

LINE 9B REVERSAL AND LINE 9 CAPACITY EXPANSION PROJECT

Application by
Enbridge Pipelines Inc.

Filed with the
National Energy Board



TABLE OF CONTENTS

1.	EXECUTIVE SUMMARY	18
1.1.	Project Overview.....	18
1.2.	Project Purpose	18
1.3.	Action Sought by Applicant	19
1.3.1.	Non-NEB Regulatory Approvals	19
2.	PROJECT DESCRIPTION.....	20
2.1.	Project Components and Activities	20
2.1.1.	Facilities.....	20
2.1.1.1.	Sarnia Terminal	20
2.1.1.2.	Densitometer Relocation at KP 2989 (MP 1857).....	20
2.1.1.3.	North Westover Station	20
2.1.1.4.	Hilton Station.....	21
2.1.1.5.	Cardinal Station	21
2.1.1.6.	Terrebonne Station	21
2.1.1.7.	Montreal Terminal.....	21
2.2.	Project Overall Map	22
2.3.	Project Schedule.....	23
2.4.	Project Cost	23
3.	ECONOMIC FEASIBILITY, ALTERNATIVES AND JUSTIFICATION	24
3.1.	Economic Feasibility and Justification	24
3.2.	Alternatives.....	26
4.	CONSULTATION.....	27
4.1.	PUBLIC CONSULTATION AND ABORIGINAL ENGAGEMENT.....	27
4.1.1.	Principles and Goals of Consultation Program.....	27
4.1.1.1.	Corporate Social Responsibility	27
4.1.1.2.	Public Consultation Program Objectives	27
4.1.1.3.	Design of Consultation Program.....	27
4.2.	Implementing a Consultation Program	28
4.2.1.	Stakeholder Groups Consulted	28
4.2.2.	Methods of Consultation.....	30

4.2.3.	Project Information Mail Outs	30
4.2.4.	Open Houses	30
4.2.5.	Person Meetings and Consultation	31
4.2.6.	Toll-Free Telephone Message Line and E-mail address.....	32
4.2.7.	Project Web Site	32
4.2.8.	Outcomes of the Consultation Program.....	32
5.	ABORIGINAL ENGAGEMENT	33
5.1.	Principles and Goals of the Aboriginal Engagement Program	33
5.2.	Design and Implementation of the Aboriginal Engagement Program	34
5.3.	Identification of Aboriginal Communities.....	34
5.4.	Aboriginal Engagement Activities.....	35
5.5.	Ongoing Aboriginal Engagement Activities	36
5.6.	Key Comments and Concerns.....	36
6.	NOTIFICATION OF COMMERCIAL THIRD PARTIES	37
7.	ENGINEERING	38
7.1.	Engineering Philosophy.....	38
7.2.	Hydraulic Design.....	38
7.3.	Pumps and Motors.....	39
7.4.	Relief Tank and Associated Piping.....	40
7.4.1.	Description of Containment	41
7.4.2.	Containment Volume	41
7.4.3.	Overflow Prevention System	41
7.4.4.	Description of Overpressure System	41
7.5.	Electrical Systems	41
7.6.	Piping	41
7.7.	Meters.....	43
7.8.	Traps	44
7.9.	Construction	44
7.10.	Material Supply Chain Information	44
8.	SYSTEMS OPERATIONS	45
9.	PIPELINE SYSTEMS CONTROL.....	46

9.1.	Pipeline Control System	46
9.2.	Leak Detection System	46
10.	SYSTEM INTEGRITY	48
11.	ENVIRONMENT AND SOCIO-ECONOMIC IMPACT ASSESSMENT	49
12.	ECONOMICS	50
12.1.	Supply.....	50
12.2.	Transportation Matters.....	51
12.2.1.	Pipeline Capacity - Contractual Arrangements & Open Season.....	51
12.2.2.	Throughput	51
12.3.	Markets	51
12.4.	Financing	51
13.	LANDS.....	52
14.	SECURITY MANAGEMENT	53
15.	EMERGENCY MANAGEMENT.....	54

LIST OF FIGURES

Figure 2.2.1	Project Map.....	22
Figure 3.1.1	Canadian Bakken vs. Atlantic Basin	25
Figure 12.1.1	CAPP Crude Oil – Forecast, Markets & Pipelines June 2011	50

LIST OF TABLES

Table 7.2.1	Product Properties – Light Crude.....	38
Table 7.2.2	Product Properties – Medium Crude.....	38
Table 7.2.3	Product Properties – Heavy Crude	38
Table 7.3.1	Proposed Mainline Pumps	39
Table 7.3.2	Proposed Booster Pumps at Sarnia Terminal	40
Table 7.4.1	Relief Piping Technical Specifications	40
Table 7.4.2	Relief Tank Specifications.....	40

Table 7.6.1 Piping Technical Specification at Sarnia	41
Table 7.6.2 Piping Technical Specification at North Westover Station.....	42
Table 7.6.3 Piping Technical Specification at Hilton Station	42
Table 7.6.4 Piping Technical Specification at Cardinal Station.....	42
Table 7.6.5 Piping Technical Specification at Terrebonne Station	43
Table 7.6.6 Piping Technical Specification at Montreal Terminal	43
Table 7.7.1 Proposed Custody Transfer Meters at the Montreal Terminal.....	43
GLOSSARY OF TERMS.....	6
FILING MANUAL CHECKLIST	8

ATTACHMENTS

- Attachment 1 – Documents of Understanding
- Attachment 2 – Plot Plans
- Attachment 3 – Corporate Social Responsibility Policy
- Attachment 4 – Stakeholder Consultation Report
- Attachment 4a – Project Information Package
- Attachment 4b – Invitation to Ontario Open Houses
- Attachment 4c – Invitation to Quebec Open Houses
- Attachment 4d – 25 September 2012 Update Letter to Stakeholders
- Attachment 4e – 2 November 2012 Update Letter to Stakeholders
- Attachment 4f – Letter to Ontario and Quebec Municipalities
- Attachment 5 – Aboriginal and Native American Policy
- Attachment 6 – Aboriginal Engagement Activities Summary
- Attachment 7 – Pipeline Engineering Assessment
 - *Appendix A to Pipeline EA - Map*
 - *Appendix B to Pipeline EA – Pipeline Compliance and Risk Management Pipeline Risk Assessment*
- Attachment 8 – Facilities Engineering Assessment
- Attachment 9 - ESEIA – Part 1
- Attachment 9 – ESEIA – Part 2
- Attachment 9 – ESEIA – Part 3 – Appendix A to C
- Attachment 9 – ESEIA – Part 4 – Appendix D - Acoustic Assessment
- Attachment 10 - Rules and Regulations Tariff

