber or vegetation clearing. Access through seasonal winter roads may require brushing to ensure safe use. At this time, no Project-related upgrades to the existing private roads are expected.

If through detailed design, new temporary access is determined to be required, NGTL will acquire the appropriate authorizations and will review the temporary access in the context of the Project ESA and implement any appropriate mitigation measures.

In addition to the use of existing roads and limited development of new temporary access, a travel lane will be installed in the pipeline construction ROW. Its surface will be prepared to safely accommodate the movement of construction vehicles and equipment. Ongoing maintenance of the travel lane will be completed regularly throughout the construction seasons.

Construction vehicles will use existing bridges, where available and feasible. In their absence, other techniques (i.e., temporary clear-span bridge, ice/snow bridge, culvert) will be used to cross watercourses with defined banks that might be encountered along the travel lane and during construction of approaches to the pipeline. The crossing method will be determined by NGTL and will reflect conditions at the time of construction as well as applicable regulatory requirements. For a list of preliminary crossing methods at watercourses, see Appendix A (Table 2A to Table 2C) of the Project ESA.

8.5 CONSTRUCTION LOGISTICS

Project construction logistics will involve moving equipment, materials and supplies by truck and/or rail to staging areas, stockpile sites and to the ROW. In addition to the equipment and materials required for construction, fuel and other supplies will be procured locally or transported from major distribution centres for use onsite.

8.6 CONSTRUCTION SAFETY

During construction, the prime contractor for each Project component will have overall responsibility for health and safety at their worksite. This includes:

- protecting the general public and TC Energy employees, the prime contractor, subcontractors, suppliers, any other contractors and visitors
- protecting and preserving NGTL property and the property of all third parties on, along, adjacent to or near the site from damage resulting from performance of any work, and exercise suitable precautions necessary to prevent damage thereto

- developing a Site-Specific Safety Plan (SSSP) that outlines how the prime contractor will implement, measure and review its Health, Safety and Environment (HSE) processes onsite
- implementing all applicable health and safety laws and regulations, including all applicable orders, directives, codes, guidelines, permits, licences and municipal bylaws
- monitoring activities at the site to ensure that the health and safety system is functioning properly and providing records to verify that the health and safety system is functioning
- implementing a task hazard assessment process (e.g., Job Safety Analysis) that breaks tasks down into steps, identifies the hazards associated with each step and identifies the appropriate control measures for the identified hazards
- ensuring all personnel (contractors, employees, NGTL representatives, visitors) complete a site-specific orientation before site access
- using proper personal protective equipment, as required
- stopping work activity immediately and notifying supervisors of unsafe conditions or acts
- in the event of an incident of elevated severity (e.g., major or critical) or of incidents where there was an elevated potential for severity, immediately stopping site activities that might obscure investigation evidence, completing a thorough investigation and preparing a written report identifying root causes and corrective measures
- reporting all incidents, including near-hits/misses and learning opportunities
- developing a site-specific traffic management plan
- developing a site-specific Emergency Response Plan (ERP)
- developing a Project-specific safety inspection and audit program in conjunction with NGTL
- having procedures in place to increase safety awareness and heighten the level of planning associated with all high-risk activities
- ensuring that required first aid services, equipment and supplies are available at the worksite
- ensuring equipment is inspected and maintained in a safe operating condition as specified by regulations and the manufacturer
- COVID-19 precautions and procedures, if applicable at time of planned commencement of construction activities

NGTL will develop a Safety Management Plan (SMP) that provides details on the roles and responsibilities of the project/construction management teams and other,

relevant safety information associated with the Project. Additionally, the Occupational Health and Safety (OHS) Standards for Prime/General Contractors outlines key safety requirements for the prime contractor to use when developing their SSSP so that a collaborative commitment to Project safety is achieved.

Where required, NGTL, in coordination with the prime contractor, will obtain safe work permits and complete an incident report consistent with the OPR.

For more information on the processes, procedures and systems for the safe, reliable and efficient operation of the Project see Section 9: Operations.

8.6.1 Emergency Response during Construction

Before construction, the prime contractor for each Project component will be responsible for developing and implementing an ERP to cover potential emergencies at their worksite and while travelling and hauling to and from their worksite during construction. This plan will be communicated during the site specific safety orientation before accessing the site. NGTL will also consult with regional emergency response agencies to help ensure that an appropriate understanding of roles and cooperation are in place for the Project during construction and that if appropriate, construction ERPs are reasonably linked into any response plans maintained by affected response agencies.

Depending on the scope and scale of any emergency that develops during construction activities, Project-specific ERPs activated during this phase may be supported by additional response-related resources maintained within TC Energy's Corporate Emergency Management Program.

For information on Emergency Preparedness and Response during operations, see Section 9: Operations.

8.6.2 Construction and Environmental Inspection

Construction inspectors are responsible for reviewing, understanding and ensuring that the prime contractor is constructing the pipeline sections in compliance with contract documents, the Project design, applicable standards, specifications and TC Energy's Quality Management System.

Environmental inspectors will be responsible for ensuring that environmental mitigation measures outlined in the Project-specific EPPs and EAS are followed during construction.

Individuals responsible for inspecting the pipeline and facility construction activities will be retained before construction activities start and will possess the necessary qualifications.

8.7 QUALITY MANAGEMENT – CONSTRUCTION

All purchased items and contracted services will be obtained from suppliers and contractors who have been pre-qualified by TC Energy’s internal supplier management and pre-qualification procedures.

During construction, the prime contractor for each Project component will be responsible for ensuring the work being performed is completed in accordance with contract documents, the Project design, applicable standards, specifications and the Project-specific quality plan.

Design changes during construction will be managed in accordance with the appropriate change management procedures and in accordance with TC Energy’s standard engineering practices.

8.8 PIPELINE CONSTRUCTION ACTIVITIES

Pipeline construction activities will include, but are not limited to:

- surveying
- clearing
- topsoil/strippings salvage
- grading
- trenching
- pipe stringing, bending and welding
- non-destructive examination
- coating
- pile driving at valve sites
- road and foreign line crossing
- watercourse crossings
- lowering-in
- buoyancy control
- backfilling
- pipeline cleaning
- pressure testing of pipeline components
- fencing at valve sites
- cleanup and reclamation

8.8.1 Right-of-Way, Site Preparation and Grading

The pipeline section ROWs will be cleared in accordance with the EPPs for the Project. Grading requirements along the ROW will vary from no grading in flat or low muskeg areas, to grade cuts in some localized areas. Grading will depend on factors such as slope angles, soil types and ice content. Grading of the ROW will be performed to the extent necessary to accommodate field pipe bending limits and ensure the safe movement of pipe, equipment and personnel along the ROW.

Where applicable, topsoil/strippings conservation will be performed to ensure that topsoil is stripped, stockpiled and replaced in a manner that prevents the loss of topsoil, mixing with subsoil or degradation of soil quality.

After topsoil or organic surface material is stripped and salvaged, irregular ground surfaces will be graded where required to provide a safe work surface. This would also include grading of any TWS as required. This will be completed using graders, excavators and bulldozers. There will be a number of other construction techniques, e.g., steep slope construction, designed for specific locations along the proposed route.

For typical drawings that show ROW use during construction, see Appendix 8-1.

8.8.2 Stringing, Welding, Bending, Coating and Non-destructive Examination

Where practical, pipe will be trucked from local stockpile sites and strung along the ROW.

For the pipeline to conform to the profile of the centreline, a bending machine will be used to bend the pipe along the ROW. The individual pipe joints will then be lined up, clamped in place and welded by either mechanical or manual welding methods. Welding requirements will be determined during detailed design. The joining program and NDE of welds will comply with the requirements of the OPR and CSA Z662-19. All welds will undergo NDE and, once validated, will be coated as per Section 7: Pipeline (Section 7.5: Pipeline Corrosion Control Elements and Facilities). NGTL will hire an independent third-party to conduct the NDE on all welds required for the Project.

8.8.3 Trenching, Installation and Backfill

Once the centreline of the pipeline has been staked, a single trench using conventional open trench pipeline construction methods will be created. Hydraulic excavators and/or trenching machines will be used to excavate the trench to the specified dimensions determined during detailed design. Open trench installation will take place in accordance with the procedures described in the EPPs for the Project. For the minimum depth of cover over the pipe, see Section 7: Pipeline (7.4.2 Minimum Depth of Cover) and Appendix 7-3.

Measures such as the installation of rock shielding or wood lagging may be used, as required, to ensure that the pipe and pipe coatings are not damaged during lowering in and backfill operations. After the joined pipeline is lowered into the trench, the pipe will be covered with suitable backfill material. In frozen conditions, the settlement of backfill materials will depend on, among other things, the ice content of the soil placed in the trench. Ditch settlement in areas with high ice content soils could be

offset with varying amounts of suitable material obtained along the construction ROW.

At any given time during pipeline construction activities, the length of open trench will be reduced, to the extent practical, to minimize environmental, socio-economic and safety concerns. The trench might be slightly wider where required (e.g., rocky terrain or where buoyancy control is required).

8.8.4 Temporary Vehicle and Pipeline Watercourse Crossing Construction

Watercourses crossed by the Project are identified in the Project's ESA Appendices A (Table 2A to Table 2C) and B.

Proposed temporary vehicle watercourse crossing methods during open water conditions are clear-span bridge and during dry or frozen conditions are clear-span bridge or snowfill/ice bridge. In some cases, culvert and fill could be used during open water or dry or frozen conditions.

Primary pipeline watercourse crossing methods are isolated open cut if water present or open cut if dry or frozen to bottom. Contingency methods are trenchless. Primary and contingency pipeline watercourse crossing methods are described in the following subsections.

8.8.4.1 Isolated Crossings

An isolated crossing method is preferred for watercourses with open water or under-ice flow that can be handled by isolation equipment. Isolated methods, using dams and pumps or flumes, divert flow around or across a construction zone to allow trench excavation, pipe installation and backfilling to occur away from flowing water. Silted water is typically left in the trench during these activities and then pumped onto a nearby vegetated or snow-filled area, rather than back into the watercourse.

8.8.4.2 Open Cut Crossings

The open cut crossing method is preferred for watercourses where flow is expected to be absent for the duration of in-stream activities. Any water collected from the excavation will be discharged to an upland area or otherwise filtered to reduce the amount of sediment being discharged back into the watercourse.

8.8.4.3 Trenchless Crossings

Trenchless crossing methods are generally considered for watercourses that cannot be effectively isolated or the meet Project needs. Under the Alberta *Water Act* Code of Practice (COP) for Pipelines and Telecommunication Lines Crossing a Water Body, the trenchless crossing method may be used in place of other construction methods and conditions described in this section for any class of water body, with or without

the written specifications and recommendations of a qualified aquatic environment specialist. Trenchless methods are included as contingencies should site-specific conditions and/or the needs of the Project at the time of construction require it; currently trenchless crossing methods are not planned for any watercourse crossings.

8.8.5 Pipeline Cleaning and Pressure Testing

The pipeline will be cleaned with cleaning pipeline inspection gauges (pigs) to remove construction debris. This debris will be collected and disposed in accordance with applicable regulations. Prefabricated components, such as aboveground risers, valve assemblies and elbow fittings with associated piping, will be tested in accordance with the pressure testing requirements in Clause 8 of CSA Z662-19, before arrival onsite.

Water for hydrostatic testing will be drawn from permitted sources and, after use, will be disposed of along the pipeline section ROWs in accordance with the applicable regulatory requirements. A mixture of water and glycol or methanol may be used for hydrostatic testing of above ground piping or where a risk of freezing exists. Any hydrostatic test medium other than water will be disposed of in accordance with applicable regulations.

8.8.6 Cleanup and Reclamation

General machine cleanup will begin along the pipeline ROW following backfill activities. In winter construction areas, final cleanup will be completed during the next winter period under frozen conditions to allow for one seasonal thaw period to occur after machine cleanup and initial operations. Examples of additional cleanup measures include replacing surface material and installing erosion-control measures.

Poor weather or unsuitable ROW conditions could delay final cleanup and ROW reclamation, until more suitable conditions exist. Watercourse crossings will be reclaimed in accordance with all applicable regulatory requirements. The ROW and TWS areas will be reclaimed as necessary and as soon as practical on completion of final cleanup.

8.9 LEAVE TO OPEN EXEMPTION REQUEST

8.9.1 Turner Valley Section

Construction of the Project involves the installation of tie-ins to existing NGTL assets for each of the Turner Valley, Longview and Lundbreck Sections. In order to preserve construction schedules and minimize outages on operating facilities, NGTL is requesting LTO exemption for thirteen tie-in assemblies (four associated with the Turner Valley Section, five associated with the Longview Section and four associated

with the Lundbreck Section). The technical details of these tie-ins and rationale are provided below and shown in Appendix 7-1.

Construction of the Turner Valley Section includes one crossover tie-in to the existing NPS 36 WAS Mainline Airdrie Section, one crossover tie-in to the existing NPS 42 WAS Mainline Loop Turner Valley Section, and two tie-ins to the existing NPS 48 Turner Valley Compressor Station suction and discharge headers. The connections to the Turner Valley Compression Station will be made with pre-tested (shop tested) tee assemblies. In order to minimize potential impacts to NGTL customers associated with pipeline outages, the connections to the parallel WAS Mainline Airdrie Section and WAS Mainline Loop Turner Valley Section will be made with hot tapped split tee connections.

Table 8-2: Turner Valley Section - LTO Exemption Request

Name	Facilities	Description
WAS90-0-D2 (hot tap)	NPS 36 x 36 split-tee NPS 36 flange by flange (F x F) valve NPS 1 ½ power gas riser assembly	Crossover to NPS 36 WAS Mainline Airdrie Section
WAS90-1-D2 (hot tap)	NPS 42 x 36 split-tee NPS 36 F x F valve NPS 1 ½ power gas riser assembly	Crossover to NPS 42 WAS Mainline Loop Turner Valley Section
WAS80-2-CSS-TRNR (tee)	NPS 48 x 42 welded tee fitting Approximately 70m of NPS 42 pipe NPS 42 x 16 welded tee fitting NPS 42 W x F valve NPS 16 W x F valve NPS 42 flange fitting Two NPS 1 ½ power gas riser assemblies	Tie-in to existing NPS 48 Turner Valley Compressor Station suction header
WAS80-2-CSD-TRNR (tee)	NPS 48 x 42 welded tee fitting Approximately 70m of NPS 42 pipe NPS 42 W x F valve NPS 42 flange fitting NPS 1 ½ power gas riser assembly	Tie-in to existing NPS 48 Turner Valley Compressor Station discharge header

8.9.2 Longview Section

Construction of the Longview Section includes one crossover tie-in to the existing NPS 36 WAS Mainline Airdrie Section, one crossover tie-in to the existing NPS 42 WAS Mainline Loop Longview Section, two direct tie-ins to the upstream and downstream ends of the existing NPS 48 WAS Mainline Loop Saratoga Section pipeline, and a tie-in of a receiver barrel NPS 16 kicker line to an existing NPS 36 crossover between the NPS 48 WAS Mainline Loop Saratoga Section and the NPS 36 Foothills Zone 7 pipeline (Western Leg). In order to minimize potential impacts to NGTL customers associated with pipeline outages, the crossover connections to the

WAS Mainline Airdrie Section, WAS Mainline Loop Longview Section will be made with hot tapped split tee connections. The NPS 16 connection to the existing NPS 36 crossover piping will be made with a hot tap with reinforced saddle. The tie-ins to the WAS Mainline Loop Saratoga Section will require a total pipeline outage, but the outage duration can be minimized by coordinating the tie-in execution at both ends of the pipeline, and the connections will be made with pre-tested (shop-tested) valve assemblies.

Table 8-3: Longview Section - LTO Exemption Request

Name	Facilities	Description
WAS70-0-U2 (hot tap)	NPS 36 x 36 split-tee NPS 36 flange by flange (F x F) valve NPS 1 ½ power gas riser assembly	Crossover to NPS 36 WAS Mainline Airdrie Section
WAS70-1-D2 (hot tap)	NPS 42 x 42 split-tee NPS 42 F x F valve NPS 1 ½ power gas riser assembly	Crossover to NPS 42 WAS Mainline Loop Longview Section
WAS67-2-BV (NPS 48 Block valve assembly with a NPS 48 cap assembly)	NPS 48 W x W valve Approximately 10 m of NPS 48 pipe Two NPS 12 blowdown assemblies Two NPS 1 ½ power gas riser assemblies NPS 48 welded cap assembly complete with NPS 1 ½ vent.	Tie-in to upstream end of existing NPS 48 WAS Mainline Loop Saratoga Section
NPS 16 receiver kicker line (hot tap)	NPS 36 x 16 hot tap, reinforced saddle NPS 16 W x F valve NPS 1 ½ power gas riser assembly	Receiver kicker line tie-in to existing NPS 36 crossover between NPS 48 WAS Mainline Loop Saratoga Section and NPS 36 Foothills Zone 7 pipeline (Western Leg)
WAS60-2-RT	NPS 48 W x F valve Approximately 10 m of NPS 48 pipe NPS 1 ½ power gas riser assembly	Tie-in of new receiver isolation valve to downstream end of existing NPS 48 WAS Mainline Loop Saratoga Section

8.9.3 Lundbreck Section

Construction of the Lundbreck Section includes two crossover tie-ins to the existing NPS 36 WAS Mainline Brooks Section, and two crossover tie-ins to the existing NPS 42 WAS Mainline Loop Lundbreck Section. In order to minimize potential impacts to NGTL customers associated with pipeline outages, the connections to the WAS Mainline and WAS Mainline Loop will be made with hot tapped split tee connections.

Table 8-4: Lundbreck Section - LTO Exemption Request

Name	Facilities	Description
WAS35-0-D2 (hot tap)	NPS 36 x 36 split-tee NPS 36 flange by flange (F x F) valve NPS 1 ½ power gas riser assembly	Crossover to NPS 36 WAS Mainline Brooks Section
WAS35-1-D2 (hot tap)	NPS 42 x 42 split-tee NPS 42 F x F valve NPS 1 ½ power gas riser assembly	Crossover to NPS 42 WAS Mainline Loop Lundbreck Section
WAS30-0-U2 (hot tap)	NPS 36 x 36 split-tee NPS 36 F x F valve NPS 1 ½ power gas riser assembly	Crossover to NPS 36 WAS Mainline Brooks Section
WAS35-1-U2 (hot tap)	NPS 42 x 42 split-tee NPS 42 F x F valve NPS 1 ½ power gas riser assembly	Crossover to NPS 42 WAS Mainline Loop Lundbreck Section

8.9.4 Safety Considerations and Rationale for Exemption Request

All pipe, fittings and valves for the tie-ins of the pipelines will be prefabricated. All pipe, tees and valves will be hydrotested in the shop with the testing witnessed by a TC Energy representative before installation. Any components which may be exempt from a pressure test as outlined in CSA Z662-19 will meet the requirements of clause 8.1.7 of CSA Z662-19. All crossover valves will remain closed until LTO is granted for the Project. The welds for each tie-in cannot be pressure tested, because they are final tie-in welds to the existing pipelines. The integrity of the welds will be verified through field weld inspection and will involve both a visual inspection and NDE that includes one or more of radiographic, ultrasonic, magnetic particle, or liquid penetration examination, depending on the size and type of weld, in accordance with TC Energy’s specifications. Inspectors are required to monitor the welding on site, verify that safe practices are implemented, and record welding parameters as part of their inspection to ensure that welding is conducted in conformance with the qualified welding procedure(s).

TC Energy has processes and safeguards in place to ensure safe construction, such as applicable inspections and testing. Since only the valve assemblies, tees, minimal facility piping and split-tees would be pressurized as a result of the tie-in connections, NGTL submits that an exemption from the LTO requirement would not compromise the safety of employees, the public or the environment.

NGTL confirms the shop tests for the tie-in assemblies will comply with the required time duration and pressure testing requirements of CSA Z662-19. NGTL proposes to file the shop test information for the valve and tee assemblies as part of the LTO application for each applicable pipeline section.

8.9.5 Relief Sought

Pursuant to section 214(1) of the CER Act, NGTL seeks an exemption from the requirements of sections 180(1)(b) and 213(1) of the CER Act to obtain LTO from the CER for the tie-in portions of the Turner Valley, Longview and Lundbreck Sections of the Project prior to the installation of the tie-in assemblies described above. NGTL will file an LTO application for the balance of each of the sections with the CER after construction is completed.

8.10 COMMISSIONING

Upon successful completion of hydrotesting, the pipeline sections will be prepared for commissioning and start-up. Commissioning will be conducted by qualified NGTL personnel.

9.0 OPERATIONS

This section provides a description of the processes, procedures and systems for the safe, reliable and efficient operation of the Project.

9.1 OPERATING STANDARDS AND DOCUMENTATION

NGTL will operate the Project in accordance with all applicable legislation, codes and standards, including the OPR and CSA Z662-19, and approval conditions. The TC Energy Operational Control Centre in Calgary monitors and controls NGTL System operations.

9.1.1 Emergency Preparedness and Response

NGTL confirms that emergency management during Project construction will be governed by the Project-specific ERPs, and during operations by TC Energy's overarching Emergency Management Corporate Program Manual and related operating procedures.

As part of Project consultation activities NGTL provides information concerning Emergency Preparedness and Response to various parties, which may include potentially affected stakeholders, landowners and Indigenous communities, as appropriate. TC Energy publishes its Emergency Management Corporate Program Manual in accordance with Order AO-001-MO-006-2016. In the event of an emergency TC Energy's comprehensive Emergency Management Program would be activated. TCPL employees and contractors receive training for emergency events and if there is an incident, will work closely with landowners and impacted persons or groups, as well as authorities and emergency responders to manage the incident.

During the operational phase, TC Energy's Emergency Management team will continue to liaise, collaborate and work with the emergency response agencies (Fire, Police, Emergency Medical Services) in the area through tabletop and field response exercises, and other outreach activities, all in order to be prepared and respond effectively to an incident.

9.1.2 Security Management Program

Security management, during operation, will be governed by TC Energy's Corporate Security Program Manual, Policy, and TC Energy Operating Procedures (TOPs) which adhere to the CSA Z246.1 standard for security management and, subsequently, the OPR. This includes, but is not limited to, procedures related to security threats, physical security and cyber security.

TC Energy's Corporate Security Program Manual will govern security management during construction and operations. However, the prime contractor(s) will also be

responsible for developing a security management plan for construction and will monitor its effectiveness.

9.1.3 TC Energy Operational Management System

TC Energy's Operational Management System (TOMS) applies to all of TC Energy's assets including the proposed Project. TOMS coordinates TC Energy's Mandated Programs which encompass the programs identified in the OPR. Mandated Programs also apply the requirements of TOMS that are based on regulatory requirements and industry management system standards to structure and manage Mandated Program activities. Through the "plan, do, check, act" continual improvement cycle of TOMS, risks are assessed and addressed through identifying goals, objectives and targets for risk reduction or performance improvement. Additionally, TOMS is refined over time through assurance and management review activities where corrective and preventative actions are identified and implemented, and any necessary modifications are implemented through TC Energy's Management of Change Framework. By implementing TOMS in support of a strong safety culture, TC Energy's projects are designed, constructed, operated and decommissioned or abandoned in a manner that provides for the safety and security of the public, TC Energy personnel and physical assets, and the protection of property and the environment.

9.1.4 Operating Procedures

To address both routine and non-routine pipeline system maintenance, the existing comprehensive registry of TOPs and associated systems will be used for the Project. TOPs are designed to:

- describe how work is to be accomplished (e.g., resources required and work instructions)
- identify specific competency requirements, where appropriate
- identify documentation requirements
- provide references to applicable health, safety and/or environmental requirements

9.1.5 Third-Party Damage Prevention Program

TC Energy's Damage Prevention Program is implemented in order to prevent Mechanical Damage. Mechanical Damage is damage to the pipe wall or coating (e.g., dent, gouge, scrape, ovality, chip or scratch) caused by mechanical or non-mechanical equipment including excavators, agricultural equipment and hand operated tools.

This Program educates all company personnel, contractors and third parties who engage in ground disturbance-related activities to promote safe excavation best practices and compliance with applicable regulations. The Damage Prevention Program defines company requirements for aerial patrol, signage, one call notification

membership and training protocols for employees who engage in planning or supervising ground disturbance activities.

TC Energy's Public Awareness Program, an integral component of the Damage Prevention Program, is designed to increase awareness of pipeline safety.

9.1.6 Public Awareness Program

Once the Project is placed in-service, the stakeholder, landowner and Indigenous engagement programs for the Project will be transitioned to TC Energy's PA Program, and the regional community and Indigenous relations resources for the operation of the asset. Stakeholders include the affected public, landowners, Indigenous groups, contractors, emergency responders and public officials.

The PA Program is intended to increase awareness of pipeline safety and, thereby, protect the public, environment and TC Energy facilities. It reaches potentially affected stakeholders, landowners and Indigenous groups engaged through Project planning and construction phases.