GLOSSARY OF TERMS

Aboriginal Communities	First Nations consulted regarding the Project
Annual Capacity	The sustainable pipeline capacity over a year after capacity reductions for routine and normal maintenance and routine operating problems are taken into account and assuming minimal or no capacity reduction due to ratability issues
bbl	barrels
Board or NEB	National Energy Board
bpd	barrels per day
CAEPLA	Canadian Association of Energy and Pipeline Landowner Associations
CAPP	Canadian Association of Petroleum Producers
CPM	Computational Pipeline Monitoring
CSA Z662-11	Canadian Standards Association Z662-11 – <i>Oil & Gas Pipeline Systems</i>
DRA	Drag Reducing Agent
Enbridge	Enbridge Pipelines Inc.
EP Plan	Environmental Protection Plan
ESEIA or ESA	Environmental and Socio-Economic Impact Assessment
GDP	Gross Domestic Product
GUI	Graphical User Interface
km	kilometre
Line 9 Reversal Phase I Project	Reversal of the 194-kilometre segment of Line 9 between Sarnia Terminal and North Westover Pump Station (“Line 9A”) pursuant to Order XO-E101-010-2012
Line 9A	194-kilometre segment of Line 9 between Sarnia Terminal and North Westover Station
Line 9B	639 km-long section of Line 9 between North Westover Station and Montreal Terminal

GLOSSARY OF TERMS

Line 9B Reversal and Line 9 Capacity Expansion Project	Proposal to reverse a section of Line 9 between North Westover and Montreal and concurrently expand the overall annual capacity of Line 9 from Sarnia to Montreal
LPM	Line Pressure Monitor
m²	square metre
m³	cubic metre
MBS	Material Balance System
MOP	Maximum Operating Pressure
NEB Act	<i>National Energy Board Act</i>
OPLA	Ontario Pipeline Landowners Association
OPR-99	<i>NEB Onshore Pipeline Regulations, 1999</i>
PLCs	Programmable Logic Controllers
Policy	Aboriginal and Native American Policy
Project	Line 9B Reversal and Line 9 Capacity Expansion Project
Revised Tariff	Revised Rules and Regulations Tariff for Line 9
ROW	right of way
RTTM	Real Time Transient Model
SCADA	Supervisory Control and Data Acquisition
TSA	Transportation Services Agreement
VFD	Variable Frequency Drive

FILING MANUAL CHECKLIST

Chapter 3 – Common Information Requirements

Filing #	Filing Requirement	In Application? References	Not in Application? Explanation
3.1 Action Sought by Applicant			
1.	Requirements of s.15 of the <i>National Energy Board Rules of Practice and Procedure, 1995</i> .	1.3	
3.2 Application or Project Purpose			
1.	Purpose of the proposed project.	1.2	
3.3 Consultation			
3.3.1 Principles and Goals of Consultation			
1.	The corporate policy or vision.	4.1.1	
2.	The principles and goals of consultation for the project.	4.1.1	
3.	A copy of the Aboriginal protocol and copies of policies and principles for collecting traditional use information, if available.	5.1, Attachment 5	
3.3.2 Design of Consultation Program			
1.	The design of the consultation program and the factors that influenced the design.	4.1.1.3	
3.3.3 Implementing a Consultation Program			
1.	The outcomes of the consultation program for the project.	4.2	
3.3.4 Justification for Not Undertaking a Consultation Program			
1.	The application provides justification for why the applicant has determined that a consultation program is not required for the project.		N/A
3.4 Notification of Commercial Third Parties			
1.	Confirm that third parties were notified.	6.0	
2.	Details regarding the concerns of third parties.	6.0	
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 #	Filing Requirement	In Application? References	Not in Application? Explanation
4.1 Project Description			
1.	The project components, activities and related undertakings.	2.1	
2.	The project location and criteria used to determine the route or site.	2.1	
3.	How and when the project will be carried out.	2.3, 7.1, 7.9	
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.	2.4	
6.	The expected in-service date.	2.2	
4.2 Economic Feasibility, Alternatives and Justification			
4.2.1 Economic Feasibility			
1.	Describe the economic feasibility of the project.	3.1	
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.	3.1, 3.2	
2.	Describe and justify the selection of the proposed route and site including a comparison of the alternatives using the selection criteria.		N/A
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.		N/A
4.	For projects subject to a <i>Canadian Environmental Assessment Act</i> environmental assessment and for which “alternatives to” the project or “alternative means” are relevant factors to be considered, describe these in the project Environmental and Socio-economic Assessment (“ESA”).		N/A
4.2.3 Justification			
1.	Provide a justification for the proposed project.	3.1	

Guide A – A.1 Engineering

Filing #	Filing Requirement	In Application? References	Not in Application? Explanation
A.1.1 Engineering Design Details			
1.	Fluid type and chemical composition.	7.2	
2.	Line pipe specifications.	7.4, 7.6	
3.	Pigging facilities specifications.	7.8	
4.	Compressor or pump facilities specifications.	7.3	
5.	Pressure regulating or metering facilities specifications.	7.7	
6.	Liquid tank specifications, or other commodity storage facilities.	7.4	
7.	New control system facilities specifications.	9.1, 9.2	
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.	2.1.1	
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.	7.1	
2.	Provide a statement indicating which Annex is being used and for what purpose.	9.2, Pipeline Engineering Assessment 4.1, Facilities Engineering Assessment 3.6.2.1	
3.	Statement confirming compliance with OPR and PPR.	7.1	
4.	Listing of all primary codes and standards, including version and date of issue.	7.1	
5.	Confirmation that the project will comply with company manuals and confirm manuals comply with OPR/PPR and codes and standards.	7.1	
6.	Any portion of the project a non-hydrocarbon commodity pipeline system? Provide a Quality Assurance 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 Description of the designs and measures required to safeguard the pipeline 		N/A
8.	If directional drilling involved: <ul style="list-style-type: none"> Preliminary feasibility report Description of the contingency plan 		N/A

9.	If new materials are involved, provide material supply chain information, in tabular format.	7.10	
10.	If re-use of materials is involved, provide an engineering assessment in accordance with CSA Z662 that indicates its suitability for the intended service.		N/A
A.1.3 Onshore Pipeline Regulations			
1.	Designs, specifications programs, manuals, procedures, measures or plans for which no standard is set out in the OPR or PPR.		N/A
2.	A quality assurance program if project non-routine or incorporates unique challenges due to geographical location.		N/A
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 • Results of procedure qualification tests 		N/A

Guide A – A.2 Environment and Socio-Economic Assessment

Filing #	Filing Requirement	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.	4.1, 4.2, 4.3 of the ESEIA	
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 consultation (see Table A-1 for examples). Where circumstances require more detailed information in an ESA, see: <ul style="list-style-type: none"> i. Table A-2 – Filing Requirements for Biophysical Elements; or ii. Table A-3 – Filing Requirements for Socio-Economic Elements. 	4.0, 4.1, 4.2, 4.3, 5.0, Table 5-2a and Table 5-2b of the ESEIA	
3.	Provide supporting evidence (e.g., references to scientific literature, local and traditional knowledge, previous environmental assessment and monitoring reports) for: <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. 	4.0, 4.1, 4.2, 4.3 5.0, 10.0 of the ESEIA	
4.	Describe and substantiate the methods used for any surveys, such as those pertaining to wildlife, plants, species at risk or species of special status, soils,	4.1.1.4, 4.2.5, Appendix D of the ESEIA	

	heritage resources or traditional land use, and for establishing the baseline setting for the atmospheric and acoustic environment.		
5.	Applicants must consult with other expert federal, provincial or territorial departments and other relevant authorities on requirements for baseline information and methods.	3.0, Table 3-1, 4.0 of the ESEIA	
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.	5.0, Table 5-1 of the ESEIA	
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.	5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 6.0, 7.0 of the ESEIA	
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 NEB.	Appendix C, Table C-1 of the ESEIA NB: Table C-1 provides specific section references to Enbridge EGC 2012.	
2.	Ensure that commitments about mitigative measures will be communicated to field staff for implementation through an Environmental Protection Plan (EP Plan).	7.2 of the ESEIA	
3.	Describe plans and measures to address potential effects of accidents and malfunctions during construction and operation of the project.	7.0, 7.2, Table C-1 of the ESEIA	
Evaluation of Significance			
1.	After taking into account any appropriate mitigation measures, identify any remaining residual effects from the project.	5.0, 5.5.3, 5.6.3 of the ESEIA	
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".	5.0, Table 5-1 of the ESEIA	
3.	Evaluate the significance of residual adverse environmental and socio-economic effects against the defined criteria.	5.0, 5.5.3, 5.6.3 of the ESEIA	
4.	Evaluate the likelihood of significant residual adverse environmental and socio-economic effects occurring and substantiate the conclusions made.	5.0, 5.5.3, 5.6.3 of the ESEIA	
A.2. 7 Cumulative Effects Assessment			
Scoping and Analysis of Cumulative Effects			
1.	Identify the valued components for which residual	5.0 of the ESEIA	

	effects are predicted, and describe and justify the methods used to predict any residual effects.		
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.	5.0, 5.5.4, 5.6.4 of the ESEIA	
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.	5.0, 5.5.4, 5.6.4 of the ESEIA	
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.	5.0, 5.5.4, 5.6.4 of the ESEIA	
5.	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: <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. 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. 	5.0, 5.5.4, 5.6.4 of the ESEIA	
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.	N/A	No significant cumulative effects identified for the Project.
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.	5.5.4, 5.6.4 of the ESEIA. No residual cumulative effects identified for the Project.	
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".	5.0, Table 5-1, Appendix A of the ESEIA	
3.	Evaluate the significance of adverse residual cumulative effects against the defined criteria.	N/A	No residual cumulative effects identified for the Project.
4.	Evaluate the likelihood of significant, residual adverse cumulative environmental and socio-economic effects occurring and substantiate the conclusions made.	N/A	No residual cumulative effects identified for the Project.
A.2.8 Inspection, Monitoring and Follow-up			
1.	Describe inspections plans to ensure compliance with biophysical and socio- economic commitments, as	7.0, 7.2 of the ESEIA	

	required by Section 27 of the OPR-99.		
2.	Evaluate the need to monitor the elements potentially affected by the project.	Table C-1 of the ESEIA	
3.	Evaluate the need for element-specific follow-up programs, as specified by the <i>CEA Act</i> , to verify the accuracy of the ESA predictions and to determine the effectiveness of any mitigation measures implemented, particularly those mitigation measures that are new or unproven or are used in vulnerable and sensitive areas.	7.0 of the ESEIA	

Table A-1 Circumstances and Interactions Requiring Detailed Biophysical and Socio- Economic Information – Densitometer site at KP 2989.30

Physical & meteorological environment	No change in existing physical or meteorological environment at the densitometer site at KP 2989.30.	
Soil and soil productivity	Densitometer site at KP 2989.30 within existing ROW consists of a corn crop, which is abundant in the immediate area. Detailed soil surveys were therefore not completed.	
Vegetation	Assessment completed at the densitometer site at KP 2989.30 determined that primary vegetation coverage consists of corn crop.	
Water quality and quantity	No surface water features present at or near the densitometer site at KP 2989.30.	
Fish and fish habitat	No fish habitat present at or near the densitometer site at KP 2989.30.	
Wetlands	No wetlands present at or near the densitometer site at KP 2989.30.	
Wildlife and wildlife habitat	Wildlife habitat within the existing ROW at the densitometer site at KP 2989.30 consists of corn crop, which is abundant in the immediate area. Detailed wildlife surveys were therefore not completed.	
Species at Risk or Species of Special Status and related habitat	No Species at Risk or related habitat are likely present at or near the densitometer site at KP 2989.30.	
Air emissions	No exceedance of provincial air quality guideline limits at the densitometer site at KP 2989.30.	
Greenhouse gas (GHG) emissions	No exceedance of provincial air quality guideline limits at the densitometer site at KP 2989.30.	
Acoustic environment	No exceedance of provincial acoustic guideline limits at the densitometer site at KP 2989.30.	

Human occupancy and resource use	Two residences are located less than 100 m from the densitometer site at KP 2989.30.	
Heritage resources	No heritage resources are present at or near the densitometer site at KP 2989.30.	
Traditional land and resource use	No traditional land and resource use is present at or near the densitometer site at KP 2989.30.	
Social and cultural well-being	Two residences located near the densitometer site at KP 2989.30 may be impacted temporarily (dust, noise, traffic, etc.) during Project construction for this site.	
Human health and aesthetics	Two residences near the densitometer site at KP 2989.30 may be impacted temporarily (dust, noise, traffic, etc.) by construction for this site.	
Infrastructure and services	No infrastructure or services will be impacted by construction and operation of the densitometer site at KP 2989.30.	
Employment and economy	No changes in employment or economy will occur as a result of the Project at the densitometer site at KP 2989.30. A short-term increase in local resource use (i.e. food, accommodation, construction materials) may occur during Project construction for this site.	

Guide A – A.3 Economics

Filing #	Filing Requirement	In Application? References	Not in Application? Explanation
A.3.1 Supply			
1.	A description of each commodity.	7.2, 12.1	
2.	A discussion of all potential supply sources.	12.1	
3.	Forecast of productive capacity over the economic life of the facility.	12.2.1	
4.	For pipelines with contracted capacity, a discussion of the contractual arrangements underpinning supply.	12.2.1.1	
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. Justification that size of expansion is appropriate. 	12.2.1	

2.	In case of new pipeline, justification that size of expansion is appropriate given available supply.		N/A
Throughput			
1.	For pipelines with contracted capacity, information on contractual arrangements.	12.2.1, 12.2.2	
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 flow formulae and flow calculations used to determine the capabilities of the proposed facilities and the underlying assumptions and parameters 	12.1, 12.2, 12.3	
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.	12.3	
2.	Provide a discussion of the physical capability of upstream and downstream facilities to accept the incremental volumes that would be received and delivered.	12.1, 12.3	
A.3.4 Financing			
1.	Evidence that the applicant has the ability to finance the proposed facilities.	12.4	
2.	Estimated toll impact for the first full year that facilities are expected to be in service.		N/A
3.	Confirmation that shippers have been apprised of the project and toll impact, their concerns and plans to address them.	12.2.1	
4.	Additional toll details for applications with significant toll impacts.		N/A
A.3.5 Non-NEB Regulatory Approvals			
1.	Confirm that all non-NEB 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.	1.3.1	
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.		N/A