The goals of the PA Program are to:

- protect the public from injury
- protect the installed pipelines and facilities
- minimize third-party damage to pipelines and facilities
- provide the following information to landowners, stakeholders and Indigenous communities that might be affected by the pipelines and facilities:
 - location of company facilities
 - product information to increase awareness
 - contact information for TC Energy
 - leak detection and awareness
 - steps to take in the event of an emergency
- ensure that emergency response service agencies understand TC Energy's emergency response procedures and how to work together during an emergency
- inform contractors of requirements for working on or near NGTL System facilities
- maintain contact with the public, contractors and emergency service agencies that might interact with TC Energy representatives, or that might be affected by TC Energy facilities or operations

The PA Program includes an annual pipeline safety mailing to potentially affected Indigenous communities, landowners, contractors, emergency responders and local public officials, and a biennial mailing to the potentially affected public. The affected public are defined as residents, landowners and persons whose addresses are located

in the affected public awareness area of coverage along the pipeline ROW and may include:

- occupants, residents or tenants
- farmers
- homeowner's associations or groups
- neighborhood organizations
- power plants
- businesses
- industrial facilities

At a regional level, dedicated regional community and Indigenous relations resources develop and implement annual plans specific to their area that assess individual regional risks and define supplemental engagement activities, such as an information sharing session, to help mitigate these risks. Messaging and engagement strategies are tailored to the respective audience and, at a minimum, include information about how to recognize the signs of a pipeline leak and the importance of calling for a locate request before beginning any ground disturbance activity or crossing the pipeline.

Ongoing contact with the public provides NGTL with an opportunity to obtain information concerning safety, security and/or potential threats relating to the operation of an asset, changes to contact information, and ultimately enables all relevant interested persons to be informed and work together to achieve safety.

9.1.7 Integrity Management Program

NGTL will implement TC Energy's comprehensive IMP to monitor and ensure the integrity of the Project. The program uses advanced inspection and mitigation techniques applied within a comprehensive risk based methodology. Risk assessment is used to identify potential integrity threats and initiate inspection and mitigation activities, while results from advanced inspections for known or suspected integrity threats are used to develop specific integrity maintenance activities. Implementation of the IMP will be used in the operations phase to:

- reduce the potential for adverse environmental effects
- protect the installed pipelines and facilities
- maintain reliability
- ensure the safety of the public and Project personnel

Preventative maintenance programs will be incorporated in the design and operation of the pipeline components of the Project, including:

- aerial patrols
- internal inspections
- CP monitoring
- pipeline markers at roads and pipeline watercourse crossings

10.0 LAND MATTERS

This section describes the land requirements for the Project, NGTL’s process for acquiring the land rights required, and NGTL’s consultation with landowners and occupants.

10.1 GENERAL LAND INFORMATION

The pipeline components for the Project require a total length of an expected 40.1 km of ROW as well as associated TWS. The new ROW and TWS are located on both private (freehold) land and Provincial/Federal Crown land in Alberta.

10.2 IDENTIFICATION OF LANDOWNERS AND OCCUPANTS

As NGTL developed the proposed pipeline section routes, Project maps were used to identify all lands potentially affected by the Project. Surface Public Land Standing Report searches were completed to provide information on the Crown lands relating to all disposition holders that have an interest in the lands. Title searches were completed through Alberta Land Titles to obtain information relating to all potentially affected freehold lands, including identification of landowners and registered occupants. NGTL also identified unregistered occupants by gathering information from landowners regarding who customarily occupies their land. This land data was then included in a Project Line List, forming the basis of consultation and land acquisition activities.

As outlined in Table 10-1, approximately 72 parcels traversed by the pipeline sections are freehold land and approximately 11 are Provincial/Federal Crown land.

Table 10-1: Land Ownership Along Proposed Pipeline Section Route ROW

Land Type	Number of Parcels	Approximate Percentage of Land Parcels Crossed	Approximate Length (km)
Turner Valley Section			
Private (freehold)	53*	100%*	23.7
Longview Section			
Private (freehold)	15	90%	8.1
Provincial (Crown)	1	1%	0.1
Federal (Crown)	1	9%	0.8
Lundbreck Section			
Private (freehold)	5	40%	3.0
Provincial (Crown)	8	60%	4.4
Total	83	100%	40.1
Note *: Less than 1% of the Turner Valley Section (approximately 40 m) crosses Provincial Crown land (at Threepoint Creek).			

NGTL has identified 55 landowners (53 freehold and the Provincial and Federal Crown) and two occupants (One freehold and one Federal Crown [Bar U Ranch National Historic Site]) that are potentially affected by the Project.

NGTL has also determined that two land users (e.g., grazing tenure holders – GRP 3798 and GRP 870052) may also potentially be affected by the Project.

As discussed in Section 10.9 and Section 11: Stakeholder Engagement, these land users have been provided with Project information. As discussed in Section 7: Pipeline (7.1.1 Route Selection Criteria), input received from these stakeholders has, and will continue to be considered as part of the routing process, as appropriate.

10.3 RIGHT-OF-WAY REQUIREMENTS

For the majority of the length of the pipeline components, a construction ROW width (includes both permanent ROW and TWS) of approximately 40 m will be utilized to provide for safe and efficient workspace for construction.

NGTL requires a permanent ROW of varying widths (between 18 m and 32 m) along the proposed route for operations and maintenance purposes. In areas where pipeline components parallel an existing NGTL ROW, the permanent ROW will, where possible, overlap the existing ROW to reduce the new permanent footprint.

Where feasible, the pipeline components parallel existing linear disturbances, such as existing NGTL ROW or other pipelines, roads and electrical power lines. Routing the pipeline components parallel and adjacent to these existing linear disturbances allows NGTL to minimize incremental environmental, stakeholder, and landowner effects, through reduction of the size of the new non-parallel permanent ROW required for the pipelines and facilitates efficient operations and maintenance of the pipeline. At this stage in Project planning, approximately 34.3 km (86%) of the proposed pipeline route parallels existing NGTL ROW or other existing linear disturbances.

Table 10-2 provides the parallel ROW and non-parallel ROW distances by pipeline section.

In addition to the typical construction ROW width of approximately 40 m, TWS will be required in certain locations to accommodate:

- safety
- material laydown areas and staging areas
- areas of increased depth of cover
- crossings (e.g., roads, railroads, pipelines, utilities and watercourses with defined banks)

- pipeline deflection areas
- surface material depth and stripping procedure
- timber clearing and storage
- access
- slip-bore locations
- trenchless crossing locations
- final tie-in weld locations
- areas where geotechnical or environmental conditions warrant additional TWS

Table 10-2: Parallel ROW and Non-Parallel ROW

	Approximate Total Length (km)	Approximate ROW Contiguous with Existing Disturbance* (km)			Approximate ROW Non-Contiguous with Existing Disturbance* (km)		
		Crown Land	Private Land	% of Total Length	Crown Land	Private Land	% of Total Length
Turner Valley Section	23.7	0.1	21.2	90%	0	2.4	10%
Longview Section	9.0	0.9	4.7	62%	0	3.4	38%
Lundbreck Section	7.4	4.4	3.0	100%	0	0	0
Total	40.1	5.4	28.9	86%	0	5.8	14%

Note *: Existing NGTL pipeline ROWs, third-party pipeline ROWs, powerline easements and/or road allowances.

For typical sketches of the construction ROW and TWS configurations, see Appendix 10-1. An estimated 117.7 ha of new permanent ROW will be required for the pipeline components, of which an estimated 30.8 ha will overlap existing NGTL pipeline ROWs. An estimated 83.4 ha of TWS will be required for construction of the pipeline components, of which an estimated 5.6 ha will overlap existing NGTL pipeline ROW.

The TWS requirements for the pipeline components are subject to refinement as the Project proceeds through detailed engineering. In addition, before the start of construction, NGTL and the prime contractor(s) for the Project will complete an additional assessment of lands required for construction activities. Once this assessment is completed, additional TWS may be required on a site-specific basis, which will be finalized in the field before, and potentially during construction. These areas, if needed, are expected to be located within the lands assessed in the Project ESA. In the event that TWS is required outside lands assessed in the Project ESA, NGTL will conduct a desktop review and field studies if necessary, and apply any necessary mitigation as detailed in the EPP.

NGTL will then review the new TWS requirements and acquire any applicable permits or authorizations and/or make any required notifications based on the scope and nature of the proposed changes.

TWS lands will not be required for NGTL’s operational needs and will, therefore, be returned to the provincial Crown or the landowner after construction, cleanup and final reclamation.

For a breakdown of the estimated land requirements for permanent land rights and TWS for the Project, see Table 10-3.

Table 10-3: Approximate Land Required for Permanent Lands and TWS

Project Component/Land Type	Approximate Non-Overlap Area (ha)	Approximate Overlap* Area (ha)	Approximate Total Area (ha)
Turner Valley Section			
Permanent ROW	47.7	27.5	75.2
TWS	38.4	1.9	40.3
Total	86.1	29.4	115.5
Longview Section			
Permanent ROW	28.3	0.0	28.3
TWS	26.3	0.4	26.7
Total	54.6	0.4	55
Lundbreck Section			
Permanent ROW	17.9	0.0	17.9
TWS	16.5	5.5	22.0
Total	34.4	5.5	39.9
TOTAL			
Permanent ROW	93.9	27.5	121.4
TWS	81.2	7.8	89.0
Total	175.1	35.3	210.4
*Overlap refers to TWS and permanent ROW overlapping existing NGTL ROW.			

10.4 PROJECT FACILITY REQUIREMENTS

10.4.1 Valve sites

Mainline valves will be installed at intervals as required along the proposed pipeline sections and will be located within the permanent ROW. Additional TWS will be required at these sites during construction. The permanent valve sites will be fenced to ensure the safety and protection of the asset and public, as well as protection of the environment.

Access to valve sites will be via the permanent ROW or permanent or temporary access roads during both construction and operations.

10.4.2 Launcher and Receiver Lands

Permanent launcher and receiver site requirements will be assessed for each pipeline component and will be located within a fenced area within the boundaries of the permanent pipeline ROW. For a preliminary list of launcher and receiver locations, see Table 7-7. Additional TWS may be required at these sites during construction. Access to sites will be via the permanent ROW or permanent or temporary access roads during both construction and operations.

10.4.3 Cathodic Protection Land Requirements

The pipeline components will share the CP system that currently protects the NGTL System. Upgrades to the existing CP system may be needed and will be evaluated as detailed design progresses, including investigation of potential Alternating Current (AC) mitigation where required. New test stations will be installed at appropriate intervals and locations along the Project to monitor the effectiveness of the applied CP current.

10.4.4 Stockpile Sites and Contractor Yards

Stockpile sites and contractor yards will be required for construction of the pipeline sections. NGTL is currently investigating potential locations for ancillary sites and will use existing disturbed areas where feasible, to minimize effects on previously undisturbed areas.

10.4.5 Third-Party Agreements

Where the pipeline sections cross or are adjacent to other existing linear facilities or developments, or road access is required, NGTL will seek to obtain the necessary agreements, consents and approvals from each third-party owner in accordance with requirements of the applicable legislation.

10.5 PROCESS FOR ACQUIRING LAND RIGHTS

NGTL confirms that the land acquisition process for the Project will comply with the applicable sections of the CER Act, including sections 321 and 322.

Notices pursuant to section 322 of the CER Act will be served on owners of lands proposed to be acquired for the Project, as defined in section 320 of the CER Act. For sample section 322 notices for acquisition of pipeline ROW on Crown and freehold lands, see Appendix 10-2 and Appendix 10-3, respectively.

For a sample of the Grant of Right-of-Way and Grant of Right-of-Way (Overlap) to be used to acquire ROW on freehold lands see Appendices 10-4 and 10-5 respectively.

For a sample of the Temporary Work Space Agreement to be used to acquire TWS on freehold lands, see Appendix 10-6.

10.5.1 Proposed Land Acquisition Schedule

NGTL anticipates commencing the freehold land acquisition process for permanent and temporary land rights, including serving section 322(1) notices, in Q4 2021. NGTL will complete land acquisition by Q2 2022. The submission of applications for Crown dispositions is anticipated to occur in Q4 2021. Table 10-4 provides a preliminary land acquisition schedule. NGTL will ensure land rights will be acquired and third-party agreements obtained in advance of the scheduled construction.

Table 10-4: Proposed Land Acquisition Schedule

Dates	Activities
June 2019	Commenced title searches and prepared line lists.
July 2019	Commenced initial engagement with landowners regarding survey access, issued survey notifications and obtained Survey Acknowledgement Forms from all landowners that would voluntarily sign regarding specific Project pipeline sections.
November 2019	Provided Project information packages to landowners and occupants.
December 2019	Project Open Houses.
June 2020	Filed Project Notification with the CER.
July 2019 – Present (Ongoing)	Consultation with landowners and occupants.
October 2020	File Project Application.
Q4 2021	Prepare and serve section 322 (1) notices.
Q4 2021 – Q4 2022	Acquire freehold land rights.
Q4 2021	Submit Crown Applications.
Q4 2021 to Q2 2022	Obtain third-party agreements.
Q4 2021	Anticipated construction start (pipeline), pending regulatory approvals and clearance of pre-construction conditions

10.6 COMPENSATION FOR LAND RIGHTS

NGTL's objective is to reach voluntary and reasonable agreements with landowners for land rights, including agreement on the compensation payable for such rights. When NGTL and a landowner cannot agree on compensation, either party may access alternative dispute resolution pursuant to the CER Act or may apply to the CER to have the compensation payable determined by the Commission at a hearing.

10.7 DAMAGES

Section 314 of the CER Act requires NGTL to do as little damage as possible to landowners' property as a result of its activities, and to make full compensation to landowners for all damages sustained by them in the manner provided for in the CER Act.

10.8 SURVEY ACCESS

In July 2019, NGTL began approaching landowners with respect to survey access to complete the environmental, geotechnical, and other surveys that are required to support the Project Application. NGTL presented landowners with survey acknowledgement forms that described the survey work and gave landowners an opportunity to note any site-specific issues on the property for NGTL to consider when carrying out the survey work, as well as any specific timing or notification issues with respect to the survey work.

NGTL will continue to pursue survey access to lands for environmental, geotechnical, and other surveys required. Additional environmental investigations are anticipated to take place in Q2 2021 (see Section 1: Executive Summary [1.15 Supplemental Information]). NGTL will consult with landowners should any additional surveys be required beyond Q2 2021.

10.9 LANDOWNER CONSULTATION AND CONCERNS

This section describes:

- the principles, goals and scope of NGTL's landowner consultation program for the Project
- NGTL's landowner consultation activities to date
- concerns that have been raised by landowners and NGTL's response to those concerns
- NGTL's plans for ongoing consultation

In this section, reference to landowners includes occupants where appropriate.

10.9.1 Principles and Goals

NGTL applies TC Energy’s landowner guiding principles on its projects to guide how TC Energy employees and contractors are required to conduct themselves when working with landowners. For a copy of TC Energy’s Working with Landowners – Our Guiding Principles document, see Appendix 10-7.

In addition to the stakeholder engagement principles and goals set out in Section 11, the goals of landowner consultation are to:

- identify and address Project-related landowner questions and concerns
- support the acquisition of land rights necessary for the construction, operation and maintenance of the Project

10.9.2 Landowner Consultation Activities

For details of the stakeholder engagement process, which included the notification and engagement of landowners, see Section 11: Stakeholder Engagement.

As noted in Section 10.8: Survey Access, NGTL began approaching landowners with respect to survey access for the project in July 2019. Contact was made to provide information about the Project and to discuss survey access for environmental, geotechnical, and other surveys.

Throughout the regulatory process and construction phase, NGTL will continue to consult with landowners to identify and address questions and concerns, and to acquire the necessary land rights.

NGTL has enacted protocols to ensure the continuation of consultation and land acquisition with land stakeholders during the COVID-19 pandemic. If social distancing measures remain in place, NGTL will conduct as many consultations and follow-ups via phone, electronic medium or mail as possible. With respect to the acquisition of land rights requiring signature, NGTL has created a process using DocuSign® to execute agreements electronically where possible. NGTL notes however that the success of this protocol will be contingent on landowner involvement and willingness to participate electronically. Should essential agreements not be progressed electronically for any reason and in-person meetings are required, the decision to meet in-person will be reviewed on a case-by-case basis and appropriate mitigation measures will be followed (e.g., outdoor meetings where possible, wearing masks, temperature checks prior to meeting, maintaining social distance, and enhanced sanitization efforts).

10.9.3 Landowner Questions and Concerns

Questions and concerns have been raised by landowners potentially affected by the Project since NGTL began landowner consultation in July 2019. NGTL will continue

to engage with landowners to address these and any other additional questions or concerns. Table 10-5 outlines landowners' concerns to October 9, 2020, and NGTL's responses.

Table 10-5: Potential Landowner Concerns

Description of Issue	Status of Resolution
Turner Valley Section	
Concerns with ROW size	NGTL is finalizing the Project footprint and will continue to engage with the landowner(s) to understand their concerns and investigate mitigations if required.
Weed control	NGTL will continue to engage with landowner(s) regarding standard mitigations for weed control management incorporated in the Project's Environmental Protection Plan (EPP).
Damage to trees, removal of trees	NGTL is finalizing the Project footprint and will continue to engage with the landowner(s) to quantify impacts on trees and investigate mitigations if required.
Proximity to residences	NGTL is finalizing the Project footprint and will continue to engage with the landowner(s) to understand their concerns and investigate mitigations if required.
General construction disturbances	NGTL is finalizing the Project footprint and will continue to engage with the landowner(s) to understand their concerns and investigate mitigations if required.
Impact to natural springs / water wells	NGTL is planning to conduct geotechnical analysis on the pipeline routes, which will provide further clarity on potential impact to water wells and springs. NGTL will follow up with landowner(s) when geotechnical information is available.
Pipeline routing	NGTL has gathered routing preferences and feedback from stakeholders and is incorporating feedback into Project planning. NGTL will continue to engage with stakeholders as routing decisions are finalized.
Disruption to grazing operations	NGTL will continue to engage with landowner(s) and occupants regarding potential impacts to grazing operations and provide mitigations if necessary.
Compensation concerns	NGTL is finalizing the Project footprint, as well as land valuations / appraisals. NGTL will meet with landowner(s) regarding appropriate compensation when the necessary inputs are finalized.
Weed control	NGTL will continue to engage with landowner(s) regarding standard mitigations for weed control management incorporated in the Project's EPP.
Longview Section	
Concerns with ROW size	NGTL is finalizing the Project footprint and will continue to engage with the landowner(s) to understand their concerns and investigate mitigations if required.
General construction disturbances	NGTL is finalizing the Project footprint and will continue to engage with the landowner(s) to understand their concerns and investigate mitigations if required.
Compensation concerns	NGTL is finalizing the Project footprint, as well as land valuations / appraisals. NGTL will meet with landowner(s) regarding appropriate compensation when the necessary inputs are finalized.

Table 10-5: Potential Landowner Concerns (cont'd)

Description of Issue	Status of Resolution
Crop loss	NGTL is finalizing the Project footprint and will meet with landowner(s) regarding appropriate compensation when the necessary inputs are finalized.
Disruption to grazing operations	NGTL will continue to engage with landowner(s) and occupants regarding potential impacts to grazing operations and provide mitigations if necessary.
Weed control	NGTL will continue to engage with landowner(s) regarding standard mitigations for weed control management incorporated in the Project's EPP.
Post-construction reclamation concerns	NGTL continues to engage with landowner(s) to understand and discuss reclamation concerns and follow up with appropriate construction / reclamation mitigations, if required.
Impact to irrigation	NGTL is finalizing the Project footprint and will continue to engage with the landowner(s) to understand their concerns and investigate mitigations if required.
Hiring of local contractors	NGTL is continuing to gather local contractor information for distribution to the prime contractor(s) for the Project once the contract(s) for prime contractor(s) have been awarded.
Lundbreck Section	
Reclamation concerns	NGTL continues to engage with landowner(s) to understand and discuss reclamation concerns and follow up with appropriate construction / reclamation mitigations, if required.
Concerns with ROW size	NGTL is finalizing the Project footprint and will continue to engage with the landowner(s) to understand their concerns and investigate mitigations if required.
General construction disturbances	NGTL is finalizing the Project footprint and will continue to engage with the landowner(s) to understand their concerns and investigate mitigations if required.
Impact to natural springs / water wells	NGTL is planning to conduct geotechnical analysis on the pipeline routes which will provide further clarity on potential impact to water wells and springs. NGTL will follow up with landowner(s) when geotechnical information is available.
Post-construction reclamation concerns	NGTL continues to engage with stakeholders to understand and discuss reclamation concerns and follow up with appropriate construction / reclamation mitigations, if required.
Business interruption	NGTL is finalizing Project details and construction schedules and will continue to engage with the landowner(s) to understand their concerns and investigate mitigations if required.
Survey Access	NGTL will continue to engage with the landowner(s) to discuss and mitigate concerns in an effort to obtain survey access.
Weed control	NGTL will continue to engage with landowner(s) regarding standard mitigations for weed control management incorporated in the Project's EPP.

10.9.4 Ongoing Consultation

Landowner consultation and land rights acquisition will continue throughout the regulatory process.

Throughout the construction phase, NGTL will maintain contact with landowners and occupants to address Project-related issues and concerns, and to implement agreed-upon mitigation or avoidance strategies.

For information regarding COVID-19 and stakeholder engagement see Section 10.9.2.

Once the Project is in-service, responsibility for ongoing landowner relations will be transitioned to operations, where regionally based NGTL liaisons will continue to build and maintain relationships with landowners and occupants. As construction of the Project nears completion, TC Energy's PA personnel will work in collaboration with the Project team to integrate these new assets into the PA Program. For more information on the PA Program, see Section 9: Operations (9.1.6 Public Awareness Program).

11.0 STAKEHOLDER ENGAGEMENT

This section describes TC Energy's stakeholder engagement program, which will be used by NGTL for the Project. The overriding principle underpinning the stakeholder engagement program is that stakeholders will be engaged in a fair, honest, open, consistent and timely manner by NGTL representatives, and will have the opportunity to provide input into NGTL's Project planning.

This section outlines the principles and goals that TC Energy used in designing its stakeholder engagement program, describes how that program is being implemented for the Project as it evolves, and summarizes the feedback received to date.

For a description of the landowner consultation for the Project, see Section 10: Land Matters, and for the Indigenous engagement program, see Section 12: Indigenous Engagement. Environmental regulatory consultation is summarized in Section 13: Environmental and Socio-Economic Matters.

11.1 PRINCIPLES AND GOALS

The purpose and goals of the stakeholder engagement program as it relates to the Project are to:

- formally introduce the Project to stakeholders
- understand and respect stakeholders' capacity to consult
- actively seek and consider comments on:
 - pipeline routing and facility site selection
 - potential environmental and socio-economic effects
 - mitigation required to address potential adverse Project effects
 - enhancement measures, where appropriate, to improve potential positive socio-economic effects.
- identify and respond to questions and concerns
- provide stakeholders with ongoing Project updates, including communication about the proposed Project and the anticipated regulatory schedule, including the CER application timing.
- consider stakeholder questions or concerns for incorporation as part of Project planning.
- facilitate ongoing communications that continue through the construction and operations phases to ensure future stakeholder questions or concerns, if any, are addressed in a timely manner.

11.2 DESIGN AND METHODOLOGY

The stakeholder engagement program was designed and implemented by TC Energy in accordance with the principles of TC Energy's stakeholder engagement framework, as well as community relations and communications best practices. The program is designed to:

- foster positive relationships with stakeholders
- provide opportunities for stakeholder input into the Project planning and development process
- provide information for stakeholders that reduces uncertainty and increases clarity

The stakeholder engagement program associated with a project is undertaken in a phased approach and implemented using open communication and participatory stakeholder involvement practices. The phases of the program include:

- identification of stakeholders and development of notification materials
- notification and engagement
- transition of Project from construction to operations

11.2.1 Identification of Stakeholders and Development of Notification Materials

The first phase of engagement involves identifying potentially interested and affected stakeholders in the Project area and developing engagement materials, including letters, maps and information fact sheets that will be used for notification purposes. NGTL identifies those stakeholders potentially affected by, or who have a potential interest in the Project before implementing an engagement program. For the Project, NGTL compiled an initial list of potential stakeholders through a combination of:

- desktop research
- NGTL's own operating experience in the area
- Leveraging our relationships and referrals with existing stakeholders

Stakeholders are encouraged to identify other potentially interested stakeholders for inclusion in the stakeholder engagement program.

Since the process of identification is ongoing and continues throughout the evolution of the Project, the stakeholder list is regularly updated. In addition, stakeholders can self identify by contacting the Project email account or toll-free telephone number referenced in Section 11.3.3.