Guide A – A.4 Lands Information

Filing #	Filing Requirement	In Application? References	Not in Application? Explanation
A.4.1 Land Areas			
1.	<ul style="list-style-type: none"> Width of right-of-way and locations of any changes to width Locations and dimensions of known temporary work space and drawings of typical dimensions Locations and dimensions of any new lands for facilities 	13.0, Executive Summary of ESEIA	
A.4.2 Land Rights			
1.	The type of lands rights proposed to be acquired for the project.	13.0	
2.	The relative proportions of land ownership along the route of the project.	13.0	
3.	Any existing land rights that will be required for the project.	13.0	
A.4.3 Lands Acquisition Process			
1.	The process for acquiring lands.		N/A
2.	The timing of acquisition and current status.		N/A
3.	The status of service of subsection 87(1) notices.		N/A
A.4.4 Lands Acquisition Agreements			
1.	A sample copy of each form of agreement proposed to be used pursuant to subsection 86(2) of the National Energy Board Act ("NEB Act").		N/A
2.	A sample copy of any proposed fee simple, work space, access or other land agreement.		N/A
A.4.5 Section 87 Notices			
1.	A sample copy of the notice proposed to be served on all landowners pursuant to subsection 87(1) of the <i>NEB Act</i> .		N/A
2.	Confirmation that all notices include a copy of <i>Pipeline Regulation in Canada: A Guide for Landowners and the Public</i> .		N/A
A.4.5 Section 58 Application to Address a Complaint			
1.	The details of the complaint and describe how the proposed work will address the complaint.		N/A

1. EXECUTIVE SUMMARY

1.1. Project Overview

Enbridge Pipelines Inc. (“Enbridge”) is proposing to reverse a section of Line 9 between North Westover, Ontario and Montreal, Quebec and concurrently expand the overall annual capacity of Line 9 from Sarnia, Ontario to Montreal to accommodate our customers’ requests for greater pipeline capacity and access to North American crude (“Line 9B Reversal and Line 9 Capacity Expansion Project” or “Project”). Increasing the supply of lower-priced North American oil to Canadian refineries benefits the refining industry and the Canadian, Ontario and Quebec economies.

Line 9 is an existing Enbridge 762 mm (NPS 30) diameter pipeline with a current approved capacity of approximately 38,157 m³/day (240,000 barrels per day (“bpd”)), extending from Sarnia to Montreal. Line 9 was placed into service in 1976 and originally flowed in an eastward direction. The flow of the pipeline was reversed to a westward direction in 1999 following the National Energy Board (“Board” or “NEB”) OH-2-97 proceeding and pursuant to Order XO-J1-34-97. Currently, the pipeline transports crude oil from areas such as the North Sea, West Africa and the Middle East, in a westbound direction.

On July 27, 2012, the NEB approved a standalone application by Enbridge for the reversal of the 194-kilometre segment of Line 9 between Sarnia Terminal and North Westover Station (“Line 9A”) pursuant to Order XO-E101-010-2012 (the “Line 9 Reversal Phase I Project”). Enbridge now seeks NEB approval for the reversal of the 639 km-long section of Line 9 from North Westover Station to Montreal Terminal (“Line 9B”) based on commercial support and current market conditions. In addition, Enbridge seeks NEB approval to increase the annual capacity of the entire Line 9 to approximately 47,696 m³/day (300,000 bpd), as well as to revise the Line 9 tariff to allow for the transportation of heavy crude on Line 9.

The reversal of the flow of Line 9B will be achieved mainly by modifying existing facilities. The increased capacity will be achieved through the addition of pumps and skids that will inject Drag Reducing Agent (“DRA”) into Line 9 at existing Enbridge facilities.

With the exception of some temporary workspace required for the construction of a new densitometer building near Enbridge’s North Westover Station, the Project will take place within existing Enbridge properties and right of way (“ROW”). Project work at Sarnia Terminal, North Westover Station, Hilton Station, Cardinal Station (in Ontario), and Terrebonne Station and Montreal Terminal (in Quebec) includes the modification or replacement of existing equipment and the installation of pumps and piping within the facility boundaries.

1.2. Project Purpose

The purpose of the Project is to respond to requests from eastern Canadian refineries to have access to the growing and less expensive supplies of crude oil production from western Canada and the U.S. Bakken region.

1.3. Action Sought by Applicant

Enbridge hereby makes application to the NEB pursuant to the *National Energy Board Act* (“NEB Act”).

Enbridge respectfully requests the following relief:

- a) an order, pursuant to section 58 of the NEB Act, exempting the Project from the provisions of paragraph 30(1)(b) and sections 31, 33 and 47 of the NEB Act;
- b) approval under Part IV of the NEB Act for the revised Line 9 Rules and Regulations Tariff; and
- c) such further and other relief as Enbridge may request or the Board may deem appropriate pursuant to section 20 of the NEB Act.

1.3.1. Non-NEB Regulatory Approvals

All non-NEB regulatory approvals required for the Project will be in place prior to Project construction.

Further correspondence respecting this application should be addressed to the attention of:

Chantal Robert
Supervisor Regulatory Affairs
Enbridge Pipelines Inc.
3000, 425 – 1st Street SW
Calgary AB T2P 3L8
Tel.: 403-718-3551
Fax: 403-767-3863

Margery Fowke
Senior Regulatory Counsel
Enbridge Pipelines Inc.
3000, 425 – 1st Street SW
Calgary AB T2P 3L8
Tel.: 403-266-7907
Fax: 403-767-3863

Doug Crowther
Legal Counsel
Fraser Milner Casgrain LLP
15th Floor, Bankers Court
850 - 2nd Street SW
Calgary, AB T2P 0R8
Tel.: 403 268 7000
Fax: 403 268 3100

2. PROJECT DESCRIPTION

2.1. Project Components and Activities

The following outlines the physical scope of the Project. A summary of the scope may also be found in the Documents of Understanding (please refer to Attachment 1) and Plot Plans (please refer to Attachment 2).

2.1.1. Facilities

2.1.1.1. Sarnia Terminal

- install one new 2,237 kW (3,000 hp) mainline pump unit, including new pump, motor, new pump foundation, new electrical equipment and cables and new instruments;
- install new electrical 2,237 kW (3,000 hp) Variable Frequency Drive (“VFD”) for starting Line 9 mainline pump motors. The new VFD will be installed in a new electrical building (approximately 100 m²) on site;
- trim the impeller and replace volute insert on one existing mainline pump;
- install new piping and valves to connect to the new mainline pump;
- replace valves on manifolds 202, 203, and 204;
- new piping from manifold 202 to booster pumps;
- install up to three new booster pumps estimated to be 261 kW (350 hp), including new pumps, motors, new pump foundations, new electrical equipment and cables, and new instruments;
- install new piping and new valves to connect to the new booster pumps;
- electrical upgrades as required;
- install new sump tank and drain system;
- install new DRA skids; and
- civil work, including excavation and grading, as required.

2.1.1.2. Densitometer Relocation at KP 2989 (MP 1857)

- install new densitometer building (up to 50 m²) on existing ROW. Temporary workspace will be required for installation; and
- install the relocated densitometer from KP 2993 (MP 1860) within the new densitometer building.

2.1.1.3. North Westover Station

- install one new 2,237 kW (3,000 hp) mainline pump unit, including new pump, motor, unit suction and discharge piping, valves, new pump foundation, new electrical equipment and cables and new instruments;
- increase the existing pump building footprint from approximately 171 m² to approximately 300 m² to accommodate the new pump unit;
- trim the impellers and replace volute inserts on two existing mainline pumps;
- install new piping and valves from trap area to pump area;
- install high-flow impellers on mainline pumps;
- replace existing pump and station valves;
- replace existing receiving trap (to/from Montreal);
- install new flow meter;
- install new DRA skids; and
- civil work, including excavation and grading, as required.

2.1.1.4. Hilton Station

- install one new estimated 2,237 kW (3,000 hp) mainline pump unit, including new pump, motor, unit suction and discharge piping, valves, new pump foundation, new electrical equipment and cables and new instruments;
- increase the existing pump building footprint from approximately 171 m² to approximately 300 m² to accommodate the new pump unit;
- trim the impellers and replace volute inserts on two existing mainline pumps;
- install new piping and valves from trap area to pump area;
- remove old by-pass piping and install new piping at a new location within the station;
- install high flow impellers on mainline pumps;
- replace existing pump and station valves;
- install new flow meter;
- install new DRA skids; and
- civil work, including excavation and grading, as required.

2.1.1.5. Cardinal Station

- install one new 2,237 kW (3,000 hp) mainline pump unit, including new pump, motor, unit suction and discharge piping, valves, new pump foundation, new electrical equipment and cables and new instruments;
- increase the existing pump building footprint from approximately 171 m² to approximately 300 m² to accommodate the new pump unit;
- trim the impellers and replace volute inserts on two existing mainline pumps;
- install new piping and valves from trap area to pump area;
- remove old by-pass piping and install new piping at a new location within the station;
- install high flow impellers on mainline pumps;
- replace existing pump and station valves;
- install new flow meter;
- install new DRA skids; and
- civil work, including excavation and grading, as required.

2.1.1.6. Terrebonne Station

- install one new densitometer complete with densitometer pump, piping, and instrumentation in existing instrumentation building;
- install new piping and valves; and
- civil work, including excavation and grading, as required.

2.1.1.7. Montreal Terminal

- install new piping and valves;
- install new delivery pressure control valve;
- replace existing receiving trap;

- install two new parallel meter manifolds near existing booster pump area;
 - each new manifold will include the following:
 - four meters,
 - four strainers,
 - valves, and
 - new piping to connect to existing prover;
- replace existing trap and prover piping;
- install new piping manifold downstream of meter manifold;
 - the piping manifold will include the following:
 - valves, including Flow Control Valves, and
 - new piping to connect from meter manifold and to fence line;
- install new surge relief tank;
- install surge relief valves and piping to connect to new surge relief tank;
- install new custody transfer instrumentation building (up to 50 m²);
- install new sump pump to pump liquid from the surge relief tank back to the Line 9 mainline; and
- civil work, including excavation and grading as required.

2.2. Project Overall Map

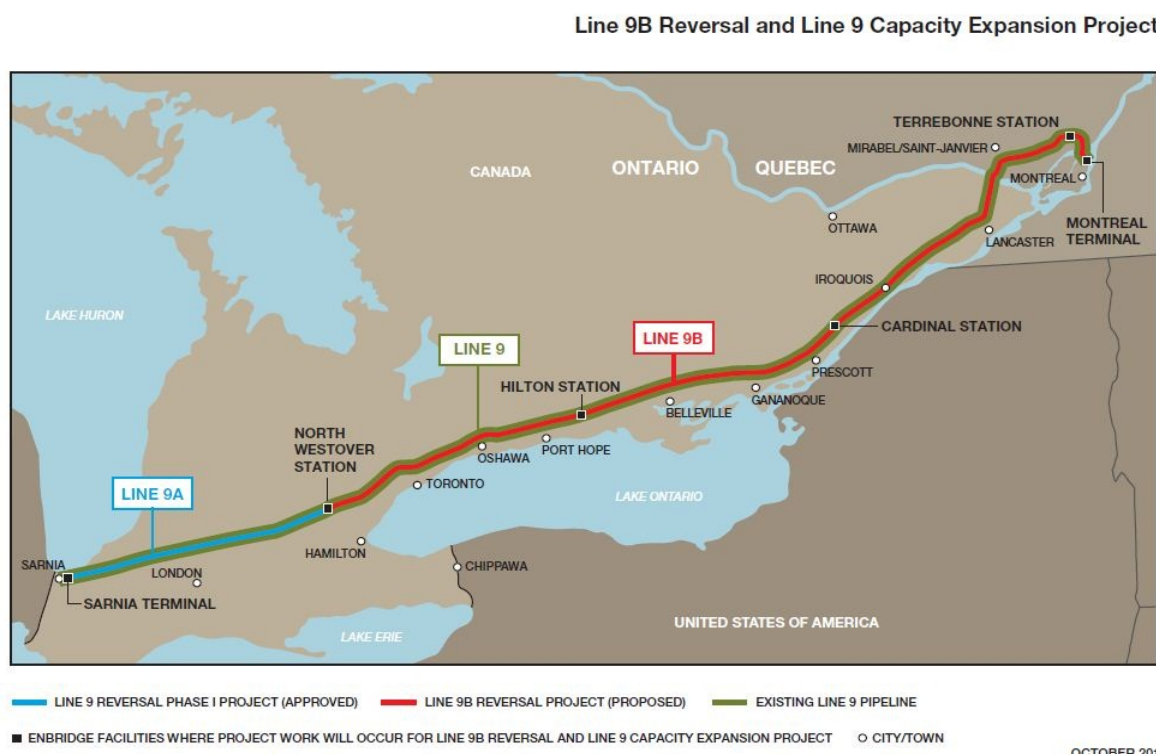


Figure 2.2.1 Project Map

2.3. Project Schedule

Subject to receipt of regulatory approvals, the construction of the Project is scheduled to commence in Q4 2013. Construction for the Project is expected to be completed by the end of Q2 2014.

Prior to the start of construction, municipal permits will need to be obtained for the Project. There are two types of municipal permits that will need to be obtained: development permits and building permits. Development permits are the first to be acquired. The approximate timeline for development permits between application and approval is four to six weeks in length. After the development permits have been issued, building permits must be obtained for each new building or any existing buildings that need to be modified for the Project. Building permits are issued by the municipalities within approximately four to six weeks.

2.4. Project Cost

The capital cost to execute the Project scope is approximately \$129 million. The operating costs will be determined on an annual basis.

Given the scope of the Project, the effect on Enbridge's abandonment cost estimates would be immaterial. Pursuant to the NEB's RH-2-2008 Decision, Enbridge's abandonment cost estimates will be subject to regular reviews (at least every five years) and updated accordingly. The combined impact of all of Enbridge's projects will be included in that periodic update and filing.

3. ECONOMIC FEASIBILITY, JUSTIFICATION AND ALTERNATIVES

3.1. Economic Feasibility and Justification

The Project was initiated in response to requests from eastern Canadian refineries to have access to the growing and less expensive supplies of crude oil production from western Canada and the U.S. Bakken region.

In support of the Project, Enbridge held a formal binding open season in May and June 2012 for shippers interested in committing to a long term ship-or-pay Transportation Services Agreement (“TSA”). Shippers were given the opportunity to subscribe for capacity on a 10-year term with one five-year renewal option.