NGTL initially identified the following stakeholders for the Project:

- members of the public
- municipal leaders and representatives (e.g., regional districts and municipalities)

- elected officials (i.e., provincial and federal)
- government agencies and representatives
- emergency responders
- local business communities

11.2.2 Notification and Engagement

The notification and engagement phase focus on public disclosure of the Project and solicitation of stakeholder input, using several engagement activities and communication tools. During this phase, NGTL seeks to:

- identify and address stakeholder questions and concerns
- provide clear, relevant and timely information about the Project
- provide an opportunity for stakeholders to provide feedback on the Project
- answer stakeholder questions about NGTL/TC Energy and the Project
- foster relationships between NGTL and communities along the proposed route
- inform stakeholders about the CER's regulatory review process
- discuss the construction schedule and potential impacts as well as local hiring opportunities
- ensure the CER's engagement process requirements are met or exceeded

NGTL's engagement continues throughout the regulatory process and Project construction.

11.2.3 Transition to Operations

The third phase of engagement will begin as the Project components transition from construction to operations. Any ongoing stakeholder questions or concerns related to Project construction or operations are managed through NGTL's regionally based liaisons, who will continue to build and maintain relationships through consistent and ongoing communication with stakeholders. TC Energy's PA Program will be implemented for the Project, as described in Section 9.1.6.

11.3 ENGAGEMENT TOOLS AND ACTIVITIES

An important component of NGTL's stakeholder engagement program is to provide timely and current information. Project information is regularly produced, updated and distributed through hand delivery, email, postings on the Project website and TC Energy's social media accounts. A toll-free telephone number and email address are also available to answer project-related questions and respond to concerns. The following sections outline some of the communication tools used.

11.3.1 Materials

General information materials were developed for the Project and used in mailouts, email distributions, presentations, responses to inquiries, media backgrounders and open houses. These materials include:

- Project letter to stakeholders
- Project fact sheet
- Public media notices
- Project maps
- open house invitations
- open house displays
- PowerPoint presentations

11.3.2 Media Relations

Along with TC Energy's community outreach program, TC Energy has a media relations program with a dedicated media line (1-800-608-7859) and email address (communications@tcenergy.com) to respond to incoming media inquiries in a timely and efficient manner.

11.3.3 Project Website, Email and Telephone Number

NGTL launched a Project website (<https://www.tcenergy.com/operations/natural-gas/west-path-delivery-program/>), which went live to the public on November 1, 2019. The website provides an overview of the Project, including routing and maps, as well as information on Project schedule, environment, safety, and emergency response. As the Project progresses, the website will be continually updated with information related to the regulatory process, construction schedule, engagement activities, and other key Project information.

Through the website, stakeholders are encouraged to email any inquiries to the Project email (public_affairs_ca@tcenergy.com), which is monitored regularly by a Project representative.

NGTL has also established a toll-free telephone number (1-855-895-8754), which is listed on the Project website.

11.3.4 Engagement Activities

In addition to the tools discussed above, NGTL also uses the following:

- Ongoing interface with stakeholders including face-to-face meetings
- newspaper and radio advertisements
- open house presentations
- Project information distribution by mail or email

- media releases
- digital media posts
- TC Energy program brochures (e.g., Indigenous Relations, Stakeholder Engagement) and the NEB brochure *Information for Proposed Pipeline or Power Line Projects that Involve a Hearing*.

For Project materials provided to stakeholders through engagement activities, see Appendix 11-1 through Appendix 11-10:

- letters to stakeholders (Appendices 11-1 and 11-2)
- Project Fact Sheet (Appendix 11-3)
- TC Energy’s Stakeholder Engagement Commitment Statement (Appendix 11-4)
- NEB brochure: *Information for Proposed Pipeline or Power Line Projects that Involve a Hearing* (Appendix 11-5)
- TC Energy brochure: *Your Safety, Our Integrity* (Appendix 11-6)
- TC Energy brochure: *Caring for the environment, stewardship, protection and performance* (Appendix 11-7)
- Indigenous Relations and Stakeholder Engagement brochures (Appendix 11-8 to 11-10)

11.4 IMPLEMENTATION OF THE ENGAGEMENT PROGRAM

NGTL’s notification and engagement activities for the Project and feedback received from stakeholders to date are summarized in the following sections.

11.4.1 Overview

Preliminary engagement with stakeholders commenced in Q4 2019. Project notifications were sent to identified stakeholders on November 6, 2019 and included a letter from TC Energy, a fact sheet including a high-level summary of the proposed Project, several TC Energy brochures, and the NEB brochure *Information for Proposed Pipeline or Power Line Projects that Involve a Hearing*. NGTL extended open offers to meet with regional and local municipalities to further discuss the Project materials provided.

The Project Notification was filed with the CER on June 1, 2020.¹ NGTL continues to engage with stakeholders to provide updated Project information and to address any questions or concerns that arise. Engagement activities and further planned activities are summarized in the sections below.

¹ CER Filing ID: C06556-1.

11.4.2 Meetings with Local Government Stakeholders

In October 2019, NGTL reached out to representatives from four municipal districts and counties to provide information on the Project, address any questions and concerns, and set up a time for in-person meetings. Follow-up communications were initiated with mayors, Chief Administrative Officers, other elected officials, staff, and emergency responders from the following local governments:

- Foothills County
- Town of Turner Valley
- Town of Black Diamond
- Foothills County
- MD of Ranchlands No. 66
- MD of Pincher Creek No. 9
- SM of Crowsnest Pass
- Town of Pincher Creek

Responses were received in October 2019, and in-person meetings were scheduled to take place in November and December 2019.

Following initial meetings, NGTL made Project presentations to all community stakeholders, listed above, in November and December 2019.

NGTL's council presentations and meetings with administration departments introduced the Project and explained TC Energy's natural gas transmission pipelines and the need for additional energy infrastructure. At these sessions, NGTL representatives:

- described the role of the CER
- described TC Energy's stakeholder engagement program
- described TC Energy's environmental assessment process
- described the components, locations, and timing of proposed Project activities
- explained essential components of TC Energy's safety, integrity and maintenance programs
- outlined potential benefits to the community as a result of the Project

Local government representatives from municipal districts, counties and municipalities were generally interested in information on:

- proposed pipeline routes and facility locations
- potential positive and negative socio-economic effects on their community

- impacts on local infrastructure
- proposed increase in NGTL System capacity and primary markets for increased natural gas volumes
- workforce accommodations strategies
- Project and regulatory timelines
- engagement strategy and notified stakeholder and Indigenous groups
- environmental assessment
- local hiring and contracting
- emergency response and safety

In keeping with TC Energy's commitment to ongoing engagement, Project representatives also participated in municipal conferences to provide information about the Project, receive feedback and answer any questions. Over the course of Project engagement to date, these conferences have provided NGTL with an opportunity to connect with existing stakeholders as well as meet newly elected municipal officials and other individuals representing municipalities and organizations that may have an interest in the Project.

11.4.3 Open Houses

NGTL hosted public Project-specific open house events in November and December of 2019, which provided an opportunity for area residents and stakeholders to ask questions and provide feedback on the Project. The open house events took place in:

- Longview, AB
- Turner Valley, AB
- Sparwood, BC

NGTL representatives from Project Management, Engineering, Environment, Land, Indigenous Relations, Socio-Economics, and Public Affairs were on hand to answer questions from attendees, record feedback, and provide both Project-specific and corporate TC Energy information.

Topics discussed during the Open Houses can be found in Section 11.5, Table 11-1.

11.5 STAKEHOLDER FEEDBACK

Engagement with stakeholders, including community members, landowners, occupants, local governments, and other stakeholders has been accomplished through direct engagement with interested parties, the Project telephone line and email address, and Project representation at community events and open houses.

For a general summary of the primary topics of discussion with stakeholders along with NGTL’s general responses, see Table 11-1.

Feedback gathered through consultation and engagement with local governments and the general public has been incorporated into ongoing engagement and will continue to be considered for incorporation into Project planning and execution, as appropriate.

Table 11-1: Summary of Stakeholder Discussion Topics

Primary Topic	Specified Interest(s)	NGTL Response(s)
Environment Matters	<p>Effect of water (e.g., wetlands, watercourses, drainages) on agricultural practices.</p> <p>Presence of moose near the Turner Valley Section for hunting.</p> <p>TC Energy reclamation practices and provincial environmental guidance.</p>	<p>As per provincial requirements regarding wetlands and watercourses, Project effects to wetlands, watercourses and drainages are considered and mitigation is implemented to minimize changes resulting from the Project.</p> <p>NGTL does not anticipate that the presence of moose near the Turner Valley Section for hunting will change. However, construction of the Turner Valley Section may temporarily affect the distribution of wildlife in the local assessment area.</p> <p>NGTL provided general information related to TC Energy’s reclamation practices and obligations, and indicated current Project schedules have been developed to ensure construction is completed under appropriate conditions. NGTL has mitigation measures to account for construction under all conditions, though optimal conditions are always preferred.</p>
Community Matters	<p>Continuing discussions on workforce accommodation options.</p>	<p>NGTL committed to considering all feedback received from local governments into planning for construction camps, if required.</p> <p>Information received regarding capacity in communities will be provided to the prime contractors to assist with planning activities.</p>
Engagement Frequency	<p>TC Energy’s general level of activity in western Alberta and stakeholder resource capacity</p>	<p>NGTL provided Project information to regional municipal stakeholders, along with preliminary information on the timing and location of other projects proposed by NGTL with a view to assisting local stakeholders in their planning and identifying any engagement-related resource and staffing needs or constraints they may anticipate. NGTL is committed to aligning and bundling Project engagement where applicable and appropriate.</p>

Table 11-1: Summary of Stakeholder Discussion Topics (cont'd)

Primary Topic	Specified Interest(s)	NGTL Response(s)
Economic Matters	<p>Local contracting and hiring opportunities available through the Project.</p> <p>Accommodations strategy and use of local businesses.</p>	<p>NGTL provided information in the Project Fact Sheet on community benefits, and indicated that TC Energy has a Diverse and Local Supplier process built into the contract language to track project spending in communities.</p> <p>NGTL indicated a local vendor registration database is currently being utilized to collect information on businesses in areas located close to NGTL projects. This information will be used to assess business capacity in the region and will be provided to prime contractors once they are on-boarded to inform them of local vendors interested in working on these projects.</p> <p>NGTL committed to meeting with the Town of Black Diamond Intermunicipal Development Committee to discuss potential opportunities for local businesses in the area.</p> <p>Project management will look to utilize hotels and other existing accommodations, restaurants, local gas stations, grocery stores, etc. NGTL advised though that camps may be required.</p>
Land Matters	<p>Timing of land acquisition, and necessity of crossing agreements to traverse pipeline ROW.</p>	<p>NGTL indicated that Land representatives would be reaching out directly to landowners and other relevant third parties to discuss the Project and provide details on the land acquisition process, as well as crossing agreements.</p>
Emergency Response and Pipeline Safety	<p>General inquiries - pipe integrity, emergency preparedness and response.</p>	<p>NGTL indicated that a construction Emergency Response Plan (ERP) would be developed, and an operational ERP would be updated to include the Project's components prior to placing them into service. NGTL outlined TC Energy's Emergency Exercise program, in which mock exercises are conducted with local first responders in communities across its footprint on an annual basis. NGTL also provided high-level information regarding TC Energy's Emergency Preparedness and Response information provided in the Project Fact Sheet.</p>

11.6 ONGOING STAKEHOLDER CONSULTATION

NGTL will continue to engage stakeholders through all Project phases and respond appropriately, including through the regulatory review process, and until completion of Project construction. Ongoing engagement efforts may include open house notifications, Project updates, community presentations, and community investment activities. Updates to the Project website and monitoring of the email address and toll-free telephone line will also continue until construction is complete.

Once the Project is in-service, regionally based NGTL liaisons will continue to build and maintain relationships through consistent and ongoing communication with stakeholders. TC Energy's PA Program will be implemented for the Project as described in Section 9: Operations (9.1.6 Public Awareness Program).

12.0 INDIGENOUS ENGAGEMENT

This section provides information on NGTL’s Indigenous¹ Engagement Program for the Project, including:

- the principles and goals of the engagement program
- the design and implementation of the engagement program
- the outcomes of the engagement program up to October 9, 2020
- plans for ongoing engagement

NGTL recognizes that its Indigenous Engagement Program is complementary to any Crown consultation concerning potential impacts to Indigenous and Treaty rights, and that the CER’s process can be relied upon by the Crown.

12.1 PRINCIPLES AND GOALS

TC Energy’s Indigenous Relations Policy, which has been submitted previously to the CER, outlines the guiding principles for the Project’s engagement program and builds on TC Energy’s values of Safety, Integrity, Responsibility and Collaboration. These values guide engagement with Indigenous groups for all TC Energy business activities. TC Energy’s policies, principles and practices guide the design and implementation of the Indigenous Engagement Program for the Project.

The goal of the Indigenous Engagement Program for the Project is to provide Project information and seek feedback from Indigenous groups, including effects on rights, in order to anticipate, prevent, mitigate and manage conditions that have the potential to affect Indigenous groups. NGTL strives to meet this goal by:

- establishing a practical approach for the implementation of Project-specific engagement activities
- initiating engagement activities as soon as possible in the planning of the Project
- providing clear, relevant and timely information to potentially affected Indigenous groups
- responding to concerns raised and commitments made during engagement activities

The design of NGTL’s engagement program is consistent with the CER’s guidance on consultation as set out in its Filing Manual and Early Engagement Guide (April 2020).

¹ “Indigenous” has the meaning assigned by the definition of Aboriginal peoples of Canada in subsection 35(2) of the Constitution Act, 1982: (2) In this Act, “aboriginal peoples of Canada” includes the Indian, Inuit and Métis peoples of Canada.

12.2 DESIGN AND IMPLEMENTATION OF THE ENGAGEMENT PROGRAM

The Indigenous Engagement Program is designed to foster productive dialogue and exchange of information with potentially affected Indigenous groups interested in the Project. It was developed and adapted according to the nature, location and potential effects of the Project, and to the identified interests, information needs and concerns of Indigenous groups. While the underlying principles remain the same, the scope and depth of engagement may vary according to the potential for Project-related effects and the identified interests of each Indigenous group.

Factors that influenced the design of the Indigenous Engagement Program include the Project scope and location. As described in Section 10: Land Matters, the Project components require a total length of approximately 40.1 km of new ROW as well as associated TWS. The new ROW and TWS are located on both private (freehold) land and Provincial/Federal Crown land in Alberta.

NGTL's Indigenous Engagement Program for the Project is carried out according to a four-step process:

- Step 1: Identify potentially affected Indigenous groups
- Step 2: Establish the engagement approach
- Step 3: Implement engagement program activities
- Step 4: Respond to questions and concerns

These steps, and the activities associated with each, are described in the following sections.

12.2.1 STEP 1: IDENTIFY POTENTIALLY AFFECTED INDIGENOUS GROUPS

NGTL initially identified potentially affected Indigenous groups based on the location of Project components within asserted traditional territories, regional boundaries and/or areas of interest. This initial identification involved desktop research, NGTL's own operating experience, including past projects in the region, existing agreements and an established network of contacts with Indigenous groups in the Project area.

Regulator Feedback

In addition to its initial assessment, NGTL contacted the CER on November 6, 2019 to request the CER's preliminary list of potentially impacted Indigenous groups for the Project. In this request, NGTL included information about the nature of the Project, a map of the Project and a list of potentially affected Indigenous groups NGTL intended to contact about the Project. On November 21, 2019, the CER identified the following additional Indigenous groups as having known or asserted Traditional Territory in the area, which may be impacted by the Project:

- Foothills Ojibway Society
- Nakcowinewak Nation of Canada

These groups were provided the initial Project notification package, described below in Section 12.2.2, on December 4, 2019.

The Project Notification was filed with the CER on May 29, 2020,² which detailed NGTL's identification of Indigenous groups potentially affected by the Project, as well as the groups identified by CER on November 21, 2019

On July 24, 2020, NGTL received notification from the CER that, upon evaluation of the Project Notification, the CER had determined that the list of potentially affected Indigenous communities in the Project Notification was incomplete. The CER identified the following additional Indigenous groups as potentially affected by the Project:

- Ermineskin Cree Nation
- Louis Bull Tribe
- Montana First Nation
- O'Chiese First Nation

NGTL subsequently emailed these four additional Indigenous groups on August 6, 2020, providing the initial Project notification package, as described in Section 12.2.2. On August 11, 2020, NGTL sent a follow-up email, to Louis Bull Tribe, Montana First Nation and O'Chiese First Nation, requesting that they confirm their interest in the Project and identify which components of the Project fall within their Traditional Territory. On August 20, 2020, NGTL sent a follow-up email Ermineskin Cree Nation, requesting that they confirm their interest in the Project and identify which components of the Project fall within their Traditional Territory.

In the same notification, received from the CER on July 24, 2020, the CER also noted that it had received feedback from Parks Canada indicating that NGTL should be engaging with the following Indigenous groups for the Longview Section of the Project:

- Akisq'nuk First Nation
- Lower Kootenay First Nation
- St. Mary's Indian Band
- Tobacco Plains Indian Band
- Ktunaxa Nation Council

NGTL emailed these additional five Indigenous groups on August 6, 2020. NGTL has been engaging these groups on the Lundbreck Section of the Project and requested that they confirm their interest in being engaged on the Longview Section of the

² CER Filing ID: C06556.

Project as well, and if so how they may be potentially affected by that Project component.

Confirmation of Interest

Following initial identification and provision of the initial Project notification package, Indigenous groups were contacted by NGTL to confirm:

- receipt of the Project notification package
- level of interest in the Project
- the primary point of contact for engagement

The potentially affected Indigenous groups engaged on the Project components that are within or proximate to their identified Traditional Territories, regional boundaries and/or areas of interest are provided in Table 12-1.

Table 12-1: Indigenous Groups Currently Engaged on the Project

Indigenous Group		Turner Valley Section	Longview Section	Lundbreck Section
First Nations, Treaty 7	Blood Tribe	X	X	X
	Piikani Nation	X	X	X
	Siksika Nation	X	X	X
	Stoney Nakoda Nations	X	X	X
	Tsuut'ina Nation	X	X	x
First Nations, Treaty 6	Samson Cree Nation	X	X	x
	Ermineskin Cree Nation	To Be Confirmed	To Be Confirmed	To Be Confirmed
	Louis Bull Tribe	X	X	X
	Montana First Nation	To Be Confirmed	To Be Confirmed	To Be Confirmed
	O'Chiese First Nation	To Be Confirmed	To Be Confirmed	To Be Confirmed
Non-Treaty First Nations	Akisiq'nuk First Nation		X	X
	Foothills Ojibway Society	X		
	Lower Kootenay First Nation (Yaqaan Nuykiy)		X	X
	Nakcowinewak Nation of Canada	X		
	St. Mary's Indian Band (Aq'am First Nation)		X	X
	Tobacco Plains Indian Band (Akun'kunik' First Nation)		X	X

Table 12-1: Indigenous Groups Currently Engaged on the Project (cont'd)

Indigenous Group		Turner Valley Section	Longview Section	Lundbreck Section
First Nation Organizations	Ktunaxa Nation Council		X	X
Métis Organizations	Métis Nation of Alberta	X	X	X
	Métis Nation of Alberta Region 3	X	X	X

12.2.2 STEP 2: ESTABLISH THE ENGAGEMENT APPROACH

Engagement with Indigenous groups began on November 7, 2019 when NGTL provided each identified potentially affected Indigenous group an initial Project notification package, which included notice that NGTL intended to file a Section 183 application with the CER for the Project.

Included in the Project notification packages were the following materials:

- Project introduction letter, including Project Fact Sheet and overview maps
- NEB brochure: *Information for Proposed Pipeline or Power Line Projects That Involve a Hearing* (Appendix 11-5)
- TC Energy brochure: *Your Safety, Our Integrity* (Appendix 11-6)
- TC Energy brochure: *Indigenous Relations Policy* (Appendix 11-8)
- TC Energy brochure: *Engaging with our Stakeholders* (Appendix 11-9)
- TC Energy brochure: *Contracting and Employment* (Appendix 11-10)

NGTL engaged in preliminary discussions with the potentially affected Indigenous groups to understand their specific capacity and resourcing needs. NGTL worked with interested Indigenous groups to develop a Project-specific work plan and budget based on the specific information provided by the Indigenous group in each case. Work plans formalize the engagement activities to be conducted for the Project and the associated funding. Work plans typically define the engagement participation of the interested Indigenous group.

Each Indigenous group may have different processes or means of gathering and sharing information. NGTL tailors its approach to gathering information from groups to meet a group’s specific needs, and where appropriate provides reasonable resources to support participation in Project engagement activities.

12.2.3 STEP 3: IMPLEMENT ENGAGEMENT PROGRAM ACTIVITIES

Following the initial Project notifications and preliminary discussions, NGTL implemented a wide range of activities and communication tools to engage

Indigenous groups on the Project. Communication tools have included, but are not limited to:

- regulatory notifications
- maps, shapefiles, KMZ (Google Earth) files
- fact sheets, brochures

Engagement activities on the Project have included, but are not limited to:

- presentations, open houses
- face-to-face meetings
- email, telephone calls, videoconferences, text messages
- map reviews
- site visits
- sharing of traditional knowledge (TK), including TK studies
- review of community-specific TK literature review results
- discussions on contracting, employment, education and training opportunities
- community investment

NGTL works with each potentially affected Indigenous group to identify areas of interest and opportunity. Engagement in Project activities may include gathering of TK, education and training, community investment, and contracting and employment. These opportunities are described below.

NGTL notes its engagement plans and approach underwent modifications beginning in mid-March 2020, in response to the COVID-19 pandemic-required physical distancing, subsequent business interruptions and Indigenous community office closures. In response, NGTL suspended face to face meetings with Indigenous groups. However, NGTL continued to progress Project engagement in a variety of ways, including electronically, by telephone and virtually wherever possible, and engage with Indigenous groups by providing Project information, inquiring how the COVID-19 pandemic has affected them, and continuing to progress various TK and capacity funding agreements with Indigenous groups. NGTL will continue to engage respectfully throughout the COVID-19 pandemic and the Project lifecycle.

12.2.4 SHARING AND REVIEW OF TRADITIONAL KNOWLEDGE

NGTL understands TK to be knowledge held and contributed to by a group of people through generations of living in close contact with the land. It may consist of traditional ecological knowledge (TEK) and traditional land use (TLU) and forms part of a larger body of information which encompasses knowledge about cultural, environmental, economic, political and spiritual inter-relationships, which is typically identified by, and gathered through, engagement with Indigenous groups, and may include information from community-led TK studies.

Through the collection of TK with interested groups, NGTL seeks to:

- identify and consider potential effects of the Project on Indigenous interests, including the exercise or practice of Indigenous and Treaty rights and current use of lands and resources for traditional purposes to inform the ESA and Project planning, including any differences in the potential effects on diverse or specific groups of people within the community.
- incorporate TK in Project planning.
- identify concerns about the Project.
- propose measures to avoid, mitigate or otherwise manage potential adverse Project effects on Indigenous interests, and to enhance or support the exercise of Indigenous and Treaty rights.

As part of engagement, Indigenous groups were asked to provide input on the CER filing requirements pertaining to the rights of Indigenous peoples' assessment factors introduced by the CER Act and the CER's Interim Filing Guidance (the Requirements) on February 20, 2020.

A community-specific literature review of publicly available information was conducted in a preliminary effort to identify information regarding the Indigenous and Treaty rights and traditional land and resource use activities exercised or practiced in the Project area and potential Project effects. On July 9, 2020, the results of the literature review were shared with Indigenous groups and Indigenous groups were invited to review and provide NGTL with feedback. NGTL requested each community confirm the information was accurate or if it was not, provide any changes and identify additional sources of information they would like considered in the Project ESA.

In addition to receiving TK through ongoing engagement, TK may be collected through Project-specific TK studies conducted independently or facilitated with the support of environmental consultants to meet a group's specific needs. Agreements for the collection and sharing of Project-specific TK are developed between NGTL and each participating Indigenous group, as appropriate, with consideration to the guidance provided in the Filing Manual and the Canadian Environmental Assessment Agency's *Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted under the Canadian Environmental Assessment Act, 2012*.³ Information provided to NGTL by Indigenous groups which is identified as confidential will not appear on the public record but will be used to inform the development of mitigation strategies.

³ Canadian Environmental Assessment Agency (CEAA). March 2015a. *Reference Guide Considering Indigenous Traditional Knowledge in Environmental Assessments Conducted under the Canadian Environmental Assessment Act, 2012*.

The status of the TK studies for the Project is provided in Table 12-2. Feedback received through engagement, including Project-specific TK studies completed to date, along with information identified through the literature review of publicly available sources, feedback received from potentially affected Indigenous groups on the literature review and input on the Requirements was used to inform the assessment of potential impacts on the rights of Indigenous peoples and traditional land and resource use and incorporated throughout the ESA for the Project where relevant. NGTL will continue to engage with Indigenous groups to further understand how Indigenous and Treaty rights are exercised or practiced in the Project area and any potential issues, concerns or recommendations Indigenous groups may have about the Project, including opportunities to provide Project-specific TK. Additional information received by NGTL following submission of the Application will continue to be considered in Project planning, as appropriate.