Upon the close of the open season, Enbridge had received executed TSAs from three counterparties with refining interests in Eastern Canada, for a total volume commitment in excess of the firm capacity initially offered for the Project. As a result of the market demand for firm capacity on the Project, Enbridge adjusted its capacity offering and will be able, subject to regulatory approvals, to accommodate 275,000 bpd of the requested commitments while maintaining a minimum of 25,000 bpd of space for spot, or uncommitted, volumes. The annual capacity of Line 9 will be 300,000 bpd.

Reversal of Line 9 to Montreal will provide western Canadian and U.S. Bakken producers access to the Quebec refining market while reducing the reliance of Quebec refiners on crude oil from areas of declining, or potentially unreliable, supply. Upon reversal, a portion of Atlantic basin supply will be replaced with western Canadian and U.S. Bakken crude oil, which has been priced at a steep discount to Atlantic basin sourced crude supply over the past 20 months (Bloomberg L.P. 2012).

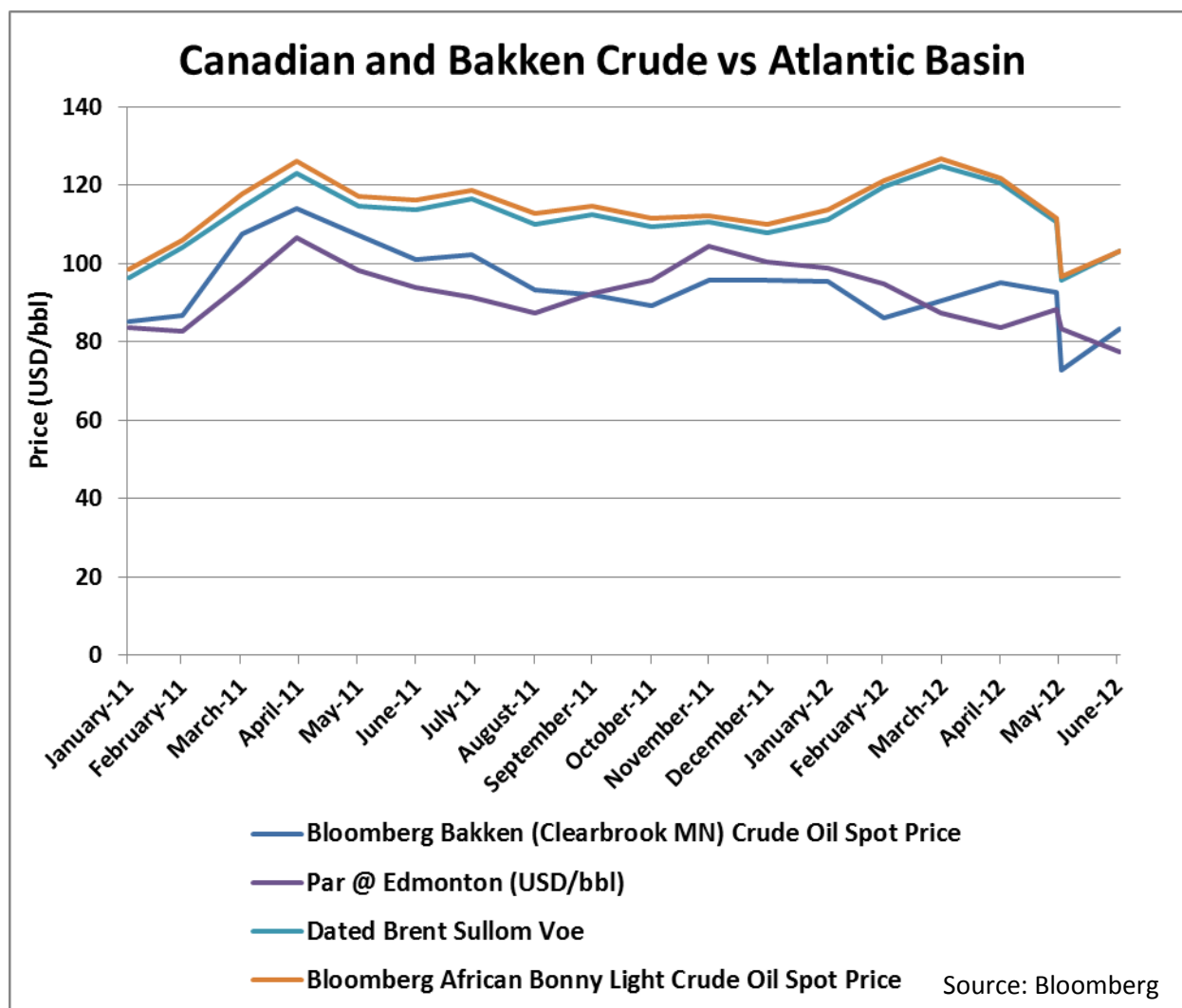


Figure 3.1.1 Canadian Bakken vs. Atlantic Basin

Additional benefits of the Project include the following.

- The Project allows refineries in Quebec to access lower cost crude oil supplies from western Canada and the U.S. Bakken region, increasing the competitiveness of these refineries. Over the next 30 years, refinery cost savings of approximately \$23 B are expected as a result of the Project.
- Over a 30 year period (2013 – 2043), the Project is expected to result in socio-economic benefits, such as:
 - an impact on Canadian Gross Domestic Product (“GDP”) of approximately \$25 B, taking into account the Project’s total multiplied impact;
 - labour income increase of nearly \$350 MM, mostly in the provinces of Ontario and Quebec; and
 - employment increases of approximately 5,500 person years, mostly in the provinces of Ontario and Quebec.

- By taking advantage of existing facilities and ROW, incremental environmental and stakeholder impacts will be minimized.

3.2. Alternatives

As the Project is a reversal of an existing Enbridge asset on existing ROW, Enbridge believes that the Project is the most economical and efficient way to meet the market demand of its customers. The NEB has previously confirmed that making use of existing underutilized pipeline capacity, such as the capacity on Line 9, is a sound idea.¹ Throughput on Line 9 over the last three years (2009-2011) has averaged only 10,175 m³/day (64,000 bpd) and ultimately, Line 9B, unless it is reversed, would be idled when Line 9A is reversed. Therefore, no other alternatives have been investigated.

¹ [NEB Letter Decision OH-005-2011](#), Enbridge Pipeline Inc. Line 9 Reversal Phase I Project, July 27, 2012, p. 5.

4. CONSULTATION

4.1. PUBLIC CONSULTATION AND ABORIGINAL ENGAGEMENT

4.1.1. Principles and Goals of Consultation Program

4.1.1.1. Corporate Social Responsibility

Enbridge values the safety of its employees and the public, a clean and healthy environment, and strong and vibrant communities. It is committed to sustaining these essential values through socially responsible operations and involvement in communities.

In addition, Enbridge has adopted a number of corporate responsibility policies and practices which have been designed based on the following drivers:

- building lasting relationships with our stakeholders;
- acting ethically and responsibly; and
- supporting the needs of communities, our investors, governments, our employees and others.

Enbridge's Corporate Social Responsibility Policy (please refer to Attachment 3) recognizes the value and importance of public consultation and stakeholder engagement as a key component of sound business practice.

4.1.1.2. Public Consultation Program Objectives

The Project-specific public consultation program was designed and implemented to ensure all potentially affected parties were engaged early and were provided with detailed and timely information respecting the Project. In addition, the consultation program for the Project was designed to ensure that interested parties had sufficient opportunity to respond with comments, questions or concerns and, if they chose, to meet in person with Enbridge representatives to discuss issues or obtain further information.

4.1.1.3. Design of Consultation Program

In designing the public consultation program for the Project, Enbridge first assessed the potential impacts of the Project to determine expected levels and areas of public interest. In addition, Enbridge considered the recent consultation process for the Line 9 Reversal Phase I Project and the wider interest that was expressed from some stakeholder groups and individuals not directly affected by that project.

Enbridge also took into account the nature and type of work to be undertaken as part of the construction and operation of the Project. Factors considered included the following.

- With the exception of some temporary workspace required for the installation of the new densitometer building near Enbridge's North Westover Station, the Project will take place within existing Enbridge properties and ROW.
- Minimal construction work will be required at Enbridge's existing facilities. Project work at Sarnia Terminal, North Westover Station, Hilton Station, Cardinal Station, Terrebonne Station

and Montreal Terminal includes the modification or replacement of existing equipment and the installation of piping within the facility boundaries.

- For the majority of stakeholders, the Project will have no noticeable impact since it involves reversing the flow and increasing capacity, with no change to maximum operating pressure, of an existing pipeline, and any impacts arising from construction (noise, dust, traffic, and disruptions due to equipment movement) are expected to be temporary and minor in nature.

The consultation program for the Project complements the public awareness program already in place for Enbridge's existing pipeline operations in the area. The existing public awareness program involves personal and direct discussions at least once every three years with landowners and occupants along the existing Enbridge pipeline ROW. During these discussions, Enbridge provides information relevant to owning or residing on land through which a pipeline runs, including: pipeline safety and integrity; emergency procedures; Enbridge's environmental protection practices; and general information about the legal implications of having a pipeline on one's property. In turn, landowners, tenants and affected public can take the opportunity to raise any concerns or questions they may have with respect to the pipeline operations. As a result of this ongoing communication program, Enbridge is known to most of those living and working along the existing Enbridge pipeline ROW.

4.2. Implementing a Consultation Program

4.2.1. Stakeholder Groups Consulted

Early in the planning process for the Project, potentially affected groups and individuals (listed below) were identified, and appropriate levels and methods of consultation were determined for each.

- Directly affected landowners, tenants and residents along the existing pipeline ROW.
- Communities and municipalities along or near the existing pipeline corridor and facilities, including the following.
 - City of Belleville
 - City of Brockville
 - City of Burlington
 - City of Cambridge
 - City of Cornwall
 - City of Etobicoke
 - City of Hamilton
 - City of Kingston
 - City of London
 - City of Oshawa
 - City of Pickering
 - City of Quinte West
 - City of Sarnia
 - City of Scarborough
 - City of Toronto
 - City of Mississauga
 - County of Leeds & Grenville –
Township of Leeds & Thousand
Islands
 - Front of Yonge
 - Lambton County
 - Lennox & Addington County
 - Loyalist Township
 - Middlesex County
 - County of Frontenac
 - County of Halton
 - County of Lennox & Addington
 - County of Northumberland
 - County of Ontario
 - County of Oxford
 - Loyalist Township
 - Municipality of Brighton
 - Municipality of Lambton Shores
 - Municipality of North Middlesex
 - Municipality of Port Hope
 - Municipality of Tweed
 - Municipality of Centre Hastings
 - Municipality of Clarington
 - Municipality of Strathroy-
Caradoc
 - Municipality of Thames Centre
 - Regional Municipality of Durham

- Regional Municipality of Halton
- Town of Alexandria
- Town of Ajax
- Town of Bowmanville
- Town of Deseronto
- Town of Greater Napanee
- Town of Milton
- Town of Oakville
- Town of Plympton-Wyoming
- Town of Shelburne
- Town of Whitby
- Augusta Township
- Township of Adelaide Metcalfe
- Township of Alnwick-Haldimand
- Township of Clarke
- Township of Cornwall
- Township of Cramahe
- Township of Darlington
- Township of Dawn Euphemia
- Township of East Hawkesbury
- Township of East Whitby
- Township of East Zorra-Tavistock
- Township of Edwardsburg/Cardinal
- Township of Elizabethtown
- Township of Ernestown
- Township of Lancaster
- Township of Leeds and the Thousand Islands
- Township of Lansdowne
- Township of Matilda
- Township of Murray
- Township of North Dumfries
- Township of North Glengarry
- Township of North York
- Township of Osnabruck
- Township of Pittsburgh
- Township of Richmond
- Township of Sidney – City of Quinte West
- Township of South Dundas
- Township of South Glengarry
- Township of South Stormont
- Township of St. Clair
- Township of Thurlow
- Township of Tyendinaga
- Township of Warwick
- Township of Whitby
- Township of Williamsburg
- Village of Point Edward
- Ville de Laval
- Ville de Mirabel
- Ville de Montréal
- Ville de Montréal-Est
- Ville de Rigaud
- Ville de Terrebonne
- Ville de Point-Fortune
- Ville de Saint Clet
- Ville de Saint Janvier-de-Joly
- Ville de Saint-André-D’Argenteuil
- Ville de Sainte-Anne-des-Plaines
- Ville de Sainte-Justine-de-Newton
- Municipalité de Très-Saint-Rédempteur

- 1 • Various provincial and federal government Ministries, individual Members of Parliament,
- 2 Members of the Ontario Parliament and Members of the Quebec National Assembly and
- 3 Mayors and councils of various municipalities where the Project work is being proposed.
- 4 • Environmental Conservation Authorities:
- 5 ○ St. Clair Region Conservation Authority;
- 6 ○ Grand River Conservation Authority;
- 7 ○ Hamilton Conservation Authority;
- 8 ○ South Nation Conservation Authority; and
- 9 ○ Raisin Region Conservation Authority.
- 10 • Landowner Associations:
- 11 ○ Canadian Association of Energy and Pipeline Landowner Associations (“CAEPLA”); and
- 12 ○ Ontario Pipeline Landowners Association (“OPLA”).

4.2.2. Methods of Consultation

The methods employed to implement the consultation program varied by specific stakeholder group, depending on the anticipated impact that the Project could potentially have on that group, as well as the expectations of stakeholders in this region. The public consultation program for the Project has involved and will continue to involve a number of activities including: mail outs of Project information packages; open houses; newspaper advertisement; face-to-face visits; communication materials such as fact sheets; establishment of a Project website and toll-free telephone number / message line; and distribution of subsequent Project updates. The public consultation program is ongoing, and the information presented in the Stakeholder Consultation Report (Attachment 4) represents consultation activities up to and including November 6, 2012.