Table 12-2: Status of the Traditional Knowledge Studies Being Completed by Each Participating Indigenous Group

Indigenous Group	Interest in Conducting a Study	Method of Study	Status of Study
Blood Tribe	Yes	Independent	Complete. TK Report received on September 15, 2020. NGTL is in the process of reviewing the TK Report and will provide a response to Blood Tribe.
Louis Bull Tribe	Yes	Independent	Underway.
Métis Nation of Alberta Region 3	Yes	Independent	Underway.
Piikani Nation	Yes	Independent	Underway.
Samson Cree Nation	Yes	Independent	Pending agreement with NGTL on appropriate scope and costs.
Siksika Nation	Yes	Independent	Complete. TK Report received on September 17, 2020. NGTL is in the process of reviewing the TK Report and will provide a response to Siksika Nation.
Stoney Nakoda Nations	Yes	Independent	Pending agreement with NGTL on appropriate scope and costs.
Tsuut'ina Nation	Yes	Independent	Interim TK Report received on September 30, 2020. NGTL is in the process of reviewing the TK Report and will provide a response to Tsuut'ina Nation.

Education and Training

NGTL recognizes the importance of providing opportunities for Indigenous participation both on the Project, as well as more broadly across areas where we work and operate. TC Energy has been supporting Indigenous groups potentially-affected by TC Energy projects through community investment in education and training to support Indigenous groups' capacity development programs, since 1999. NGTL will continue to provide support and resources to Indigenous groups to increase their ability to participate in Project activities and to support their long-term goals for skills development and training.

In collaboration with local Indigenous groups, and in alignment with TC Energy's Indigenous Relations Policy (see Appendix 11-8), NGTL has been and will continue working with Indigenous groups to identify opportunities for capacity development. As part of NGTL's ongoing broader corporate engagement program, NGTL will work with Indigenous groups through their human resource coordinators, economic development and education officers, or other designated responsible representatives, to support the group's immediate and/or long-term training needs, thereby ensuring any support and/or associated programs are fit-for-purpose.

Training and capacity development programs which TC Energy and NGTL have supported and sponsored in the past include:

- literacy and numeracy programs
- job readiness and life skills programs
- administration courses for Band staff
- safety tickets, first-aid and cardiopulmonary resuscitation (CPR) training
- heavy equipment operators training
- environmental assessment and monitoring courses
- pre-trades training

NGTL also supports individual community members in achieving their education goals through TC Energy's Community Scholarships Program. The Program delivers over 1,000 scholarships to students across North America, including 154 Indigenous Legacy Scholarships specifically for Indigenous students.

NGTL remains available to further discuss education and training and potential opportunities to support the same with potentially affected Indigenous groups at their request.

Community Legacy

NGTL has identified three focus areas for community legacy, in addition to education and training:

- **Safety:** Work with Indigenous groups to understand how NGTL can support their safety initiatives, including emergency preparedness, accident prevention and education and training.
- **Community:** Support community-led initiatives that bring communities together through initiatives such as cultural preservation and community events.
- **Environment:** Work with communities to conserve important habitat, protect species at risk and the environment.

NGTL supports community-led initiatives including, but not limited to: safety equipment and safety programs, emergency preparedness, Sun Dances, Pow Wows, Métis festivals, breakfast programs, cultural/language preservation, Elders programs, habitat conservation, species protection, and more.

NGTL recognizes that each Indigenous group's needs and interests are unique. Funding to communities is designed to provide flexibility in the development of initiatives that will support each Indigenous group's long-term goals.

NGTL contributes to community-led investment initiatives with Indigenous groups in the Project area and will continue to identify opportunities for collaboration in all operating regions.

NGTL remains available to further discuss community legacy initiatives and potential opportunities to support with potentially affected Indigenous groups at their request.

Contracting and Employment

NGTL's Indigenous Relations Business Engagement (IRBE) activities for the Project were established to increase the participation of those Indigenous groups potentially affected by the Project. Business engagement activities seek to provide business opportunities for participation arising from Project-related activities to qualified Indigenous contractors, suppliers, and individuals and are designed to:

- Assess local Indigenous groups and business capacity and capabilities for contracting and employment opportunities.
- Identify contracting and employment opportunities for Indigenous groups and businesses through the Project's contractors and subcontractors or through contracts with NGTL.
- Provide Project Contractors with information respecting the capabilities and capacity of Indigenous Groups and Businesses for inclusion in sub contracts and employment opportunities.
- Inform Project Contractors of services (Sub contracts) that are designated to be executed by qualified Indigenous Suppliers Only and those that are to be targeted for qualified Indigenous Supplier inclusion.

- Enhance capacity of Indigenous businesses and individuals to participate in the Project including education and training.
- Monitor, report and audit performance of contractor Indigenous participation plans developed and implemented by Project Contractors.

NGTL continues to provide information about contracting and employment opportunities activities to potentially affected Indigenous groups and businesses, obtain information regarding Indigenous group interest, capacity and capability relating to the Project, and discuss potential economic participation in the Project to build reciprocal business relationships.

The majority of opportunities for economic participation through contracting and employment will occur in the construction phase of the Project, if approved. It is not NGTL's practice to set targets for Indigenous employment and contracting, rather NGTL seeks to maximize economic opportunities for local Indigenous groups on all projects. To learn more about the IRBE program and activities as well as a list of potential employment opportunities, accountabilities and anticipated minimum anticipated entry requirements, please see Appendix 11-11.

NGTL maintains an updated understanding of business capacity and capabilities by engaging with Indigenous groups local to the Project on an ongoing basis to collect and validate information. Indigenous groups and businesses that show an interest in contracting opportunities are also directed to TC Energy's online vendor registration portal to submit business information. The information received is captured in TC Energy's Indigenous Business Directory and is shared, on consent, with Prime Contractor(s) for consideration of contracting and employment opportunities.

NGTL expects its contractors to uphold TC Energy's commitment to maximizing Indigenous participation of local Indigenous groups on its Projects. NGTL outlines Indigenous sub-contracting, employment, and training expectations through its sourcing events (e.g., request for proposals). In addition, NGTL actively monitors Prime Contractor implementation of its Indigenous participation commitments.

12.2.5 STEP 4: RESPONDING TO QUESTIONS OR CONCERNS

Questions or concerns identified by Indigenous groups during engagement activities are recorded and responded to by NGTL. As part of preparing a response, such questions or concerns will be shared with the appropriate Project technical specialists or designated environmental consultant. Once a response or resolution is developed, it is provided to the Indigenous group for further comment or dialogue.

NGTL seeks to work collaboratively with Indigenous groups to address Project-related questions or concerns and to provide information on how their input influenced Project design changes. The mitigation measures identified for the Project were developed by NGTL in collaboration with Indigenous groups during

engagement activities for the Project. NGTL continues to discuss with Indigenous groups the proposed measures to avoid, mitigate or otherwise manage potential effects of the Project and to address or respond to questions or identified concerns.

The outcomes of these efforts will be considered for incorporation in Project planning, and reported in regulatory filings, as appropriate. Concerns that remain outstanding will also be tracked and reported to the Commission as required.

12.3 OUTCOMES OF THE ENGAGEMENT PROGRAM

Project engagement activities, as well as the outcomes of those activities, have been and will continue to be tracked with a response provided, as appropriate. Engagement activity information is collected and managed in a database designed to support this work. Information collected includes the following:

- a list of Indigenous groups provided with Project-specific information.
- a description of how and when information was provided.
- dates and locations of activities throughout the engagement process.
- a summary of engagement efforts and outcomes, including information on concerns raised, and responses and measures taken to address the concerns.
- a description of outstanding concerns and proposed follow-up with Indigenous groups, if required.

12.3.1 Summary of Engagement Activities

This section provides an overview of the engagement activities carried out for the Project with each potentially affected Indigenous group from November 7, 2019, to September 17, 2020.

In addition to the Project materials provided on November 7, 2019, to all identified potentially affected Indigenous groups, the following engagement activities took place:

- On November 11, 2019, NGTL emailed potentially affected Indigenous groups in Alberta an invitation to the Public Open Houses in the Village of Longview and Town of Turner Valley to learn more about the proposed Project.
- On February 20, 2020, potentially affected Indigenous groups were asked to provide input on the CER filing requirements pertaining to the rights of Indigenous peoples' assessment factors introduced by the CER Act and the CER's Interim Filing Guidance (the Requirements) with respect to the Project.
- On May 11, 2020, NGTL emailed potentially affected Indigenous groups notification of an employment opportunity with NGTL's environmental consultant for the Project. Details surrounding the job postings and the associated

opportunity to expand interest and experience in environmental work were provided.

- On July 9, 2020, the results of the community-specific literature reviews were shared with potentially affected Indigenous groups for their review. NGTL requested each group confirm the information was accurate or if it was not, provide any changes and identify additional sources of information they would like considered in the Project ESA.
- On July 30, 2020, NGTL emailed potentially affected Indigenous groups in follow up to the community-specific literature review provided on July 9, 2020. NGTL noted it was able to consider input provided by August 7, 2020 into the Project ESA. NGTL also confirmed it would continue to engage and provide additional opportunities to share information about traditional knowledge and land use in the Project area, as well as any potential issues, concerns or recommendations the community may have about the Project. NGTL concluded that additional information received after August 7, 2020 would be considered in Project planning, as it became available to NGTL.
- On August 27, 2020, NGTL emailed select potentially affected Indigenous groups who had not provided a response to the community-specific literature review that was sent on July 9, 2020.⁴ NGTL noted that it had not received any feedback and as such would be considering the information in the ESA for the Project. NGTL confirmed engagement with the community would be ongoing and that NGTL would provide further opportunities to share information about traditional knowledge and land use in the Project area and any potential issues, concerns or recommendations the community may have about the Project. NGTL noted that additional information would be considered in the context of the Project ESA and incorporated into Project planning as appropriate, as it became available to NGTL.

NGTL will also provide notice to each potentially affected Indigenous group of the filing of this Application within 72 hours, in accordance with the guidance provided in the CER Filing Manual.

Since providing the initial Project notification package and follow up emails and by telephone to verify whether the communities had any questions or concerns related to the Project, NGTL has not received a response from the following groups:

- Akisq'nuk First Nation
- Ermineskin Cree Nation
- Tobacco Plains First Nation
- St. Mary's Indian Band
- Foothills Ojibway Society

⁴ August 27, 2020 email sent to: Akisq'nuk First Nation, Tobacco Plains Indian Band, St. Mary's Indian Band, Blood Tribe, Foothills Ojibway Society, Ktunaxa Nation Council, Métis Nation of Alberta, Nakcowinewak Nation of Canada, Piikani Nation, Samson Cree Nation, Siksika Nation and Lower Kootenay First Nation.

- O’Chiese First Nation
- Lower Kootenay First Nation
- Metis Nation of Alberta

Where engagement has occurred in addition to the notifications provided to all groups being engaged on the Project listed above, summaries of these activities with the respective Indigenous groups are provided below. These summaries also identify any questions and concerns communicated to NGTL, as well as the actions taken by, or planned to be taken by, NGTL to address those questions and concerns.

Blood Tribe (BT)

On November 7, 2019, NGTL received an email from BT confirming receipt of the Project notification package that NGTL had emailed to BT earlier the same day. BT requested a meeting to discuss the Project and begin the engagement process.

On November 12, 2019, NGTL and BT exchanged several emails discussing potential meeting dates. NGTL and BT agreed to meet on November 29, 2019.

On November 27, 2019, NGTL received an email from BT with a proposed budget for the November 29, 2019 meeting. On November 28, 2019, NGTL and BT exchanged several emails in follow up to BT’s November 27, 2019 email. NGTL informed BT that it would not be able to approve the budget provided by BT at that time, but that one of the items to be discussed at the meeting would be engagement capacity funding for the Project. NGTL noted that it would provide a Project overview to BT, which may assist BT in determining the types of engagement activities BT would like to undertake in relation to the Project. NGTL offered to travel to BT to reduce any travel costs associated with the meeting. BT replied, requesting that the meeting be postponed to the following week. NGTL confirmed receipt of the request to reschedule, and inquired what alternate dates worked well for BT. The meeting was rescheduled for December 2, 2019, and NGTL provided the KMZ files for the Project to aid in BT’s review of the Project information.

On December 2, 2019, NGTL and BT met to discuss the Project. NGTL provided a Project overview, emphasizing that the Project was in the early stages of Project planning. BT requested site visits and NGTL noted that an engagement capacity funding agreement could be developed to include facilitating a TK Study and subsequent report. NGTL requested that BT draft a work plan outlining items BT would like to be covered in the engagement capacity funding agreement for discussion and review. NGTL and BT agreed to meet early in the New Year (January 2020) to go over the work plan.

NGTL and Siksika Nation (SN) coordinated a meeting for January 24, 2020, to discuss the Project. On the day of the meeting, BT was also in attendance, as per SN’s invitation to BT to join the meeting.

On January 24, 2020, NGTL met with BT and SN to discuss the Project and timelines. BT and SN stated they would work with one another to coordinate site visits and sharing of information. BT also stated that they were concerned with the number of Projects being built in relation to cumulative effects. NGTL noted that the Project was looping existing infrastructure and that NGTL would work to minimize disturbance by following existing pipeline corridors. NGTL stated it would provide BT opportunities for site visits. BT stated that the amount of Crown land in Southern Alberta was shrinking and that BT would have to say no to development at a certain point. NGTL explained the amount of Crown land associated with each segment and noted that the Project was in the preliminary routing stages and that the routes were subject to change.

On February 13, 2020, NGTL emailed BT to follow up on the proposed engagement capacity funding agreement. BT replied by email the same day stating they would like a meeting to discuss the engagement capacity funding agreement. BT noted that they would inquire internally to see what dates worked well for their team and reach out to NGTL when they had a suggested date for a meeting.

On February 25, 2020, NGTL received an email from BT requesting maps for the Project.

On February 27, 2020, NGTL and BT exchanged emails and telephone calls to confirm a March 11, 2020 meeting.

On March 4, 2020, NGTL emailed BT providing the requested maps outlining the Crown land and freehold lands associated with the Project. NGTL also provided KMZ files for each section of the Project.

On March 11, 2020, NGTL met with BT and their legal counsel to discuss the Project. NGTL provided an overview of the Project and Project maps. BT noted that due to the number of large projects in the area, including mines in the Crowsnest Pass area, they were considering a regional impact assessment to cover the entirety of the land area that may be potentially impacted by all the projects, which may impact engagement on the Project as well. BT informed NGTL that BT was working to fully understand the new CER process and the Requirements that NGTL had requested input on, as part of early engagement. BT stated that the request for input on the Requirements was premature, and that BT would prefer to create a collaborative document in regard to the literature review. BT stated that they felt that the literature review document provided by NGTL did not create a full depiction of how the community could be impacted by the Project. BT requested additional time to complete the literature review and provide input on the Requirements. NGTL agreed to provide an extension to March 20, 2020. NGTL advised that through the TK Study BT could provide more input on the Requirements. BT stated the interpretation of rights from the government's perspective was a minimum and did not include crossing the landscape, camping or ability to conduct ceremony. BT stated that they would like to have a discussion with NGTL's Legal and Regulatory counsels to get a

better understanding of the Requirements. BT Legal representatives and NGTL Legal counsel agreed to an additional meeting separately to discuss the Requirements and potential process for collaboration. NGTL stated that it would provide the Crown land and freehold land maps electronically to assist in BT's assessment of the Project. NGTL and BT agreed to enter into an engagement capacity funding agreement and a TK Protocol Agreement. NGTL requested BT to provide a detailed work plan with proposed budget for NGTL to review. NGTL stated it would provide BT a copy of an example draft engagement capacity funding agreement for review.

On March 16, 2020, NGTL emailed BT in follow up to the meeting on March 11, 2020 providing the Crown land and freehold land maps, and an example draft engagement capacity funding agreement for review.

On March 18, 2020, NGTL received an email from BT containing a letter regarding concerns associated with NGTL's approach to collecting information pertaining to the Requirements. Some of the concerns included:

- The lack of capacity funding to undertake the review
- The summary information provided about the Project to date
- Perception that NGTL had not offered to work with BT collaboratively

Between June 2, 2020 and August 11, 2020 NGTL and BT negotiated engagement capacity funding for the Project and executed an agreement that included the provision of capacity funding, a TK Study as well as rights analysis report.

On July 29, 2020, NGTL received an email from BT requesting the shapefiles for the Project. NGTL emailed the shapefiles as requested that day.

On September 10, 2020, NGTL emailed BT and provided updated Crown land and freehold land map books. NGTL also provided details on changes that had been made to the Turner Valley Section, Longview Section and Lundbreck Section of the Project, as it related to access points onto the parcels of land for BT's TK Study.

On September 15, 2020, NGTL received BT's TK Report titled Blood Tribe/Káínai Traditional Knowledge, Land and Resource Use Baseline Study report. The report explained aspects of Blackfoot territory, history, way of life and culture to provide context for both changes and continuity between historic Blackfoot modes of living and Blood Tribe/Káínai's current land and resource use and the exercise of Treaty Rights.

NGTL is reviewing the results of BT's TK Report, and will provide a response with an offer to meet to answer questions or discuss concerns, if any.

On September 16, 2020, NGTL emailed BT several weblinks of drone video footage of aerial overviews of the Crown land that was anticipated to make up the route of the

Project. NGTL also provided Crown map books for the community to reference while reviewing the drone footage for context. NGTL stated the pipeline routing development process was still ongoing and subject to change. NGTL requested that BT contact NGTL if BT wished to share the video or use the video, or any part of it, for any other purposes than supporting their understanding of the preliminary pipeline route.

On September 17, 2020, NGTL emailed BT in follow up to the email sent the day prior containing the weblinks of drone video footage. NGTL clarified an error that had been made in the body of the email sent on September 16, 2020 and requested that BT contact NGTL if they had any questions.

On September 18, 2020, NGTL received an email from BT containing BT's Rights Assessment Study Report. NGTL is reviewing the results of BT's Rights Assessment Study Report and will provide a response with an offer to meet to answer questions or discuss concerns, if any.

On October 2, 2020, NGTL emailed BT to provide information regarding land access for the Lundbreck Section, Longview Section and Turner Valley Section of the Project. NGTL requested that BT contact NGTL if they had any questions.

On October 5, 2020, NGTL and BT exchanged text-messages. BT provided an update on the fieldwork for their TK Study and confirmed that they would be undertaking the fieldwork with SN. NGTL inquired if BT had all the maps they required. BT replied requesting the NGTL provide the shapefiles for the Project. On the same day, NGTL emailed BT the shapefiles for the Project.

Ermineskin Cree Nation (ECN)

On August 20, 2020, NGTL received an email from ECN in response to NGTL's follow-up email sent earlier the same day. ECN confirmed receipt of NGTL's email and noted that they would discuss the matter internally and get back to NGTL.

On September 17, 2020, NGTL emailed ECN and noted that while in discussion with ECN on another NGTL project, NGTL was informed that the Project falls outside of ECN's areas of interest. NGTL requested that ECN confirm if the Project falls outside of ECN's areas of interest. NGTL noted it was available to further discuss the request to be engaged.

Ktunaxa Nation Council (KNC)

With regards to the community specific engagement of Indigenous groups that are part of KNC, NGTL received direction from KNC that NGTL should send Project updates or information to KNC (through the online web-portal) and not directly to Akisq'nuk First Nation (AQFN), St. Mary's Indian Band (SMIB), Tobacco Plains Indian Band (TPIB), or Lower Kootenay First Nation (LKFN), as each community

has their own consultation team that may or may not respond to NGTL. Therefore, information that goes into the KNC web-portal may receive a response in the engagement summary below from AQFN, SMIB, TPIB, or LKFN.

On November 25, 2019, NGTL met with KNC to introduce the Project Engagement team and to gain an understanding of how KNC wanted to be engaged on the Project. NGTL provided a brief overview of its current operations and overview of the Project. KNC noted that they engage on behalf of the four Ktunaxa communities, AQFN, SMIB, or TPIB, and LKFN. KNC stated they would meet with the communities and subsequently provide NGTL a letter demonstrating consent for KNC to work on behalf of the other communities. KNC also directed NGTL to upload the Project information on the KNC online referral portal. KNC noted they would review the information with the Ktunaxa communities and provide NGTL with the next steps.

On November 28, 2019, NGTL emailed KNC noting that it was unable to upload the Project information into the KNC web-portal as directed. NGTL requested that KNC advise on next steps. On the same day, NGTL received an email reply from KNC confirming receipt of NGTL's email and noting that KNC would investigate the issue NGTL was having with the web-portal and follow up with NGTL.

On December 2, 2019, NGTL uploaded the Project notification package into the KNC web-portal.

On December 18, 2019, NGTL received an email from KNC in which KNC confirmed that at the time they did not have any comments regarding the Project or the information provided to date.

On June 29, 2020, NGTL received an email from KNC requesting shapefiles for another TC Energy project, as well as for the Project.

On July 6, 2020, NGTL emailed KNC the shapefiles for the Lundbreck Section of the Project. NGTL explained the Lundbreck Section was the Project section nearest to the Crowsnest Pass area, and requested KNC to contact NGTL if they needed additional information. NGTL also provided the Engagement Lead contact information for the other project KNC inquired about in their June 29, 2020 email.

On July 13, 2020, NGTL received an email from KNC in which KNC advised NGTL the KNC represents the AQFN, TPIB, SMIB and LKFN. KNC advised NGTL to provide all correspondence to KNC and not directly to the communities.

Louis Bull Tribe (LBT)

On August 11, 2020, NGTL emailed LBT in follow up to the email sent on August 6, 2020, which contained the initial Project notification package. NGTL requested that

LBT confirm their interest in being engaged on the Project, and if so, identify which components of the Project fall within their Traditional Territory. At this time, NGTL also provided the shapefiles for the Project. On the same day, NGTL received an email reply from LBT confirming their interest in the Project, and confirming that all the Project components fall within their Traditional Territory. LBT noted that they had an active group of hunters that used the Project areas for elk hunting as well as gatherers that travel to these regions and trade with other Indigenous groups near these areas. LBT expressed concerns that due to extensive development within Treaty 6, community members are forced to travel to Treaty 7 and 8 lands to practice their rights in an undisturbed manner. LBT also expressed interest in undertaking a map review and Elders and land users meeting, and possibly a TK Study.

On August 20, 2020, NGTL emailed LBT to request a telephone conference call to discuss the Project. On August 21, 2020, NGTL received an email from LBT confirming their availability for a telephone conference call on August 24, 2020.

On August 24, 2020, NGTL had a telephone conference call with LBT during which NGTL provided an overview of the Project and each of the Project components including the amount of Crown land associated with each component. NGTL also described the type of application, explaining that NGTL planned to file a Section 183 application as required for pipelines that are greater than 40 kilometers long, which will involve a hearing. LBT confirmed their interest in completing a map review and TK Study. LBT inquired if NGTL would provide capacity funding to LBT to undertake a TK Study. LBT confirmed they would like to undertake a TK Study on the Lundbreck Section of the Project, as LBT members hunted in that area. NGTL and LBT discussed capacity funding. NGTL and LBT agreed to enter into an engagement capacity funding agreement. LBT noted they would complete a site visit on the Lundbreck Section and that they would tentatively book the site visit the week of September 21, 2020. NGTL committed to providing LBT with the Crown land and freehold land map books, the KMZ file and the access map. NGTL also agreed to draft and provide an engagement capacity funding agreement for LBT's review and approval.

On August 25, 2020, NGTL emailed LBT providing a draft engagement capacity funding agreement for LBT's review and approval.

On September 1, 2020, NGTL received an email from LBT confirming that they had reviewed the engagement capacity funding agreement and agreed with the terms. LBT noted that they would have the document signed and would send it back to NGTL the following week. LBT requested that NGTL participate in an Elders meeting to provide a presentation of the Project. On September 2, 2020, NGTL emailed LBT confirming its ability to virtually present the Project at the upcoming Elders meeting and requested LBT confirm the date of the meeting.

On September 8, 2020, NGTL emailed LBT to request the date of the Elders meeting. On September 9, 2020, NGTL received an email from LBT with the signed

engagement capacity funding agreement attached. LBT noted they would be in touch later on regarding scheduling the Elders meeting and virtual Project presentation.

On September 10, 2020, NGTL emailed LBT the land access maps for the Lundbreck Section of the Project to facilitate LBT's TK Study planning.

On September 16, 2020, NGTL emailed LBT several weblinks of drone video footage of aerial overviews of the Crown land that was anticipated to make up the route of the Project. NGTL also provided Crown map books for the community to reference while reviewing the drone footage for context. NGTL stated the pipeline routing development process was still ongoing and subject to change. NGTL requested LBT contact NGTL if LBT wished to share the video or use the video, or any part of it, for any other purposes than supporting their understanding of the preliminary pipeline route.

On September 17, 2020, NGTL emailed LBT in follow up to the email sent the day prior containing the weblinks of drone video footage. NGTL clarified an error that had been made in the body of the email sent on September 16, 2020 and requested that LBT contact NGTL if they had any questions.

On September 18, 2020, NGTL received an email from LBT noting that due to the COVID-19 pandemic, LBT would not be able to hold any meetings, and would therefore be rescheduling the Elders and land users meeting that had been organized as part of their TK Study.

On October 1, 2020, NGTL received an email from LBT noting that they would not be able to complete the field work for their TK Study until Spring 2021. LBT noted that they would continue with their plans to have Elders and land user meetings and map reviews through the fall.

On October 2, 2020, NGTL emailed LBT thanking LBT for the update on their TK Study. NGTL provided Crown land and freehold land map books and provided information regarding access for the Lundbreck Section of the Project. NGTL requested that LBT contact NGTL if they had any questions or comments.

To date, LBT has not submitted a TK Report for the Project to NGTL. Upon receipt, the findings of LBT's TK Report will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

Métis Nation of Alberta Region 3 (MNAR3)

On November 28, 2019, NGTL emailed the KMZ file for the Project to MNAR3.

While in communication with MNAR3 regarding another project, a meeting between NGTL and MNAR3 was coordinated for December 9, 2019, regarding the Project.

On December 9, 2019, NGTL met with MNAR3 to discuss the Project. NGTL provided a brief overview of the Project, and noted that the Project was in the preliminary stages and routes were subject to change. MNAR3 noted that they would present the Project to MNAR3 council and contact NGTL in the New Year (2020) with next steps.

On January 21, 2020, NGTL received an email from MNAR3, in which MNAR3 requested a meeting to discuss the Project. NGTL replied by email the same day confirming a meeting date of January 28, 2020.

On January 28, 2020, NGTL met with MNAR3. MNAR3 noted that they would be presenting the Project to their Regional committee and requested more information on the Project's timelines. NGTL provided an overview of the Project timelines.

On February 10, 2020, NGTL received an email from MNAR3 thanking NGTL for the information it had shared to date and confirming that they would like to be engaged on the Project.

On February 13, 2020, NGTL emailed MNAR3, noting that NGTL would like to engage MNAR3 on the Project. NGTL proposed the parties enter into an engagement capacity funding agreement. NGTL requested that MNAR3 identify specific types of engagement activities that were important to MNAR3, so that NGTL could provide capacity funding to MNAR3, to support participation in those engagement activities. NGTL provided a list of possible engagement activities that MNAR3 might like to include. NGTL requested that MNAR3 contact NGTL to discuss further.

On February 14, 2020, NGTL and MNAR3 exchanged several emails to arrange a meeting. A meeting date of March 4, 2020 was agreed upon.

On March 4, 2020, NGTL met with MNAR3 to discuss the Project. NGTL provided the map books showing the Crown land and freehold land associated with the Project. NGTL also provided additional information and context regarding the Requirements and the community-specific literature review. The parties also discussed the engagement capacity funding agreement for the Project and TK Study. MNAR3 inquired if they could be notified if archeological artifacts were found on private land. NGTL noted that it would look into whether or not private land owners were required to disclose that type of information. MNAR3 requested that NGTL provide electronic versions of the map book and updated KMZ files for the Project. MNAR3 committed to developing a work plan for the engagement capacity funding agreement and TK Study for the Project. On the same day, NGTL emailed MNAR3 providing the electronic map books and updated KMZ files for the Project.

On April 14, 2020, NGTL received a telephone call from MNAR3 to discuss the engagement capacity funding agreement and TK Study for the Project. NGTL requested MNAR3 submit a budget for the field work related to the TK Study. MNAR3 noted that they may have some challenges getting the required documents

approved, as many staff were working remotely due to the COVID-19 pandemic. NGTL stated it would continue to work with MNAR3 recognizing the limitations the COVID-19 pandemic may bring to completing the TK studies and MNAR3's ability to provide feedback. NGTL also noted, in follow up to a March 4, 2020 meeting, which MNAR3 inquired if they could be notified if archeological artifacts were found on private land, NGTL noted that it would be the choice of the Landowner whether or not they would disclose information regarding potential archeological finds on private land.

On April 15, 2020, NGTL emailed MNAR3 a draft engagement capacity funding agreement for review and comment. NGTL requested that MNAR3 identify the specific types of engagement activities that were important to MNAR3, so it could facilitate their participation on the Project.

On May 11, 2020, NGTL received an email from MNAR3 advising that their regional council was not scheduled to meet until June 19, 2020, so MNAR3 would be unable to have the engagement capacity funding agreement signed until then. NGTL replied by email the same day suggesting that MNAR3 and NGTL draft the budgets associated with the engagement capacity funding agreement and TK Study, so that those documents could also be presented to the regional council. MNAR3 replied by email the same day, agreeing to this and noting that they would work on drafting the budgets.

On June 2, 2020, NGTL emailed MNAR3 requesting a status update on the engagement capacity funding agreement budget and TK Study budget for the Project.

On June 12, 2020, NGTL received an email from MNAR3 with the budgets attached for NGTL's review. MNAR3 advised NGTL they would present the budgets to their regional council on June 19, 2020.

On June 15, 2020, NGTL received an email from MNAR3 requesting a telephone call the same day to discuss the engagement capacity funding agreement budget and TK Study. The same day NGTL and MNAR3 had a telephone call to discuss the budgets. After the telephone call, on the same day, NGTL received an email from MNAR3 with a revised engagement capacity funding agreement budget and TK Study budget attached.

On June 18, 2020, NGTL and MNAR3 exchanged several emails regarding the engagement capacity funding agreement budget and TK Study budgets for the Project. NGTL provided MNAR3 a revised draft of the engagement capacity funding agreement and TK Protocol Agreement, and the associated budgets, for MNAR3's review and approval.

On July 8, 2020, NGTL emailed MNAR3 to inquire about the status of the engagement capacity funding agreement and TK Protocol Agreement, and the associated budgets.

On July 10, 2020, NGTL received an email from MNAR3 advising that the engagement capacity funding agreement and TK Protocol Agreement, and the associated budgets were approved by MNAR3 regional council and would be signed the following week, at which time MNAR3 would provide NGTL with signed copies.

On July 21, 2020, NGTL received an email from MNAR3 requesting a Word document version of the engagement capacity funding agreement and TK Protocol Agreement.

On July 23, 2020, NGTL emailed MNAR3 the Word document versions of the engagement capacity funding agreement and TK Protocol Agreement.

On August 4, 2020, NGTL received an email from MNAR3 with the signed engagement capacity funding agreement and TK Protocol Agreements attached.

On August 7, 2020, NGTL received an email from MNAR3. MNAR3 advised that they wanted to submit their own literature review for consideration in the context of the Project ESA, rather than review and provide feedback on the version that NGTL had provided.

On August 11, 2020, NGTL emailed MNAR3 regarding the literature review. NGTL advised that if MNAR3 wished to develop a community-specific literature review, it could be appended to the Project ESA. NGTL stated that it would have to confirm the possibility of additional time for MNAR3 to develop and submit their own literature review.

On August 12, 2020, NGTL emailed MNAR3 thanking them for the signed engagement capacity funding agreement and TK Protocol Agreement. NGTL requested that MNAR3 provide a timeline for MNAR3's fieldwork associated with the TK Study.

On August 19, 2020, NGTL emailed MNAR3 to inform them that if the community specific literature review was submitted to NGTL by September 4, 2020, it would be incorporated into the Project ESA.

On August 19, 2020, NGTL received an email from MNAR3 informing NGTL that their Elders were not comfortable undertaking fieldwork, while the COVID-19 pandemic was a continued risk, and would provide an updated TK fieldwork schedule.

On September 10, 2020, NGTL emailed MNAR3 and provided updated Crown land and freehold land map books. NGTL also provided details on changes that had been

made to the Turner Valley Section, Longview Section and Lundbreck Section of the Project, as it related to access points onto the parcels of land for MNAR3's TK Study.

On September 11, 2020, NGTL emailed MNAR3 in response to MNAR3's email of August 7, 2020 regarding the community specific literature review. NGTL explained the literature review focused on publicly available information in and around the Project area and was compiled in good faith in a preliminary effort to identify potential Project effects on MNAR3 as required by CER. NGTL requested permission from MNAR3 to incorporate information from its Traditional Land Use Study Report completed for the Springbank Off-Stream Reservoir Project (Springbank Report) into the literature review for the Project ESA, as the Springbank Report is not currently available on the public domain. NGTL noted that information from the Springbank Report would form part of the public record, should MNAR3 grant permission for its incorporation into the Project ESA. NGTL requested permission from MNAR3 to incorporate information from the Springbank Report in the Project ESA and requested a response by September 17, 2020.

On September 14, 2020, NGTL emailed MNAR3 to inquire if MNAR3 had scheduled or completed the field work for their TK Study. NGTL requested that MNAR3 provide an estimated timeline for when the interim and final TK Reports would be submitted to NGTL. NGTL noted that it would like for MNAR3 to have an opportunity to describe the Indigenous rights that MNAR3 exercises or practices in the Project area and to provide MNAR3's views on how the Project may affect the ability to exercise or practice Indigenous rights in the Project area. NGTL requested MNAR3 contact NGTL if they had any questions or concerns.

On September 16, 2020, NGTL and MNAR3 exchanged several emails related to the inclusion of information from MNAR3's Springbank Report, in the ESA for the Project. MNAR3 and NGTL agreed to discuss the matter further via telephone conference call on September 17, 2020.

On September 16, 2020, NGTL emailed MNAR3 several weblinks of drone video footage of aerial overviews of the Crown land that was anticipated to make up the route of the Project. NGTL also provided Crown map books for the community to reference, while reviewing the drone footage for context. NGTL stated the pipeline routing development process was still ongoing and subject to change. NGTL requested MNAR3 contact NGTL if MNAR3 wished to share the video or use the video, or any part of it, for any other purposes than supporting their understanding of the preliminary pipeline route.

On September 17, 2020, NGTL and MNAR3 had a telephone conference call to discuss community-specific literature review for the Project provided by NGTL, as well as NGTL's request for permission from MNAR3 to incorporate information to the ESA from MNAR3's Springbank Report. MNAR3 advised NGTL the Springbank Report did not accurately represent or reflect the current history of MNAR3

community members. MNAR3 noted that historical gaps are often present in literature written about MNAR3 by non-MNAR3 members. MNAR3 advised they would like to complete the literature reviews themselves or work in collaboration with NGTL to ensure an accurate and up-to-date portrayal of MNAR3 history and interests. MNAR3 explained the literature review needs to be a collaborative part of the engagement process. NGTL advised it would be filing the Project Application with the CER in early October 2020. NGTL explained the literature review was not intended to be a comprehensive overview, but a compilation of publicly available sources. NGTL explained that MNAR3's TK Report would supplement the information already compiled through the literature review and provide more accurate information regarding MNAR3's history and interests. NGTL advised that since MNAR3 had not yet completed their TK Study, that Project-specific TK may not be available for the ESA filing; however, NGTL would use the feedback provided by MNAR3 regarding the literature review. MNAR3 concluded they did not want the Springbank Report utilized to inform the Project ESA, but MNAR3 approved of appending MNAR3's community-specific literature review to the ESA. On the same day, NGTL emailed MNAR3 thanking them for the telephone conference call. NGTL requested that MNAR3 confirm NGTL's understanding from the telephone conference call that, MNAR3 did not want the Springbank Report utilized to inform the ESA for the Project, and that MNAR3 would like NGTL to append their Project-specific literature review to the ESA for the Project.

On September 29, 2020, NGTL received an email from MNAR3 requesting that NGTL provide copies of the TK Protocol Agreement and approved work plan for MNAR3's records.

On September 30, 2020, NGTL and MNAR3 exchanged emails. NGTL provided the TK Protocol Agreement and approved work plan for MNAR3's records. NGTL requested that MNAR3 confirm if they intended to complete their field work in the fall of 2020. MNAR3 noted that they would be in touch with NGTL once they had internally organized their field work schedule. To date, MNAR3 has not submitted a TK Report for the Project to NGTL. Upon receipt, the findings of MNAR3's TK Report will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

On October 2, 2020, NGTL emailed MNAR3 to provide information regarding land access for the Lundbreck Section, Longview Section and Turner Valley Section of the Project. NGTL requested that MNAR3 contact NGTL if they had any questions.

Montana First Nation (MFN)

On September 8, 2020 NGTL received an email from MFN advising that after reviewing the KMZ files provided by NGTL, MFN had determined there would be direct and immediate effects from the Project to MFN's traditional livelihood and traditional use activities. MFN noted that they had always utilized the Project area on a year-round basis and identified areas of concern for MFN in relation to traditional

and cultural use, plant harvesting for medicinal and ceremonial purpose, hunting, trapping, as well as impacts to trees. MFN expressed concern that the proposed Project activities had the potential to damage ecosystems and the environment in general, as well as add to cumulative impacts to the lands MFN use, and additional loss of habitat for animals and plant species.

On September 29, 2020, NGTL emailed MFN requesting a telephone conference call with MFN to discuss the Project. NGTL provided some dates it was available and requested that MFN confirm if any of the proposed dates worked for MFN.

Nakcowinewak Nation of Canada (NNC)

On July 9, 2020, NGTL had a telephone call with NNC to discuss the Project. NNC noted that NGTL had provided NNC a number of Project updates within the last few weeks and NNC acknowledged they were behind in reviewing the Project information but would like to participate in the Project. NGTL explained the new assessment factors introduced by the CER Act and the Requirements, and requested NNC's input on the Requirements. NGTL requested NNC to provide a map outlining NNC's areas of interest or current use, and explained this information would help NGTL understand how the Project may potentially affect the exercise of NNC rights within the Project area, while also helping NGTL to scope engagement with NNC. NNC noted they would contact NGTL and provide a Traditional Territory map. NNC requested a meeting with NGTL to discuss the Project further.

On August 30, 2020, NGTL received an email from NNC explaining that they had been working towards completing a TK Study, and associated TK Report, for another project through the summer and had been very busy. NNC noted they would telephone NGTL to discuss the status of the community-specific literature review.

On September 8, 2020, NGTL received an email from NNC expressing apologies for not responding to the literature review and requested that NGTL resend the literature review.

On September 15, 2020, NGTL emailed NNC their community-specific literature review for the Project and requested that NNC contact NGTL if they had any questions.

On September 18, 2020, NGTL received an email from NNC containing proposed comments and additions to the community-specific literature review for the Project. On the same day, NGTL replied by email noting that as per NGTL's email of August 26, 2020, any feedback on the literature review reviewed after August 7, 2020, would be considered in the context of the ESA and incorporated into Project planning as appropriate, and will be reported on in a subsequent filing to the CER.

Piikani Nation (PKN)

On November 28, 2019, NGTL emailed the KMZ file for the Project to PKN.

On December 3, 2019, NGTL received an email from PKN confirming their receipt of the Project information provided to date. PKN requested that NGTL provide its availability for a meeting to discuss the Project. On December 4, 2019, NGTL emailed PKN to provide its availability for a meeting, and requested that PKN confirm if any of the dates proposed worked for PKN. On the same day, NGTL received an email reply from PKN confirming their availability for a meeting on December 12, 2019.

On December 5, 2019, NGTL received an email from PKN requesting that the meeting scheduled for December 12, 2019, be rescheduled for January 2020. PKN requested that NGTL provide its availability for a meeting in January 2020. NGTL replied by email on the same day and proposed several dates in January 2020 for a meeting.

From December 9, 2020 to December 17, 2020, NGTL and PKN exchanged several emails to confirm a meeting for January 20, 2020.

On January 20, 2020, NGTL met with PKN to discuss the Project. NGTL provided PKN an overview of the Project, which included: Project timelines, the planned CER Project Application filing date, anticipated construction dates and locations of the Project. NGTL explained the amount of Crown land associated with each pipe component of the Project, and explained the Project was still in the preliminary routing stages and details were subject to change. NGTL stated it would be requesting input from PKN on the Requirements, and NGTL noted it would be providing PKN a literature review of publicly available information on PKN for comment and review. PKN stated that they would draft a work plan outlining the activities PKN would like to complete to review the Project.

On February 13, 2020, NGTL emailed PKN noting that NGTL would like to engage PKN on the Project. NGTL proposed the parties enter into an engagement capacity funding agreement. NGTL requested that PKN identified specific types of engagement activities that were important to PKN, so that NGTL could provide capacity funding to PKN, to support participation in those engagement activities. NGTL provided a list of possible engagement activities that PKN might like to include. NGTL requested that PKN contact NGTL to discuss further.

On March 13, 2020, NGTL and PKN exchanged a series of emails. PKN advised that due to issues around the COVID-19 pandemic, priorities in the community had been adjusted and PKN requested an extension to provide input on the Requirements and literature review. NGTL responded and requested if an extension to March 20, 2020 would give PKN enough time to complete the information request. PKN responded

that they would work with the extension but would contact NGTL if they required additional time.

On April 14, 2020, NGTL emailed PKN to follow up on previous discussions regarding an engagement capacity funding agreement. NGTL inquired if PKN was available for a telephone discussion.

On April 28, 2020, NGTL and PKN exchanged emails to schedule a telephone call for May 1, 2020 to discuss the Project.

On May 1, 2020, NGTL telephoned PKN to discuss the Project. NGTL provided PKN an update on the Project, and NGTL and PKN discussed the planned CER Project Application filing date and next steps in engagement for the Project. NGTL noted that there was the potential for filing additional information received after the Application is filed. PKN requested that NGTL provide a summary of the conversation for reference by email. On the same day NGTL emailed PKN summarizing the telephone call as requested. NGTL also provided Project details and the Application filing dates as well as maps showing the Crown and freehold land associated with the Project. NGTL included draft copies of an engagement capacity funding agreement and TK Protocol Agreement for PKN's reference.

On June 2, 2020, NGTL emailed PKN to request an update on the status of PKN's review of the engagement capacity funding agreement and TK Protocol Agreement and associated budgets.

On June 9, 2020, NGTL had a telephone call with PKN to discuss the engagement capacity funding agreement and TK Protocol Agreement and associated budgets. PKN noted that they would be starting field work for the TK Study in mid-July 2020. NGTL and PKN agreed that PKN would provide an interim report to NGTL on September 5, 2020 and the final TK Report on October 15, 2020.

On June 10, 2020, NGTL received an email from PKN with revised copies of the engagement capacity funding agreement and TK Protocol Agreement and associated budgets for NGTL's review.

On June 11, 2020, NGTL emailed PKN with final versions of the engagement capacity funding agreement and TK Protocol Agreement and associated budgets for PKN's signature.

On July 8, 2020, NGTL emailed PKN inquiring about the status of the engagement capacity funding agreement and TK Protocol Agreement and associated budgets. NGTL also inquired if PKN was still intending to start field work associated with the TK Study in mid-July.

On August 12, 2020, NGTL emailed PKN inquiring about the status of the engagement capacity funding agreement and TK Protocol Agreement and associated budgets. On the same day, NGTL received an email reply from PKN with the signed engagement capacity funding agreement and TK Protocol Agreement attached. PKN inquired if they could start scheduling their fieldwork for the TK Study. NGTL replied by email the same day informing PKN that they can schedule fieldwork and requested that PKN provide NGTL with the dates that PKN intended to complete the fieldwork component of the TK Study.

On September 10, 2020, NGTL emailed PKN and provided updated Crown land and freehold land map books. NGTL also provided details on changes that had been made to the Turner Valley Section, Longview Section and Lundbreck Section of the Project, as it related to access points onto the parcels of land for PKN's TK Study.

On September 14, 2020, NGTL emailed PKN to inquire if PKN had scheduled or completed the field work for their TK Study. NGTL requested that PKN provide an estimated timeline for when the interim and final TK Reports would be submitted to NGTL. NGTL noted that it would like for PKN to have an opportunity to describe the Indigenous and Treaty rights that PKN exercises or practices in the Project area and to provide PKN's views on how the Project may affect the ability to exercise or practice Indigenous and Treaty rights in the Project area. NGTL requested that PKN contact NGTL if they had any questions or concerns

On September 16, 2020, NGTL emailed PKN several weblinks of drone video footage of aerial overviews of the Crown land that was anticipated to make up the route of the Project. NGTL also provided Crown map books for the community to reference while reviewing the drone footage for context. NGTL explained the pipeline routing development process was still ongoing and subject to change. NGTL requested PKN contact NGTL if PKN wished to share the video or use the video, or any part of it, for any other purposes than supporting their understanding of the preliminary pipeline route.

On September 17, 2020, NGTL emailed PKN in follow up to the email sent the day prior containing the weblinks of drone video footage. NGTL clarified an error that had been made in the body of the email sent on September 16, 2020 and requested that PKN contact NGTL if they had any questions.

On September 29, 2020, NGTL emailed PKN to inquire if they had scheduled the field work for their TK Study for the Project. PKN replied by email the same day confirming that they would be scheduling field work for October 2020. NGTL replied by email the same day noting that it would confirm with its environmental consultant if it would be available to accompany PKN on their field work.

On September 30, 2020, NGTL emailed PKN to inform PKN that its environmental consultant would be available to accompany PKN on their fieldwork. NGTL requested a contact telephone number from PKN, to provide to its environmental

consultant to facilitate coordination. PKN replied the same day providing the telephone contact number requested.

On October 2, 2020, NGTL emailed PKN to provide information regarding land access for the Lundbreck Section, Longview Section and Turner Valley Section of the Project. NGTL requested that PKN contact NGTL if they had any questions.

To date, PKN has not submitted a TK Report for the Project to NGTL. Upon receipt, the findings of PKN's TK Report will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

Samson Cree Nation (SCN)

On November 7, 2019, NGTL received an email from SCN confirming receipt of the initial Project notification package and providing NGTL with SCN's community consultation procedures package.

On November 12, 2019, NGTL emailed SCN confirming receipt of SCN's community consultation procedures package and requesting that SCN provide potential dates for a meeting with NGTL to discuss the Project.

On November 18, 2019, NGTL received an email from SCN noting that SCN was available for a telephone conference call on November 25, 2019 or November 28, 2019 and requested that NGTL confirm its availability for either of the dates proposed.

On November 18, 2019, NGTL emailed SCN the KMZ files for the Project.

On November 26, 2019, NGTL received an email from SCN cancelling the potential telephone conference call that was proposed for November 25, 2019 or November 28, 2019.

On February 13, 2020, NGTL emailed SCN noting that NGTL would like to engage SCN on the Project. NGTL proposed the parties enter into an engagement capacity funding agreement. NGTL requested that SCN identify specific types of engagement activities that were important to SCN, so that NGTL could provide capacity funding to SCN, to support participation in those engagement activities. NGTL provided a list of possible engagement activities that SCN might like to include. NGTL requested that SCN contact NGTL to discuss further. On the same day, NGTL received an email from SCN confirming receipt of NGTL's email. SCN stated that they would review the information and contact NGTL to discuss.

On February 26, 2020, and February 27, 2020 NGTL and SCN exchanged several emails. NGTL inquired if SCN was available to meet on March 3, 2020. SCN replied stating that they were not available and proposed alternate dates in March. NGTL

replied, and the parties confirmed availability for a telephone conference call on March 13, 2020.

On March 10, 2020, NGTL and SCN exchanged several emails to confirm the telephone conference call for March 13, 2020 to discuss the Project.

On March 13, 2020, NGTL and SCN had a telephone conference call to discuss the Project where NGTL provided SCN an overview of the Project. NGTL and SCN discussed the new assessment factors and the Requirements introduced by the CER Act and Interim Guidance. NGTL explained that input on the Requirements could be high-level based upon information already collected by SCN. NGTL noted that SCN would be provided funding to complete a TK Study to assist the community in determining potential Project effects on their areas of interest and exercise of rights. SCN inquired if capacity funding would be provided to SCN for review of the Project. NGTL confirmed engagement capacity funding would be available for review of Project information in the form of an engagement capacity funding agreement. NGTL stated it would provide SCN example types of engagement activities that SCN might consider including in the agreement. SCN also requested NGTL provide shapefiles for the Project as the SCN database was not compatible with KMZ files. NGTL confirmed that it would provide Project shapefiles, and further information regarding the proposed engagement capacity funding agreement, as well as Crown land and freehold land maps to SCN.

On March 17, 2020, NGTL emailed SCN, providing the shapefiles for the Project, the Crown land and freehold land maps for the Project area, and further information on the proposed engagement capacity funding agreement. NGTL requested SCN review the documents and provide comments on what engagement activities SCN would like to include in the engagement capacity funding agreement. NGTL requested that SCN contact NGTL if they had any questions.

On March 20, 23 and 26, 2020, NGTL and SCN exchanged emails regarding the COVID-19 pandemic and the impact on SCN. NGTL inquired if engagement communication would be paused or if the SCN consultation group would be working remotely. SCN replied stating that they would be working remotely.

On May 14, 2020, NGTL received an email from SCN requesting that NGTL confirm the required date for feedback on the community specific literature review. NGTL replied by email the same day noting that feedback on the literature review was required by May 29, 2020 for incorporation into the Project ESA.

On May 21, 2020, NGTL emailed SCN to inquire about the status of SCN's review of the engagement capacity funding agreement and TK Protocol Agreement. NGTL offered to have a telephone call with SCN, if SCN wanted to discuss anything in the documents, or if they had any questions.

On June 2, 2020, NGTL emailed SCN to inquire about the status of SCN's review of the engagement capacity funding agreement and TK Protocol Agreement. NGTL offered to have a telephone call with SCN, if SCN wanted to discuss anything in the documents, or if they had any questions. On the same day NGTL received an email reply from SCN noting that they were drafting the workplans and proposed budgets associated with the engagement capacity funding agreement and TK Protocol Agreement. SCN inquired if NGTL had any field-safety work procedures that it would be able to share with SCN, as SCN was finding it challenging to scope in certain safety protocols due to the COVID-19 pandemic.

On June 3, 2020, NGTL emailed SCN documents that had been provided to NGTL by its environmental consultant regarding best practices for conducting field work in light of the COVID-19 pandemic. The materials describe how to protect the health and safety of employees and minimize the spread of the virus; and second, address business continuity. SCN replied by email the same day thanking NGTL for the information.

On July 2, 2020, NGTL received an email from SCN. SCN noted that they were working on drafting the workplans and proposed budgets associated with the engagement capacity funding agreement and TK Protocol Agreement and inquired about the overall size of the Project. On July 7, 2020, NGTL emailed SCN and provided a table outlining the sizes of each of the Crown land sections of the Project, in kilometres, to aid in SCN's development of their workplans and budgets.

On July 23, 2020, NGTL emailed SCN to inquire about the status of SCN's review of the engagement capacity funding agreement and TK Protocol Agreement.

On August 12, 2020, NGTL emailed SCN to inquire about the status of SCN's review of the engagement capacity funding agreement and TK Protocol Agreement.

On September 10, 2020, NGTL emailed SCN and provided updated Crown land and freehold land map books. NGTL also provided details on changes that had been made to the Turner Valley Section, Longview Section and Lundbreck Section of the Project, as it related to access points onto the parcels of land for SCN's TK Study.

On September 16, 2020, NGTL emailed SCN several weblinks of drone video footage of aerial overviews of the Crown land that was anticipated to make up the route of the Project. NGTL also provided Crown map books for the community to reference, while reviewing the drone footage for context. NGTL stated the pipeline routing development process was still ongoing and subject to change. NGTL requested SCN contact NGTL if SCN wished to share the video or use the video, or any part of it, for any other purposes than supporting their understanding of the preliminary pipeline route.

On September 17, 2020, NGTL emailed SCN in follow up to the email sent the day prior containing the weblinks of drone video footage. NGTL clarified an error that had been made in the body of the email sent on September 16, 2020 and requested that SCN contact NGTL if they had any questions.

On October 2, 2020, NGTL emailed SCN to provide information regarding land access for the Lundbreck Section, Longview Section and Turner Valley Section of the Project. NGTL requested that SCN contact NGTL if they had any questions.

On October 6, 2020, NGTL received an email from SCN inquiring if the engagement capacity funding agreement and TK Protocol Agreement could be consolidated into one document, for the Project.

To date, SCN has not submitted a TK Report for the Project to NGTL. Upon receipt, the findings of SCN's TK Report will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

Siksika Nation (SN)

On November 7, 2019, NGTL received an email from SN confirming receipt of the initial Project notification package and requesting a meeting with NGTL to discuss the Project.

On November 12, 2019, NGTL emailed SN requesting that SN provide their availability for a meeting, in the next two to three weeks.

On November 28, 2019, NGTL emailed SN the KMZ file for the Project.

While NGTL was meeting with SN regarding another project, a meeting date of January 24, 2020 was confirmed to discuss the Project. On the day of the meeting, BT was also in attendance, as per SN's invitation to BT.

On January 24, 2020, NGTL met with SN and BT to discuss the Project and associated timelines. BT and SN stated they would work with one another to coordinate site visits and sharing of information. NGTL explained the amount of Crown land associated with each pipe segment, and explained the Project was in the preliminary routing stages and that the routes were subject to change. NGTL requested that SN develop a work plan for an engagement capacity funding agreement that illustrated the engagement activities that SN would need to undertake to complete a review the Project and determine potential Project affects. NGTL stated that once the work plan was complete, SN and NGTL could discuss the budget associated with the proposed engagement activities. SN requested a meeting in March 2020 between SN and NGTL, to which NGTL agreed and requested that SN provide potential dates. NGTL noted that it would be requesting input from SN on the Requirements. NGTL explained that the Requirements were part of the new CER

assessment factors. NGTL also stated they would also be providing SN a literature review for SN's review and comment.

On February 13, 2020, NGTL emailed SN noting that NGTL would like to engage SN on the Project. NGTL proposed the parties enter into an engagement capacity funding agreement. NGTL requested that SN identify specific types of engagement activities that were important to SN, so that NGTL could provide capacity funding to SN, to support participation in those engagement activities. NGTL provided a list of possible engagement activities that SN might like to include. NGTL requested that SN contact NGTL to discuss further. On the same day, NGTL received an email from SN confirming receipt of NGTL's email and noted that SN would review the information and contact NGTL to discuss.

On February 6, 2020, NGTL received an email from SN requesting a meeting to discuss the Project. On February 27, 2020, NGTL and SN exchanged emails regarding potential meeting dates, in a follow-up to SN's February 6, 2020 email. NGTL and SN agreed upon a meeting date of March 6, 2020 to discuss the Project, engagement capacity funding and for NGTL to present Project information to SN.

On March 6, 2020, NGTL met with SN and provided an overview of the Project. NGTL explained the input on the Requirements could be high-level based upon information already collected by SN. NGTL also discussed the literature review of publicly available sources that would be used to inform the assessment of potential impacts on the rights of Indigenous peoples and traditional land and resource use, to be considered in Project planning as appropriate. SN inquired if engagement capacity funding would be provided for the Project. NGTL confirmed engagement capacity funding would be available for review of Project information in the form of an engagement capacity funding agreement and a TK Protocol Agreement. NGTL requested that SN provide the types of engagement activities that SN might request be included in the engagement capacity funding agreement. SN also requested NGTL provide shapefiles and KMZ files for the Project. NGTL confirmed that it would provide Project shapefiles and KMZ files. SN and NGTL agreed to conduct a helicopter flyover of the Project area during the second week of April 2020. SN and NGTL agreed the flyover would assist the community in developing the work plan as the terrain and access was unknown to SN. SN stated they would work towards the development of a work plan to be signed and completed by May 2020. Due to COVID-19 pandemic, helicopter overflights were not possible after March 11, 2020.

On March 9, 2020, NGTL emailed SN to provide them with the KMZ files, the Crown land map book and a draft engagement capacity funding agreement, for SN's review.

On April 8, 2020, NGTL emailed SN in follow up to previous discussions regarding an engagement capacity funding agreement. NGTL received an email reply from SN the same day, noting that SN was working remotely and requesting NGTL to provide

further information on an engagement capacity funding agreement to advance the conversation. On the same day, NGTL emailed SN providing the Crown land and freehold land maps and a draft copy of an engagement capacity funding agreement. NGTL requested that SN consider what engagement activities are important to SN, to ensure they were included in the engagement capacity funding agreement. NGTL also requested that SN include a budget for the TK Study.

On April 9, 2020, NGTL received a telephone call from SN to discuss the budget for the TK Study. NGTL provided an overview of the items that would be covered in the TK Study budget and under the capacity funding agreement. On the same day NGTL emailed SN in follow up to the phone call and stated it would provide a draft engagement capacity funding agreement as per the telephone call for SN to review and provide comment on the following week.

On April 14, 2020, NGTL received a text-message from SN requesting a telephone conference call the following day, April 15, 2020. NGTL replied by text message the same day noting that it was available afternoon on April 15, 2020 and that SN should call NGTL anytime in the afternoon. On April 22, 2020, NGTL and SN exchanged several text-messages to set up a date and time to discuss the engagement capacity funding agreement. NGTL and SN agreed to a telephone call on April 23, 2020.

On April 23, 2020, NGTL and SN had a telephone call to discuss the engagement capacity funding agreement for the Project. NGTL noted that it would send a revised version of the engagement capacity funding agreement, reflecting changes discussed during the telephone call, for SN's review and signature. On the same day, NGTL emailed SN a summary of the telephone call to confirm the details that were discussed. SN replied by email the same day requesting that NGTL provide the revised version of the engagement capacity funding agreement for review and signature.

On April 30, 2020, NGTL emailed SN a copy of the revised engagement capacity funding agreement for review and signature.

On May 1, 2020, NGTL received an email from SN to inform NGTL that SN did not agree with the approach NGTL had taken to date regarding the request for input on the Requirements, but that they were working on a proposed plan for developing input on the Requirements and would be submitting it to NGTL upon completion for review and discussion. SN's Legal Counsel also commented on funding associated with engagement and noted that they would be proposing a budget in relation to engagement associated costs for the community. SN's Legal counsel informed NGTL that they were to be copied on all future correspondence involving SN, as it pertained to the Project.

Between June 2, 2020 and August 28, 2020 NGTL and SN negotiated engagement capacity funding for the Project and executed an agreement that included the provision of capacity funding, a TK Study, as well as rights analysis report.

On July 29, 2020, NGTL received an email from SN requesting the shapefiles for the Project. NGTL emailed the shapefiles as requested that day.

On September 10, 2020, NGTL emailed SN and provided updated Crown land and freehold land map books. NGTL also provided details on changes that had been made to the Turner Valley Section, Longview Section and Lundbreck Section of the Project, as it related to access points onto the parcels of land for SN's TK Study.

On September 16, 2020, NGTL emailed SN several weblinks of drone video footage of aerial overviews of the Crown land that was anticipated to make up the route of the Project. NGTL also provided Crown map books for the community to reference while reviewing the drone footage for context. NGTL stated the pipeline routing development process was still ongoing and subject to change. NGTL requested SN contact NGTL if SN wished to share the video or use the video, or any part of it, for any other purposes than supporting their understanding of the preliminary pipeline route.

On September 17, 2020, NGTL emailed SN in follow up to the email sent the day prior containing the weblinks of drone video footage. NGTL clarified an error that had been made in the body of the email sent on September 16, 2020 and requested that SN contact NGTL if they had any questions.

On September 17, 2020, NGTL received SN's TK Report titled Siksika Nation Traditional Knowledge, Land and Resource Use Baseline Study report. The report explained aspects of Blackfoot territory, history, way of life and culture to provide context for both changes and continuity between historic Blackfoot modes of living and SN's current land and resource use and the exercise of Treaty Rights.

NGTL is reviewing the results of SN's TK Report, and will provide a response with an offer to meet to answer questions or discuss concerns, if any.

On September 18, 2020, NGTL received an email from SN containing SN's Rights Assessment Study Report. NGTL is reviewing the results of SN's Rights Assessment Study Report and will provide a response with an offer to meet to answer questions or discuss concerns, if any.

On October 2, 2020, NGTL emailed SN to provide information regarding land access for the Lundbreck Section, Longview Section and Turner Valley Section of the Project. NGTL requested that SN contact NGTL if they had any questions.

On October 2, 2020, NGTL received a telephone call from SN. SN provided an update on the fieldwork for their TK Study and noted that they would be undertaking their fieldwork with BT. NGTL noted that they would provide SN the shapefiles for the Project, to assist in the fieldwork planning

On October 5, 2020, NGTL emailed SN the shapefiles for the Project.

Stoney Nakoda Nations (SNN)

On November 8, 2020, NGTL received an email from SNN requesting that NGTL confirm the amount of capacity funding that would be made available to SNN to participate in engagement on the Project.

On November 12, 2020, NGTL emailed SNN advising that engagement capacity funding would be available for the Project in the form of an engagement capacity funding agreement and a TK Protocol Agreement. NGTL requested that SNN prepare a workplan and budget outlining activities SNN wanted to undertake in relation to engagement on the Project and aid in determining how the Project may impact SNN's use of the Project area and Indigenous rights. NGTL stated that once SNN provides a workplan and budget a meeting to discuss the items would be scheduled. NGTL received an email reply from SNN on the same day requesting that NGTL provide SNN the maximum amount of capacity funding that SNN could receive. SNN noted that this information would aid in the development of the workplan.

On November 27, 2020, NGTL provided SNN information to aid in determining the types of engagement activities SNN might want to undertake as part of engagement on the Project. NGTL explained the Project was in the preliminary stages of route determination and may change, thus capacity funding was also subject to change. NGTL provided SNN KMZ files, proposed kilometers of the pipeline and percentages of Crown land in the Project area to assist SNN in scoping their engagement activities. NGTL noted it was available for a meeting or telephone call to discuss further.

On February 13, 2020, NGTL emailed SNN to follow up on the engagement capacity funding agreement for the Project. NGTL requested that SNN contact NGTL to discuss further.

On February 19, 2020, NGTL received an email from SNN confirming receipt of the Project information and requesting that NGTL complete the Stoney Information Letter (SIL) as part of SNN's consultation process. SNN also provided NGTL with SNN's consultation guidelines and maps of SNN's Traditional Territory.

On February 25, 2020, NGTL emailed SNN a completed copy of the SIL as requested and provided updated Project maps for SNN's reference. NGTL requested that SNN inform NGTL of next steps in SNN's consultation process and propose dates when SNN would be available to meet with NGTL to discuss the Project.

On February 26, 2020, NGTL was included on a letter that SNN sent to The Honorable Jonathan Wilkinson, Minister of Environment and Climate Change Canada (ECCC). In the letter, SNN asserted that the Project, along with three other

NGTL and Foothills projects⁵ should be designated under the Impact Assessment Act due to their interconnected nature, the locations of the projects, and the impacts the projects could collectively and individually have on the Section 35 Rights of SNN including impacts to Section 35 Rights; impacts to culture; impacts to health of SNN members; and, impacts to sacred and ceremonial sites. The letter provided a brief description of each of the four projects referenced and SNN's concern that the projects were not subject to the integrated review process led by the Impact Assessment Agency of Canada (IAAC). The letter highlighted SNN's concerns that it had corresponded with TC Energy and its subsidiaries to relay their concerns on the four projects at their own cost. SNN noted that a capacity funding agreement between SNN and NGTL had not yet been reached and expressed concerns related to individual projects not triggering a hearing under the CER or an impact assessment under the IAAC, which SNN felt meant it would not have access to associated participant funding under the CER or IAAC. SNN requested that Minister Wilkinson and the IAAC review these four projects and their designation.

On April 22, 2020, NGTL received an email from SNN inquiring if there was capacity for SNN to provide input on the Requirements prior to the April 30, 2020 deadline. NGTL emailed SNN the same day and requested clarification from SNN on what was meant by capacity. NGTL stated if SNN was referring to capacity funding, NGTL had contacted SNN in February 2020 requesting to start the process of entering into an engagement capacity funding agreement with SNN in order to support participation of the review of the Project, which included input on the Requirements. NGTL noted that it was available to discuss the next steps to get the process started and requested for SNN to contact NGTL to discuss further.

On June 2, 2020, NGTL emailed SNN to inquire again if SNN was interested in undertaking a TK Study for the Project. NGTL requested that SNN contact NGTL if they had any questions or wanted to discuss further.

While NGTL was in communication with SNN regarding another project, on June 10, 2020, SNN requested that NGTL resend the Project fact sheet and maps for the Project.

On June 12, 2020, NGTL emailed SNN the Project fact sheet and the map book indicating Crown land associated with the Project. NGTL explained the Project was made up of three pipeline sections and that NGTL anticipated filing an application with the CER under Section 183 of the CER Act in Q4 2020, with an anticipated in-service date in Q4 2023. NGTL noted that drone footage for the Project would be available in the coming weeks.

⁵ NGTL West Path Delivery 2022, Foothills Zone 8 West Path Delivery 2022, and Foothills Zone 8 West Path Delivery 2023.

On June 17, 2020, NGTL emailed SNN in follow up to NGTL's email from June 12, 2020 offering to enter into an engagement capacity funding agreement with SNN and a TK Protocol Agreement to support SNN's participation in engagement for the Project. NGTL provided draft copies of the engagement capacity funding agreement and TK Protocol Agreement for SNN's review and comment.

On June 18, 2020, NGTL and SNN exchanged several emails and SNN confirmed their interest in undertaking a TK Study for the Project. NGTL requested SNN's availability for a meeting to discuss the Project. NGTL and SNN agreed to have a telephone conference call on June 24, 2020.

On June 24, 2020, NGTL and SNN had a telephone conference call during which. NGTL provided an overview of the Project and timelines. SNN advised that the State of Emergency, due to the COVID-19 pandemic, was lifted on June 18, 2020 and SNN was in a position to start reviewing Projects and complete site visits. SNN advised they were able to meet with community members in small groups to review Project information and would be able to conduct site visits and meetings according to Alberta safety standards. NGTL offered to provide SNN NGTL's environmental consultant's best practices for conducting field work in light of the COVID-19 pandemic as follow up materials. SNN stated they were interested in being included in archaeological assessments and wanted to participate in archaeological assessments on both Crown and private lands. NGTL noted that it had provided SNN on April 30, 2020 notice that NGTL's environmental consultant was looking to hire a local Field Technician and Archaeologist to join their field teams and expand their interest and experience in environmental work. NGTL explained the deadline had since expired, but would determine if the opportunity was still available. SNN stated they intended to complete site visits in August 2020 and would prepare a budget for the site visits for NGTL's review. NGTL noted that it required the submission of two reports as outcomes of the TK Study – the Interim and the Final TK Report, outlining potential impacts to SNN rights and traditional use. NGTL explained the information in the reports would be considered in the context of the ESA, incorporated into Project planning, and reported on in a subsequent filing to the CER. NGTL noted that it would provide shapefiles, an engagement capacity funding agreement and the freehold land and Crown land map book information to SNN as well as the best practices for site visits. On the same day, NGTL emailed SNN the documents it had committed to provide to SNN during the telephone conference call.

On July 7, 2020, NGTL telephoned SNN to discuss the COVID-19 pandemic, as well as the Project. NGTL provided information on the Project components and the Project timelines. Potential contracting opportunities on the Project and other IRBE items were also discussed.

On July 8, 2020, NGTL emailed SNN to inquire about the status of SNN's review of the draft engagement capacity funding agreement and TK Protocol Agreement that

NGTL provided on June 24, 2020. NGTL inquired if SNN had an opportunity to develop a work plan and associated budget for the agreements.

On August 4, 2020, NGTL received an email from SNN requesting an extension for providing feedback on the community-specific literature review.

On August 12, 2020, NGTL emailed SNN to inquire about the status of SNN's review of the draft engagement capacity funding agreement and TK Protocol Agreement that NGTL provided on June 24, 2020. NGTL inquired if SNN had an opportunity to develop a work plan and associated budget for the agreements.

On August 19, 2020, NGTL emailed SNN, in response to the August 4, 2020 email, to advise that NGTL was able to incorporate feedback on the literature review into the Project ESA, if the feedback was received by September 4, 2020.

On September 2, 2020, NGTL emailed SNN and requested an update on the status of the development of the budget associated with the engagement capacity funding agreement and TK Study for the Project. NGTL requested SNN contact NGTL to discuss the agreements further.

On September 10, 2020, NGTL emailed SNN and provided updated Crown land and freehold land map books. NGTL also provided details on changes that had been made to the Turner Valley Section, Longview Section and Lundbreck Section of the Project, as it related to access points onto the parcels of land for SNN's TK Study.

On September 16, 2020, NGTL emailed SNN several weblinks of drone video footage of aerial overviews of the Crown land that was anticipated to make up the route of the Project. NGTL also provided Crown map books for the community to reference while reviewing the drone footage for context. NGTL stated the pipeline routing development process was still ongoing and subject to change. NGTL requested SNN contact NGTL if SNN wished to share the video or use the video, or any part of it, for any other purposes than supporting their understanding of the preliminary pipeline route.

On September 17, 2020, NGTL emailed SNN in follow up to the email sent the day prior containing the weblinks of drone video footage. NGTL clarified an error that had been made in the body of the email sent on September 16, 2020 and requested that SNN contact NGTL if they had any questions.

On October 2, 2020, NGTL emailed SNN to provide information regarding land access for the Lundbreck Section, Longview Section and Turner Valley Section of the Project. NGTL requested that SNN contact NGTL if they had any questions.

To date, SNN has not submitted a TK Report for the Project to NGTL. Upon receipt, the findings of SNN's TK Report will be reviewed in the context of the ESA and considered for incorporation into Project planning, as appropriate.

Tsuut'ina Nation (TSN)

On November 7, 2019, NGTL received an email from TSN confirming receipt of the initial Project notification package and requesting a meeting with NGTL to discuss the Project. TSN noted they would be in touch with NGTL once they had reviewed the Project information.

On November 27, 2020, NGTL emailed TSN to inquire if they were available on November 19, 2020 for a meeting to discuss the Project. In the same email NGTL provided the shapefiles for the Project.

On January 8, 2020, NGTL emailed TSN to follow up on its email from November 27, 2019 regarding TSN's availability for a meeting to discuss the Project. NGTL received an email reply from TSN the same day, providing their availability for a meeting. NGTL replied by email the same day confirming its availability for a meeting on January 14, 2020.

On January 14, 2020, NGTL met with TSN to introduce the Project. NGTL provided TSN an overview of the Project which included Project timelines, planned CER Application filing date, anticipated construction dates and location of the Project. NGTL explained the amount of Crown land associated with each component of the Project and noted that the route was subject to change. TSN requested that NGTL provide a Project presentation to TSN Elders and schedule an open house in the community. NGTL requested that TSN develop a workplan that outlined the activities TSN wanted to undertake to determine any potential Project impacts on TSN's rights and traditional use activities. NGTL noted that once the workplan was complete, TSN and NGTL would discuss the budget associated with activities.

On February 13, 2020, NGTL emailed TSN noting that NGTL would like to engage TSN on the Project. NGTL proposed the parties enter into an engagement capacity funding agreement. NGTL requested that TSN identified specific types of engagement activities that were important to TSN, so that NGTL could provide capacity funding to TSN, to support participation in those engagement activities. NGTL provided a list of possible engagement activities that TSN might like to include. NGTL requested that TSN contact NGTL to discuss further.

On April 30, 2020, NGTL received an email from TSN in response to the email NGTL had sent to all groups being engaged on the Project regarding employment opportunities on some of the field studies for the Project. TSN thanked NGTL for the email and noted that they were still working remotely due to the COVID-19 pandemic.

On May 21, 2020, NGTL emailed TSN to inquire if TSN was interested in undertaking a TK Study for the Project. TSN replied by email the same day confirming their interest in undertaking a TK Study for the Project. TSN noted that they were awaiting confirmation from Chief and Council regarding when the TSN consultation office would be able to resume TK studies. NGTL replied by email the same day requesting that TSN advise NGTL when engagement activities would be able to resume.

On June 10, 2020, NGTL emailed TSN to inquire if TSN was still working remotely. On the same day, TSN emailed that they were continuing to work remotely and would likely be working remotely until the end of June 2020.

On July 8, 2020, NGTL emailed TSN to inquire about TSN's availability for a telephone conference call. On the same day NGTL and TSN exchanged several emails to coordinate a telephone conference call for either July 14, 2020 or July 15, 2020.

On July 12, 2020, NGTL received an email from TSN in which TSN provided feedback on the community-specific literature review, provided by NGTL, for TSN's review. TSN explained some of the history of the Tsuut'ina linguistic group. TSN also provided information regarding reservations and how that system impacted food security, and how the TSN established a buffalo paddock to ensure availability for harvest and ceremonies. TSN advised that the statistics in the literature review was not comprehensive and requested a more informative reflection of TSN.

On July 12, 2020 and July 13, 2020, NGTL and TSN exchanged emails to reschedule the telephone conference call they had previously arranged. A new date of July 20, 2020 was agreed upon.

On July 20, 2020, NGTL and TSN had a telephone conference call to discuss the Project. TSN noted that although they were still working remotely due to the COVID-19 pandemic, they were beginning to complete site visits and other work to support TK studies. NGTL explained that the results of TSN's TK Study would be considered in the context of the Project ESA, incorporated into Project planning, and reported in subsequent filings to the CER. NGTL and TSN discussed an engagement capacity funding agreement and TK Study budget. NGTL requested that TSN draft a work plan and budget for the TK Study and engagement capacity funding agreement.

On July 22, 2020, NGTL emailed TSN in follow up to the telephone conference call of July 20, 2020. NGTL provided NGTL's environmental consultant's best practices for conducting field work in light of the COVID-19 pandemic. NGTL explained NGTL's environmental consultant had put mitigations in place to accommodate continuity of fieldwork based on the current COVID-19 pandemic to assist communities to protect the health and safety of community members and minimize the spread of the virus.

On August 12, 2020, NGTL emailed TSN to request an update on the status of the draft work plan and budget for the TK Study and engagement capacity funding agreement.

On August 13, 2020, NGTL received an email from TSN with the draft work plan and budget for the TK Study and engagement capacity funding agreement attached.

On August 18, 2020, NGTL and TSN exchanged several emails in relation to the draft work plan and budget for the TK Study and engagement capacity funding agreement. NGTL requested that TSN provide the dates they anticipate conducting the field work for the TK Study. TSN provided the dates as requested. NGTL committed to drafting the TK Protocol Agreement and engagement capacity funding agreement based on the work plan provided, for TSN's review and signature.

On August 23, 2020, NGTL received an email from TSN stating that they would like to arrange TK Study field work for the first week in September and requested that NGTL contact the TSN contact for the individual responsible for coordinating site visit details.

On August 24, 2020, NGTL received a telephone call from TSN to discuss engagement capacity funding for the Project. NGTL noted that the draft engagement capacity funding agreement and TK Protocol Agreement were under development and would be sent to TSN shortly. On the same day, NGTL emailed TSN in follow up to the telephone call. NGTL provided TSN the Crown land and freehold land map books for the Longview section of the Project. NGTL committed to providing the map books for the Turner Valley Section of the Project once they were updated.

On August 25, 2020, NGTL emailed TSN providing the engagement capacity funding agreement and TK Protocol Agreement for the Project, for TSN's review and signature.

On September 10, 2020, NGTL emailed TSN and provided updated Crown land and freehold land map books. NGTL also provided details on changes that had been made to the Turner Valley Section, Longview Section and Lundbreck Section of the Project, as it related to access points onto the parcels of land for TSN's TK Study.

On September 14, 2020, NGTL emailed TSN to follow up on the status of TSN's review of the the engagement capacity funding agreement and TK Protocol Agreement for the Project. NGTL also inquired if TSN had scheduled the field work for their TK Study. NGTL noted that it would like for TSN to have an opportunity to describe the Indigenous and Treaty rights that TSN exercises or practices in the Project area and to provide TSN's views on how the Project may affect the ability to exercise or practice Indigenous and Treaty rights in the Project area. NGTL requested TSN contact NGTL if they had any questions or concerns

On September 16, 2020, NGTL emailed TSN several weblinks of drone video footage of aerial overviews of the Crown land that was anticipated to make up the route of the Project. NGTL also provided Crown map books for the community to reference while reviewing the drone footage for context. NGTL stated the pipeline routing development process was still ongoing and subject to change. NGTL requested TSN contact NGTL if TSN wished to share the video or use the video, or any part of it, for any other purposes than supporting their understanding of the preliminary pipeline route.

On September 17, 2020, NGTL emailed TSN in follow up to the email sent the day prior containing the weblinks of drone video footage. NGTL clarified an error that had been made in the body of the email sent on September 16, 2020 and requested that TSN contact NGTL if they had any questions.

On September 29, 2020, NGTL and TSN exchanged emails. NGTL inquired when TSN would be providing the signed copies of the engagement capacity funding agreement and TK Protocol Agreement for the Project. TSN requested that NGTL resend the engagement capacity funding agreement and TK Protocol Agreement. TSN also noted they would be sending the interim TK Report to NGTL by September 30, 2020. NGTL emailed TSN the engagement capacity funding agreement and TK Protocol Agreement.

On September 30, 2020, NGTL received TSN's interim TK Report for the Project. In the Report TSN identified signs of several animals in the area as well as medicinal plants. TSN also provided recommendations for mitigation measures for the protection of water quality and medicinal plants, loss of wildlife habitat and climate change.

NGTL is reviewing the results of TSN's TK Report, and will provide a response with an offer to meet to answer questions or discuss concerns, if any.

12.4 PLANS FOR ONGOING ENGAGEMENT

NGTL continues to actively engage with all potentially affected Indigenous groups consistent with the approach described above. Engagement activities will continue during all Project phases. NGTL will continue to respond to questions and concerns, and ongoing engagement activities will continue with the intent to:

- address any Project-related questions or concerns
- progress work plans that provide capacity funding for communities
- understand interests in employment and contracting opportunities
- continue to gather input through ongoing engagement activities

12.4.1 Pre-Construction and Construction

NGTL will continue to engage with Indigenous groups potentially affected by the Project during the pre-construction and construction phases, and address questions or concerns in a timely manner should any arise. See Section 8, Pipeline Construction, for more construction-related information including information on the planned Project construction schedule (8.2 Construction Schedule) and emergency response during construction (8.6.1 Emergency Response during Construction).

12.4.2 Operations

Once the Project, if approved, is placed in-service, the Indigenous Engagement Program for the Project will be transitioned to TC Energy's Regional Engagement Leads for the operational life of the asset. Regional Engagement Leads implement the PA Program (for more information see Section 9: Operations) and are responsible for sharing information about operations and maintenance activities with potentially affected Indigenous groups and engagement during operations in order to understand and address questions and concerns on a case-by-case basis, if any arise. See Section 9, Operations, for more information on the processes, procedures and systems for the safe, reliable and efficient operation of the Project including emergency preparedness and response, TC Energy's Damage Prevention Program and integrity management.

NGTL is committed to ongoing engagement over the lifecycle of its projects and supporting Indigenous groups through continued community legacy; education and training programs; and opportunities.

13.0 ENVIRONMENTAL AND SOCIO-ECONOMIC MATTERS

Section 13 summarizes the need for, and scope of, the Project ESA, along with its approach, findings, and conclusions.

Stantec Consulting Ltd. (Stantec) prepared the ESA on behalf of NGTL based on the description of the Project components outlined in this Application.

13.1 NEED FOR THE ESA

The Project will require a certificate in respect of a pipeline, pursuant to Section 183 of the CER Act. Under Section 183(2) of the CER Act, the CER must consider environmental effects of the pipeline, including any cumulative environmental effects as well as the health, social and economic effects, when recommending whether or not the certificate should be issued for all or any part of the pipeline.

13.2 SCOPE OF THE PROJECT

The scope of the Project includes the activities and components required to carry it out and allow it to proceed; including its construction, operation, and decommissioning or abandonment as presented in Sections 8 and 9 of this Application.

13.3 SCOPE OF THE ESA

In scoping the Project ESA, the environmental and socio-economic elements listed in Table A-1 of the Filing Manual, (CER 2020) and the Interim Filing Guidance and Early Engagement Guide (NEB 2019) were considered, as well as any others of particular value or interest to regulators, stakeholders, landowners and Indigenous groups.

The ESA for the Project was prepared in accordance with the requirements of the NEB Act and the NEB Filing Manual in place prior to the coming into force of the CER Act. The CER Act introduced the following new environmental and socio-economic assessment factors:

- Canada's commitments in respect of climate change
- Canada's environmental obligations
- Gender-Based Analysis Plus (GBA+)

NGTL notes that this Project application was prepared in accordance with the requirements of the CER Act, CER's Filing Interim Guidance and the NEB Filing Manual guidance. Upon release of the CER's updated Filing Manual on August 6, 2020 (Updated Filing Manual), updates were incorporated. NGTL is currently

assessing the Updated Filing Manual to determine additional requirements and will submit any necessary supplemental information in accordance with the Filing Manual on or before January 31, 2021. Currently, the supplemental filing is expected to be limited to additional information required to support the GHG Emissions and Climate Change filing requirements not previously contemplated in the CER's Interim Guidance.

To focus the ESA on matters of relevance (valued components [VCs]), likely interactions of the Project with the surrounding biophysical and socio-economic environment were identified. The VCs have dedicated chapters in the Project ESA, as listed below:

Chapter 5 - Assessment of Effects on Soil Capability

Chapter 6 - Assessment of Effects on Vegetation and Wetlands

Chapter 7 - Assessment of Effects on Wildlife and Wildlife Habitat

Chapter 8 - Assessment of Effects on Aquatic Resources

Chapter 9 - Assessment of Effects on Greenhouse Gas Emissions

Chapter 10 - Assessment of Effects on Human Occupancy and Resource Use

Chapter 11 - Assessment of Effects on Traditional Land and Resource Use

Chapter 12 - Heritage Resources

Chapter 13 - Assessment of Effects on Socio-economic Valued Components

Chapter 14 - Assessment of Effects on Rights of Indigenous Peoples

Additionally, Chapters 1 through 4 cover the introduction, project description, engagement, and assessment methods; Chapter 15 addresses changes to the Project that may be caused by the environment; Chapter 16 covers potential effects related to potential accident and malfunction scenarios and Chapter 17 provides a concluding statement.

Project ESA appendices include: a Project-specific EPP (Appendix A); EASs highlighting site-specific features and corresponding mitigation (Appendix B); and technical data reports (Appendices E to I). A preliminary assessment of the effects of decommissioning and abandonment (Appendix C).

13.4 ESA METHODOLOGY

For each VC, potential effects resulting from the Project are identified and assessed in the context of the VC's existing conditions, as well as its biophysical or socio-economic characteristics, regulatory context, and input received from the engagement process. The assessment of each VC begins with a description of the pathways

whereby specific Project activities and actions could result in an environmental effect (i.e., the effect pathways). Once effect pathways are identified, one or more measurable parameter(s) are selected to facilitate quantitative (where possible) and qualitative assessment of residual project effects and residual cumulative effects. Measurable parameters provide defensible and acceptable means to characterize change in a VC attributable to the Project and contribute to the determination of the significance of those effects.

Project-related and cumulative effects are assessed sequentially in the Project ESA. Potential project-related environmental effects and the mechanisms through which they act are discussed first, considering design and mitigation measures that help to avoid or reduce the effect. Residual Project-related environmental effects are characterized using specific criteria (e.g., direction, magnitude, geographic extent, duration, frequency, likelihood) defined for each VC included in the assessment. If there is an identified potential for adverse residual environmental effects of the Project to interact cumulatively with the residual environmental effects of other past, present or reasonably foreseeable future projects or physical activities, these cumulative environmental effects are also assessed. The significance of residual Project and residual cumulative effects is then determined based on pre-defined criteria or thresholds.

13.5 SPATIAL BOUNDARIES

Spatial boundaries for assessing Project and cumulative effects include:

- Project Development Areas (PDAs) – Include the anticipated areas of physical disturbance associated with the construction and operation of the Project components. The PDAs for the Turner Valley Section, Longview Section and Lundbreck Section are each a 75 m wide assessment corridor, which conservatively includes a minimum 32 m-wide construction corridor plus up to an additional 43 m for TWS to accommodate construction activities and safe vehicle and equipment movement. For this Project:
 - The PDA of the Turner Valley Section is 23.7 km-long and 75 m-wide totaling approximately 178 ha in area.
 - The PDA for the Longview Section is 9 km-long and 75 m-wide totaling approximately 68 ha in area.
 - The PDA for the Lundbreck Section is 7.4 km-long and 75 m-wide totaling approximately 56 ha in area.
- Local Assessment Areas (LAAs) – Consist of the areas in which project-related effects (direct or indirect) are predicted to occur. The LAAs consist of the PDA and are VC specific.

- Regional Assessment Areas (RAAs) – Consist of the areas within which potential cumulative effects - the predicted residual effects from the Project in combination with those of past, present and reasonably foreseeable future projects - are assessed. The RAAs consist of the PDAs and the LAAs and are VC specific.

LAA and RAA boundaries are illustrated and described in each VC section (Sections 5 through 14).

13.6 TEMPORAL BOUNDARIES

Temporal boundaries identify when an environmental effect will be evaluated in relation to specific Project phases and activities. Temporal boundaries for this assessment include:

- Construction:
 - Construction of the Turner Valley Section is planned to start in February 2023 with clearing from February to March, and pipeline construction is planned to start in July 2023 and is expected to be completed in October 2023 (6 months)
 - Construction of the Longview Section is planned to start in August 2023 and is expected to be completed in October 2023 (3 months)
 - Construction of the Lundbreck Section is planned to start in February 2023 with clearing from February to March, and pipeline construction is planned to start in August 2023 and is expected to be completed in October 2023 (5 months)
- Operation: The Project has an anticipated in-service date of November 2023 and it is expected to be operated for more than 25 years.

At this time there is no plan to decommission or abandon the Project. An assessment of potential effects that might arise from decommissioning or abandonment is included in Appendix C of the Project ESA.

13.7 BIOPHYSICAL AND SOCIO-ECONOMIC ELEMENTS

As discussed in Sections 13.3 Scope of the ESA and 13.4 ESA Methodology, the environmental and socio-economic elements listed in Table A-1 of the Filing Manual, (CER 2020) and the Interim Filing Guidance and Early Engagement Guide (NEB 2019) were considered, as well as any others of particular value or interest to regulators, stakeholders, landowners and Indigenous groups. To focus the ESA on matters of relevance, VCs were selected based on likely interactions of the Project with the surrounding biophysical and socio-economic environment and include: soil capability, vegetation and wetlands, wildlife and wildlife habitat, aquatic resources,

greenhouse gas emissions, human occupancy and resource use, traditional land and resource use, heritage resources, socio-economics, and rights of indigenous peoples.

13.8 POTENTIAL, RESIDUAL PROJECT AND CUMULATIVE ENVIRONMENTAL AND SOCIO-ECONOMIC EFFECTS

Residual effects are those remaining after the implementation of mitigation measures. Should residual Project effects be expected to act in combination with existing and reasonably foreseeable effects arising from other projects and activities (within the spatial and temporal boundaries of the Project ESA), a cumulative effects assessment was conducted. Potential, residual Project and cumulative effects are presented in Table 13-1.

13.9 ESA CONCLUSIONS

The Project ESA concludes that, with the implementation of standard and Project-specific mitigation measures, adverse residual Project and residual cumulative environmental and socio-economic effects are predicted to be not significant. Significance of project and cumulative effects is determined based on the significance definition outlined for each VC in the ESA.

Table 13-1: Potential, Residual Project and Cumulative Effects

VC	Potential Effect (Change in...)	Residual Project Effect (+/A/N/U/P/L) ^{1,2,3}	Residual Cumulative Effect (+/A/N/U/P/L) ^{1,2,3}
Soil Capability	soil quality	A, P-L	--
	terrain	A, L	--
Vegetation and Wetlands	vegetation communities	A, L	A, L
	vegetation species	A, P-L	A, L
	wetland function	A, L	A, L
Wildlife and Wildlife Habitat	habitat	A, L	A, L
	movement	A, U-L	A, L
	mortality risk	A, U-P	A, P-L
Aquatic Resources	fish habitat	A, L	A, L
	fish mortality risk	A, L	
	surface water quality	A, L	A, L
	groundwater quality and quantity	A, U-P	

Table 13-1: Potential, Residual Project and Cumulative Effects (cont'd)

VC	Potential Effect (Change in...)	Residual Project Effect (+/A/N/U/P/L)^{1,2,3}	Residual Cumulative Effect (+/A/N/U/P/L)^{1,2,3}
Greenhouse Gas Emissions	release of GHG emissions	As the effect on climate change from the contribution of a single project cannot be accurately measured or attributed, it is not reasonable to conclude a significant adverse residual effect on atmospheric GHG concentrations or climate change from a single project's GHG emissions. Instead, evaluation of residual Project effects focuses on estimation of GHG releases, mitigation and evaluation of Project GHG releases in relation to provincial, national and Canadian sector (i.e., ECCC – Oil and Natural Gas Transmission) GHG totals and the Government of Canada's GHG reduction targets.	Cumulative effects associated with the releases of Project-related GHGs are global and are not limited to provincial or national borders. GHG sources, sinks and reservoirs around the world contribute to the cumulative effect. The Intergovernmental Panel on Climate Change (IPCC) forecasts global GHG emissions in various scenarios and determines the impacts of the forecasts. The assessment of cumulative effects of Project-related GHGs is beyond the scope of this Project.
Human Occupancy and Resource Use	land use	A, L	A, L
	navigation and navigation safety	A, P	--
Traditional Land and Resource Use	quality, quantity or distribution of traditional resources for current use	A, U-L	A, L
	access to traditional resources or areas of current use	A, P-L	A, L
	current use locations	A, P-L	A, L
Heritage Resources	heritage resources	--	--
Socio-economics	employment and economy	+	--
	demand for community infrastructure and services	A, U	A, L
	human health social and cultural well-being	A, L	--

Table 13-1: Potential, Residual Project and Cumulative Effects (cont'd)

VC	Potential Effect (Change in...)	Residual Project Effect (+/A/N/U/P/L) ^{1,2,3}	Residual Cumulative Effect (+/A/N/U/P/L) ^{1,2,3}
Rights of Indigenous Peoples	the exercise or practice of Indigenous and Treaty rights	A, L	A, L
<p>Note: Residual effects are characterized in detail in the ESA; only direction and likelihood of the predicted residual effects are provided here. A range indicates that the direction and/or likelihood of the predicted residual effects vary between project components and/or phases. Positive (+) indicates a beneficial direction; Adverse (A) indicates a detrimental direction; and Neutral (N) indicates no net change. Unlikely (U) indicates that the predicted residual effect is not likely to occur; possible (P) indicates that it may occur but is not likely; and likely (L) indicates that it is likely to occur.</p>			

13.10 CONTINUING ENVIRONMENTAL FIELD STUDIES

The information in this Application is supported by results of field investigations, plus feedback gathered to date through NGTL’s engagement and consultation programs. Additional field studies are planned for spring to fall 2020; these include:

- soils
- vegetation (e.g., wetlands, rare plants and ecological communities, weeds)
- wildlife (e.g., birds, amphibians, and habitat features including breeding habitat, leks, dens, and nests)
- fish and fish habitat
- Historical Resources Impact Assessments as required by ACMSW

The results of these studies, and any additional information gathered through NGTL’s engagement and consultation programs, will be incorporated into Project planning. Any additional mitigation required as a result of these supplemental findings will be included in the final EASs and EPPs, as appropriate.

13.11 COMMITMENT

NGTL will adopt all of TC Energy's plans and policies for the purpose of the Project and will adopt the mitigation identified in the Project ESA and EPP appended to the ESA.

To ensure that mitigation measures are followed, NGTL will have qualified environmental inspectors on the Project and will develop an environmental orientation for Project personnel. Socio-economic commitments and mitigation measures not included in the EPP will be monitored during construction by Project assignees such as Project Management, Construction Management and Stakeholder Engagement teams.

13.12 POST CONSTRUCTION MONITORING

Post-construction monitoring (PCM) activities will verify the effectiveness of mitigation measures following construction and will involve adapting the mitigation measures, if required. NGTL's PCM activities will include an assessment of reclamation success, including identification of any environmental issues, an assessment of the effectiveness of mitigation practices, and identify recommended corrective actions for outstanding environmental issues. NGTL's PCM and activities will be followed for compliance with specific reclamation performance expectations and conditions.

The objectives of PCM are to:

- assess the success of environmental protection measures implemented during construction;
- visually inspect the Project footprint to capture previously unidentified environmental issues;
- recommend remedial measures, if warranted, to be implemented to address outstanding environmental issues in a timely manner;
- review the success of re-establishing equivalent land capability; and
- document opportunities for procedural learnings and continuous improvement.

13.13 ENVIRONMENTAL REGULATORY CONSULTATION

Early engagement activities, including the distribution of Project factsheets, were initiated in Q4 2019. AEP, ACMSW, ECCC and PCA received these factsheets.

NGTL met with AEP on January 9 and March 26, 2020 to discuss the Lundbreck Section and on May 28, 2020 to discuss the Turner Valley and Longview Sections. The discussion focused on routing, Project footprint requirements and construction timing; vegetation, wildlife and fisheries; timing restrictions and mitigation; provincial disposition applications and other provincial project permitting.

ACMSW has been engaged to determine the heritage requirements for the Project. An Historic Resources Application was completed for each of the Turner Valley,

Longview and Lundbreck Sections, and results were submitted to ACMSW on December 2, 2019. ACMSW issued HRA Requirements for the Project components.

PCA (including representatives of Archaeology and History and Impact Assessment), was engaged to determine impact assessment requirements in March and June 2020. The Archaeology and History Branch of the PCA indicated that an Archaeological Impact Assessment (AIA) would be required for all undisturbed portions of the PDA that pass through the Bar U Ranch National Historic Site. PCA also requested that NGTL complete a project description template to help PCA determine the need for an impact assessment, which was submitted to PCA in July 2020.

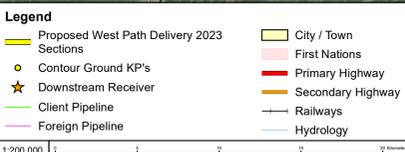
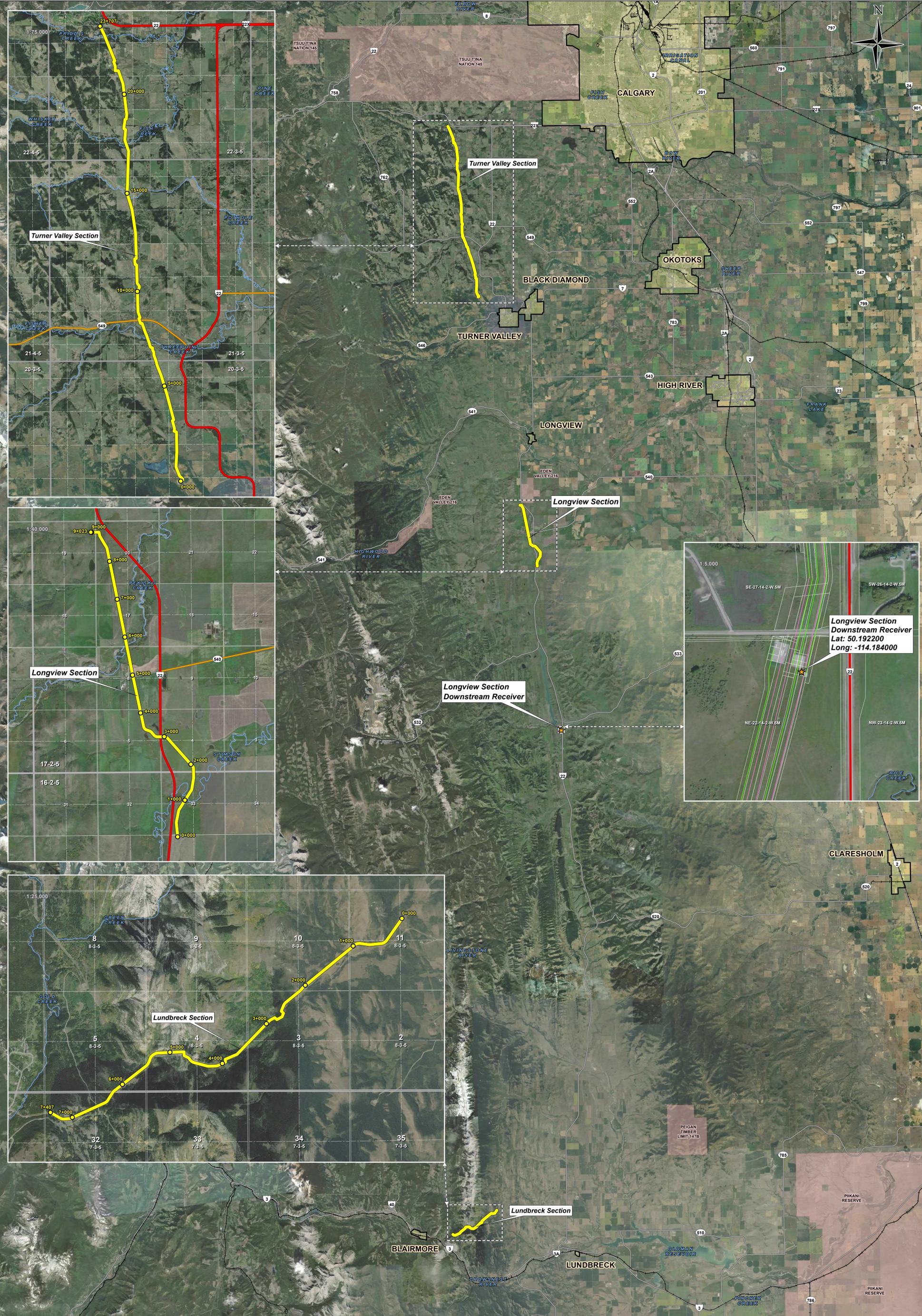
NGTL will continue to engage with the identified agencies on an ongoing basis. All required permits will be obtained prior to construction and associated conditions and mitigations will be implemented. NGTL will continue to discuss Project details with regulators to identify and resolve concerns. To this end, additional discussions are planned for all components of the Project.

13.14 REFERENCE

CER (Canada Energy Regulator). 2020. Filing Manual. Available at: <https://www.cer-rec.gc.ca/bts/ctr/gnnb/flngmnl/flngmnl-eng.pdf>. Accessed August 2020.

NEB (National Energy Board). 2019. *Interim Filing Guidance and Early Engagement Guide*. August 22, 2019. Available at: <https://www.cer-rec.gc.ca/bts/ctr/gnnb/ntrmflnggdnc/2019flngntrm/2019flngntrm-eng.pdf>. Accessed November 2019.

Section 14-1
Project Overview Map



NOVA GAS TRANSMISSION LTD.

NGTL WEST PATH DELIVERY 2023
WESTERN ALBERTA SYSTEM MAINLINE LOOP NO.2
TURNER VALLEY, LONGVIEW, AND LUNDBRECK SECTIONS

Alberta Sections Project Overview Map

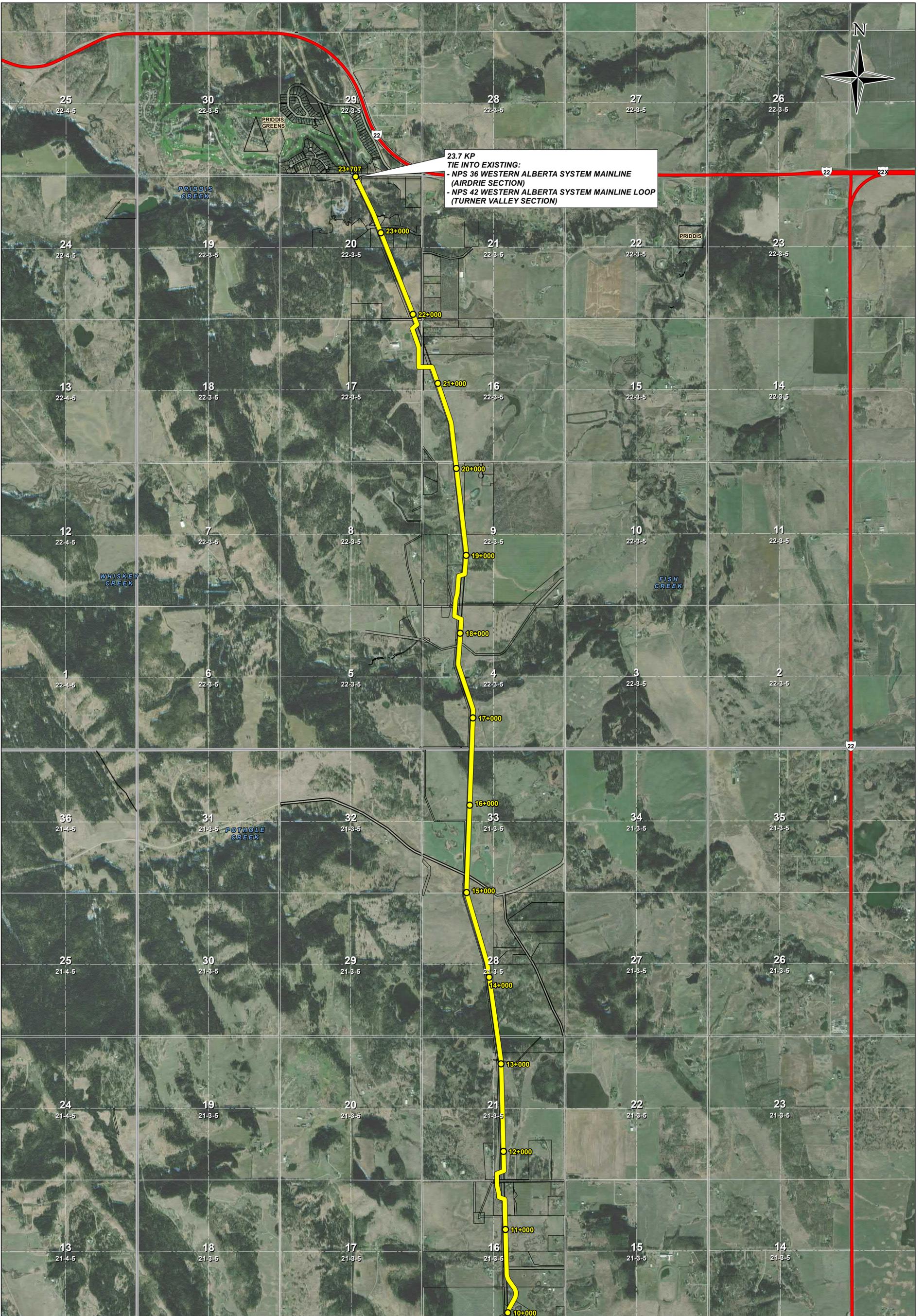
Route Reference: B029-MB1-G-SM-001, B029-MB1-G-SM-004, B029-MB1-G-SM-004
Sheet 1 of 1
October 9, 2020

REV 2

Section 14-2

Detailed Route Maps

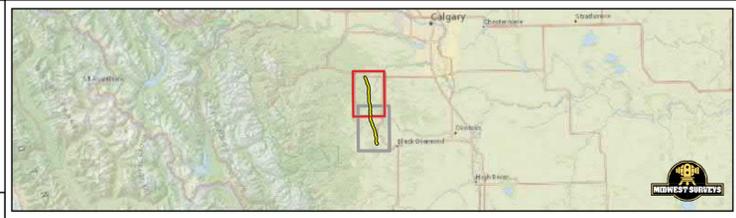
Turner Valley, Longview and Lundbreck Sections



Legend

- 1 km Contour Ground KP's
- Turner Valley 2023 CER Application Route - Rev0
- Base Mapping
- Primary Highway
- Secondary Highway

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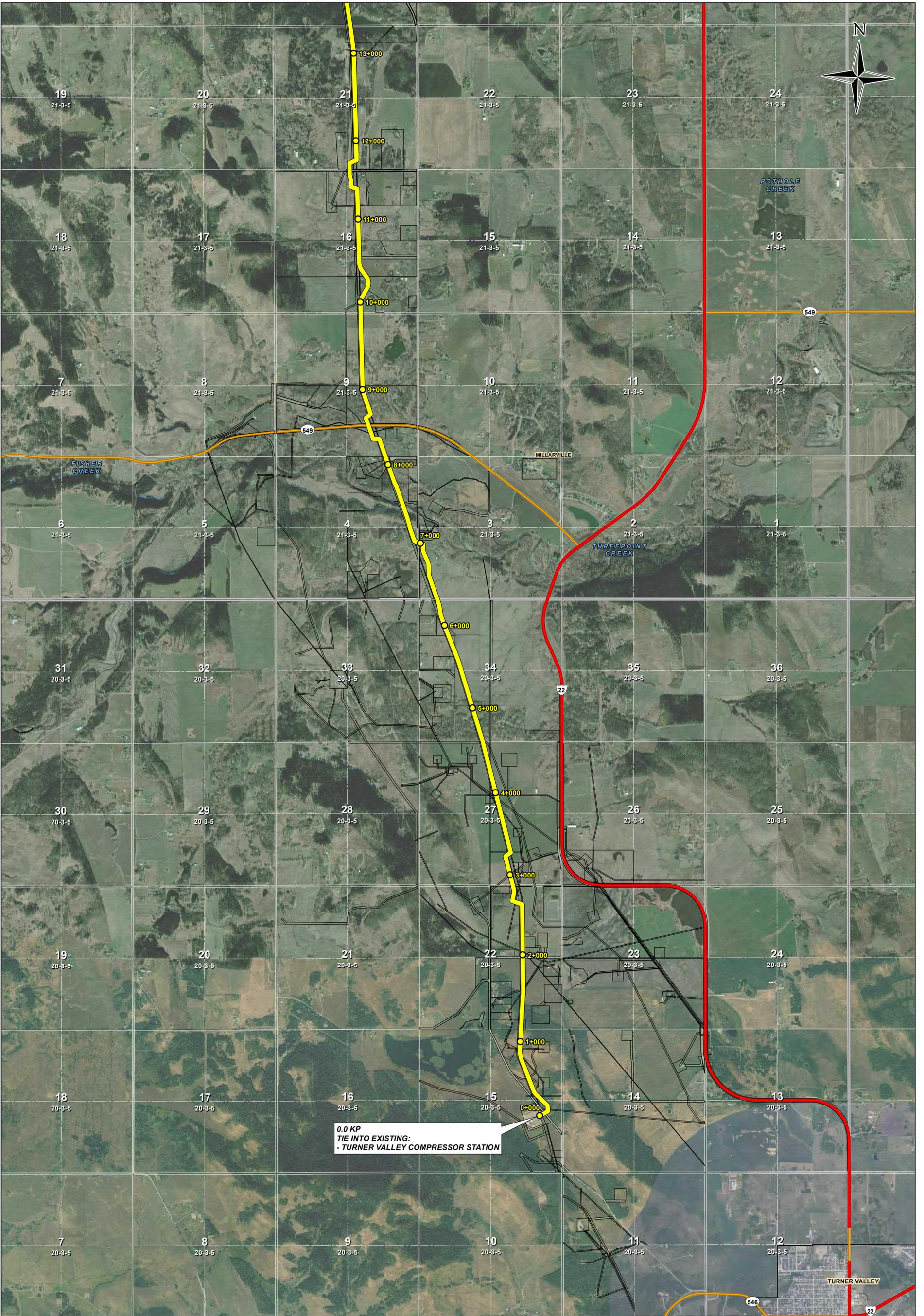


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**NGTL WEST PATH DELIVERY 2023
 WESTERN ALBERTA SYSTEM MAINLINE LOOP NO. 2 -
 TURNER VALLEY SECTION**

Detail Map Showing Proposed Ditchline

Route Reference: 80294-MSI-G-SH-0004_00_TurnerValley_2023_CER_Application_Ditchline	Sheet 1 of 2	REV
Document Control: 80294-2020-MP-08-0026	October 8, 2020	1



Legend

- 1 km Contour Ground KP's
- Turner Valley 2023 CER Application Route - Rev0
- Base Mapping
- Primary Highway
- Secondary Highway

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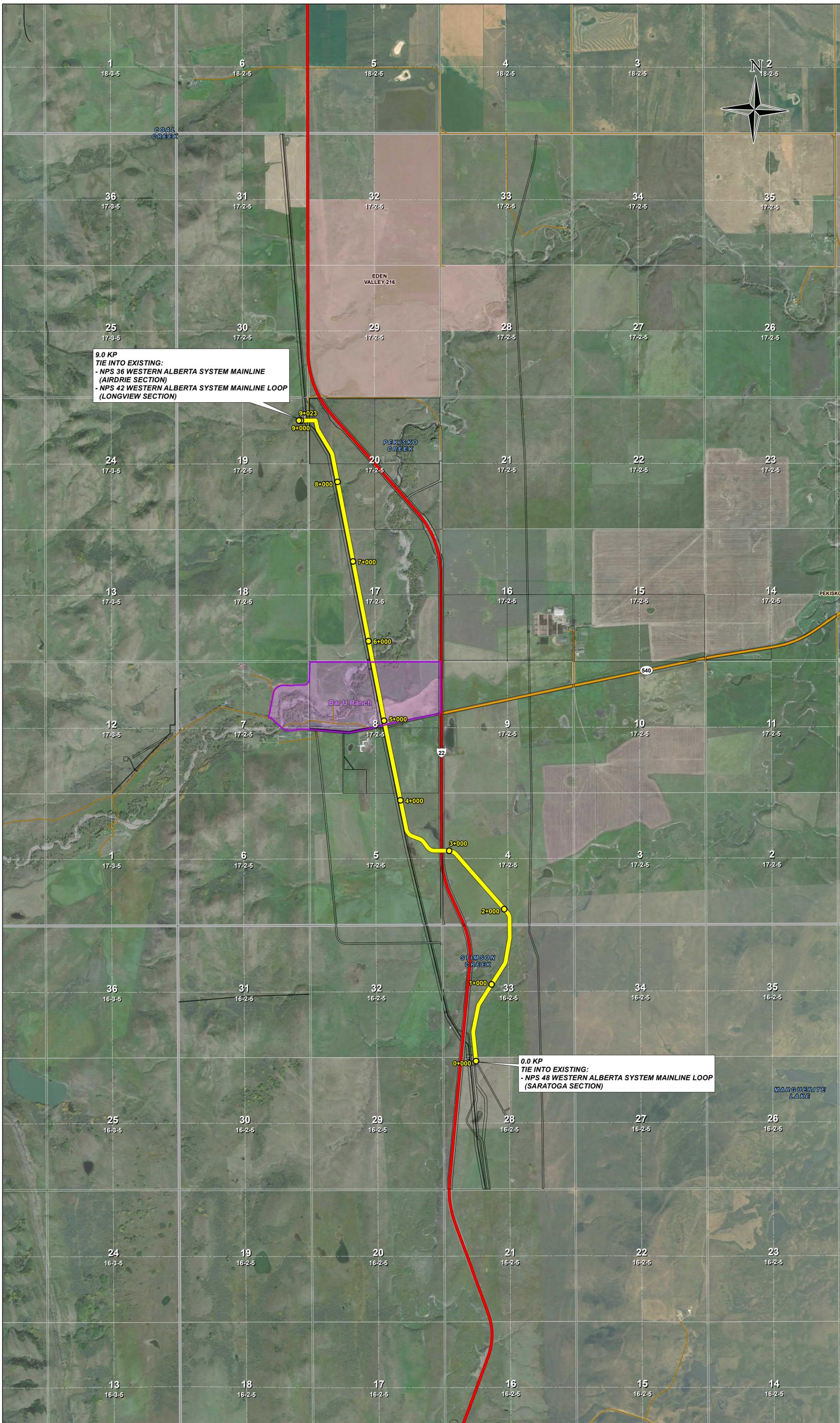


NOVA GAS TRANSMISSION LTD.

**NGTL WEST PATH DELIVERY 2023
 WESTERN ALBERTA SYSTEM MAINLINE LOOP NO. 2 -
 TURNER VALLEY SECTION**

Detail Map Showing Proposed Ditchline

Route Reference: 80294-MSI-G-SH-0004_00_TurnerValley_2023_CER_Application_Ditchline	Sheet 2 of 2	REV
Document Control: 80294-2020-MP-08-0026	October 8, 2020	1

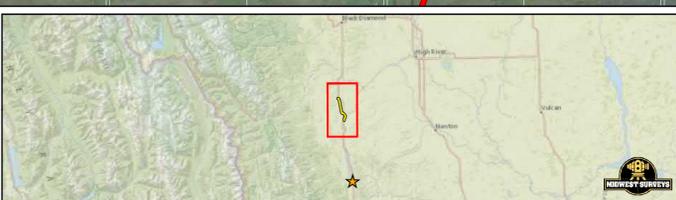


9.0 KP
TIE INTO EXISTING:
 - NPS 36 WESTERN ALBERTA SYSTEM MAINLINE (AIRDRIE SECTION)
 - NPS 42 WESTERN ALBERTA SYSTEM MAINLINE LOOP (LONGVIEW SECTION)

0.0 KP
TIE INTO EXISTING:
 - NPS 48 WESTERN ALBERTA SYSTEM MAINLINE LOOP (SARATOGA SECTION)

Legend

- 1 km Contour Ground KP's
- ★ Downstream Receiver
- Longview 2023 CER Application Route - Rev0
- Base Mapping
- First Nations
- Bar U Ranch
- Primary Highway
- Secondary Highway



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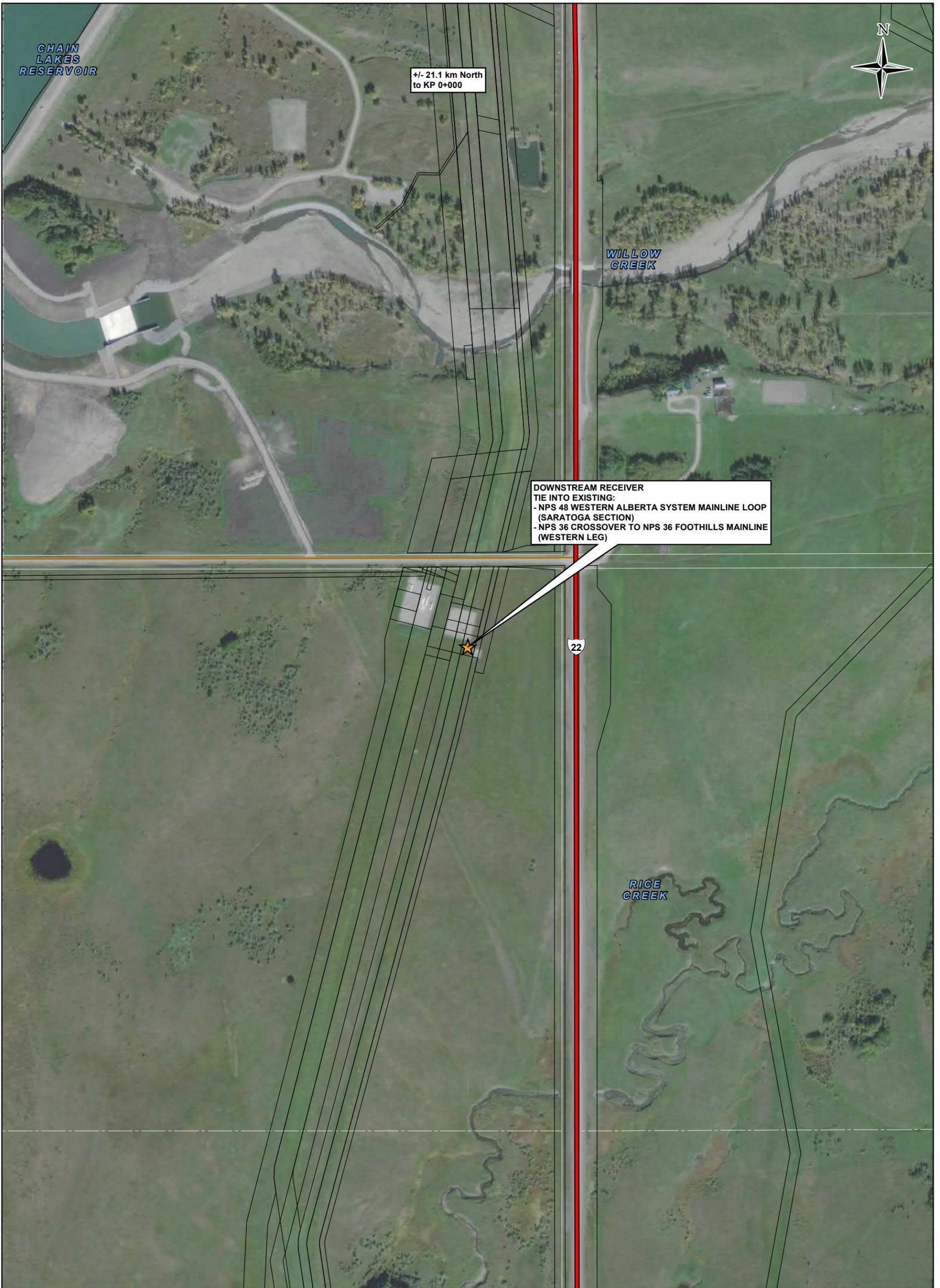
NGTL WEST PATH DELIVERY 2023
WESTERN ALBERTA SYSTEM MAINLINE LOOP NO. 2 -
LONGVIEW SECTION

Detail Map Showing Proposed Ditchline and Downstream Receiver

Route Reference: 80296-MSI-G-SH-0004_00_Longview_2023_CER_Application_Ditchline
 Document Control: 80296-2020-MP-08-0013

Sheet 1 of 2
 October 8, 2020

REV
1



Legend

- 1 km Contour Ground KP's
- ★ Downstream Receiver
- Longview 2023 CER Application Ditchline - Rev0
- Base Mapping
- First Nations
- Bar U Ranch
- Primary Highway
- Secondary Highway

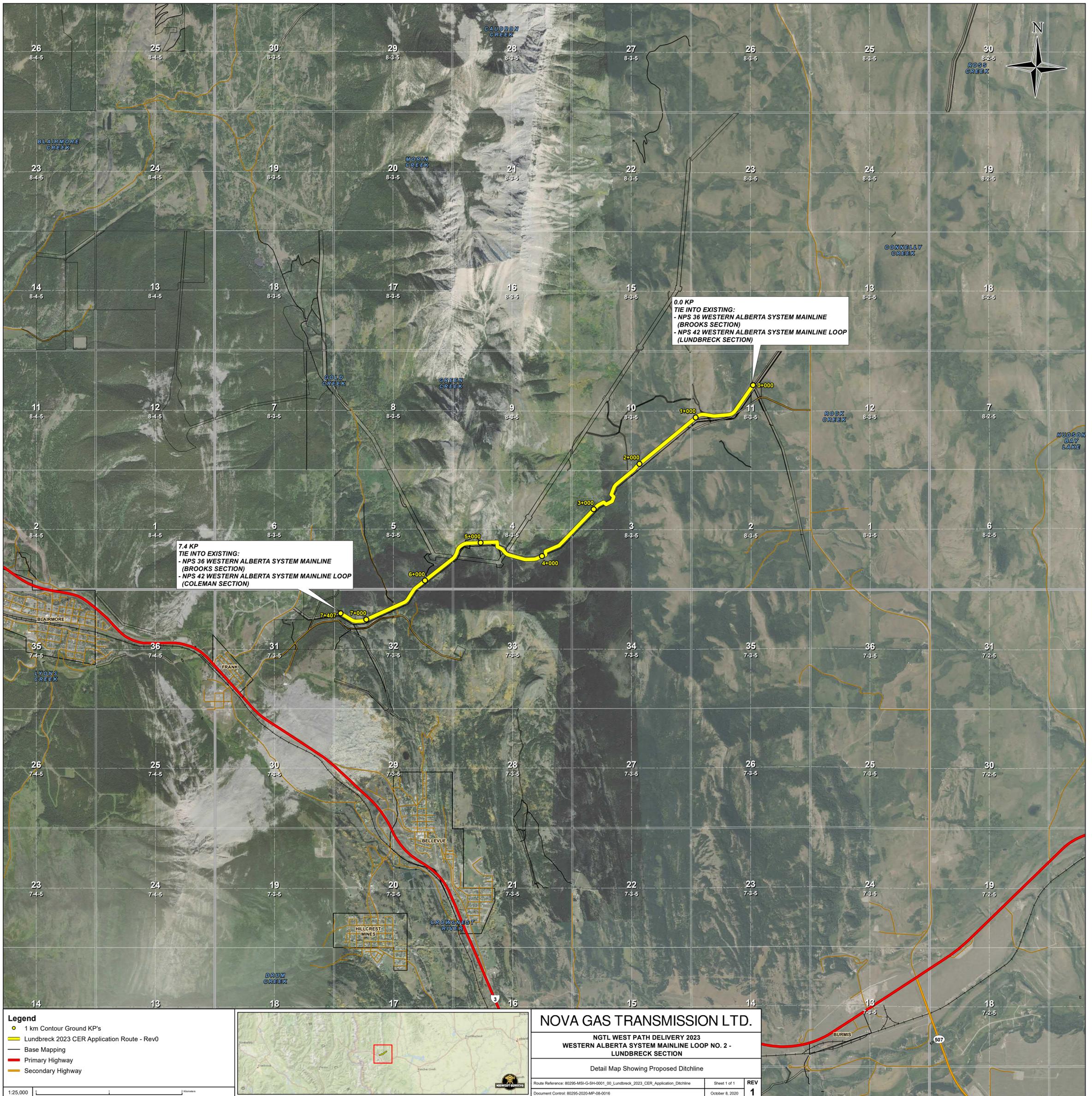


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NGTL WEST PATH DELIVERY 2023
WESTERN ALBERTA SYSTEM MAINLINE LOOP NO. 2 - LONGVIEW SECTION

Detail Map Showing Proposed Ditchline and Downstream Receiver

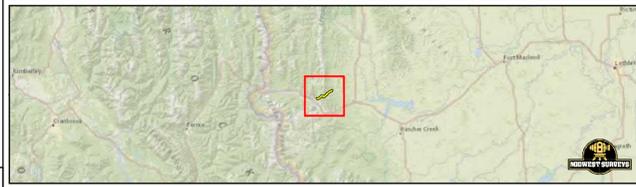
Route Reference: 80296-MSI-G-SH-0004_00_Longview_2023_CER_Application_Ditchline	Sheet 2 of 2	REV
Document Control: 80296-2020-MP-08-0013	October 8, 2020	1



0.0 KP
 TIE INTO EXISTING:
 - NPS 36 WESTERN ALBERTA SYSTEM MAINLINE (BROOKS SECTION)
 - NPS 42 WESTERN ALBERTA SYSTEM MAINLINE LOOP (LUNDBRECK SECTION)

7.4 KP
 TIE INTO EXISTING:
 - NPS 36 WESTERN ALBERTA SYSTEM MAINLINE (BROOKS SECTION)
 - NPS 42 WESTERN ALBERTA SYSTEM MAINLINE LOOP (COLEMAN SECTION)

- Legend**
- 1 km Contour Ground KP's
 - Lundbreck 2023 CER Application Route - Rev0
 - Base Mapping
 - Primary Highway
 - Secondary Highway



NOVA GAS TRANSMISSION LTD.

NGTL WEST PATH DELIVERY 2023
 WESTERN ALBERTA SYSTEM MAINLINE LOOP NO. 2 - LUNDBRECK SECTION

Detail Map Showing Proposed Ditchline

Route Reference: 80295-MSI-G-SH-0001_00_Lundbreck_2023_CER_Application_Ditchline	Sheet 1 of 1	REV
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