4.2.3. Project Information Mail Outs

- Enbridge distributed Project information packages to 2,652 landowners and other stakeholders along the Line 9B ROW to describe the proposed Project and inform them of how to communicate with either Enbridge or the NEB regarding any concerns (May 17, 2012) (please refer to Attachment 4a).
- Invitations to Ontario open houses were mailed to stakeholders in Ontario on May 28, 2012 (please refer to Attachment 4b).
- Invitations to Quebec open houses were mailed to stakeholders in Quebec on September 11, 2012 (please refer to Attachment 4c).
- Update letters to stakeholders in Ontario and Quebec describing the proposed capacity expansion scope change were mailed on September 25, 2012 (please refer to Attachment 4d).
- An update letter to stakeholders along the Line 9A ROW describing the proposed capacity change to Line 9 was mailed on November 2, 2012 (please refer to Attachment 4e).
- A letter was sent to municipalities along the Line 9 ROW responding to an October 22, 2012 letter from Environmental Defence and addressing numerous issues including pipeline integrity, products to be shipped on the reversed pipeline, and safety. The letter was mailed to Ontario municipalities November 19, 2012 and Quebec municipalities November 22, 2012 (delay to Quebec municipalities to allow for translation) (please refer to Attachment 4f).
- Ongoing update letters will be developed on a regular basis to keep stakeholders informed as the Project progresses through construction and in-service.

4.2.4. Open Houses

Open houses were held at five Ontario locations between June 11 and 18, 2012: Port Hope; Corbyville; Gananoque; Maitland; and Martintown. Each open house was advertised in local newspapers in the two weeks prior to the event. Attendance ranged from eight to 26 individuals, mostly landowners. Areas of interest about the Project included: pipeline safety; integrity digs; refineries/demand; history of Line 9; and sources of crude oil. These open houses provided an opportunity for guests to speak directly with Enbridge subject-matter experts and for Enbridge to listen and learn about the interests of some of our most engaged stakeholders.

Open houses were held October 2 in Montreal East and October 3 in Saint-Janvier de Mirabel. Each open house was advertised in local newspapers the week before the event. Attendance was 33 in Montreal East and 19 in Saint-Janvier de Mirabel with a variety of guests, including the Montreal East Mayor, the Mirabel fire chief, representatives of government ministries, a local chamber of commerce federation, Environmental Non-Governmental Organizations, unions and landowners. Areas of interest about the Project included: benefits of the project; pipeline integrity; oil sands; and transporting oil sands crude. As in Ontario, these open houses provided an opportunity for guests to speak directly with Enbridge subject-matter experts and

for Enbridge representatives to listen and learn about the interests of some of our most engaged stakeholders. The Quebec open houses were followed up by an informational advertisement in the publication *Avenir de L'Est* the weeks of October 22 and 29, 2012.

4.2.5. Personal Meetings and Consultation

Enbridge has met in-person with interested municipalities along the pipeline ROW, as follows:

- Municipality of Strathroy-Caradoc
- Municipality of Thames Centre
- Township of Edwardsburg/Cardinal
- Augusta Township
- Town of Brockville
- City of Cambridge
- City of Cornwall
- City of Quinte West
- City of Pickering
- City of Oshawa
- City of Sarnia
- City of Hamilton (three meetings)
- Township of Dawn-Euphemia
- Loyalist Township
- Municipality of Brighton
- Municipality of North Middlesex
- Municipality of Tweed
- City of Toronto (eight meetings)
- Municipality of Center Hastings
- Municipality of Clarington
- Regional Municipality of Halton
- Regional Municipality of Port Hope
- Town of Coburg
- Town of Colbourne
- Town of Odessa
- Town of Spencerville
- Town of Williamsburg
- Town of Shelburne
- Town of Desoronto
- Town of Plympton-Wyoming
- Town of Whitby
- Township of Alnwick-Haldimand
- Township of Cramahae
- Town of Napanee
- Township of South Stormont
- Township of South Glengarry
- Township of Bandford-Blenheim
- City of Kingston
- Town of Ganonoque
- City of Mississauga
- Township of South Dundas
- Township of Tyendinaga
- Town of Milton
- Town of Oakville
- City of Burlington
- Township of Leeds and the Thousand Islands
- Township of Leeds and Grenville County
- Ville de Laval
- Ville de Montréal
- Ville de Terrebonne
- Ville de Rigaud
- Ville de Pointe Fortune
- Ville de Saint-Janvier-de-Joly
- Ville de Sainte-Anne-des-Plaines
- Ville de Saint-André-d'Argenteuil
- Ville de Mirabel
- Municipalité de Très-Saint-Rédempteur
- Ville de Sainte-Justine-de-Newton

A meeting was held with OPLA and CAEPLA on May 26, 2012 in London, Ontario where Enbridge representatives provided an overview of the Project. OPLA and CAEPLA members in attendance raised a number of land-related, regulatory and historic issues that were of significant concern, but not specifically related to the Project. A follow-up email on issues and concerns not related to the Project was sent by Enbridge on June 12, 2012.

A meeting with L'Union des Producteurs Agricoles is scheduled for November 26, 2012.

4.2.6. Toll-Free Telephone Message Line and E-mail address

Forty-eight e-mails and 55 calls to the toll-free line have been received as of November 6, 2012. Most of the inquiries are from landowners inquiring whether the Project will affect their properties. Other inquiries have included municipalities asking whether the pipeline runs through their jurisdiction and people voicing general concerns about oil sands, carbon dioxide / greenhouse gas emissions and pollution.

4.2.7. Project Web Site

Information about the Project is available on the enbridge.com website, at: www.enbridge.com/Line9b. Project web pages are active in both English and French, and will be updated regularly through to the Project in-service date.

4.2.8. Outcomes of the Consultation Program

The consultation program is ongoing and will continue through the life of the Project. Through the course of six Project information mail-outs, seven open houses, and over 55 in-person meetings (most with municipal governments along the Line 9 ROW) to date, Enbridge has had the opportunity to connect with a wide variety of stakeholders, including landowners, representatives from municipal and provincial governments, Members of the Ontario Provincial Parliament, Members of the Quebec National Assembly, federal and provincial government Ministries, conservation authorities, Chambers of Commerce, Union organizations, and other interested parties. Discussion topics with stakeholders have been in the general categories of pipeline integrity, emergency response and economic development. Specific questions asked and issues raised are detailed in the Stakeholder Consultation Report included in Attachment 4.

5. ABORIGINAL ENGAGEMENT

The information presented in this section reflects Aboriginal engagement activities for the Project up to and including November 6, 2012, although such engagement is continuing and will continue throughout the life of the Project.

5.1. Principles and Goals of the Aboriginal Engagement Program

The purpose of the Aboriginal engagement program is to implement the policies and procedures employed by Enbridge for effective and meaningful engagement and consultation with First Nations (“Aboriginal Communities”) relating to the Project.

Enbridge has sought and will continue to seek to foster successful working relationships with Aboriginal Communities in the areas where we operate our pipelines. Aboriginal Communities are key stakeholders as Enbridge plans, constructs and operates its pipeline systems. Enbridge believes that positive relationships with Aboriginal Communities, based on shared respect, are of mutual benefit and importance.

To this end, Enbridge has instituted an enterprise-wide Aboriginal and Native American Policy (the “Policy”) (please refer to Attachment 5). This Policy outlines key principles for relations with Aboriginal Communities, including respect for traditional ways and land, heritage sites, the environment, and traditional knowledge. The Policy was also designed to ensure a consistent and thorough approach to consultation and engagement with Aboriginal Communities for proposed new pipeline projects. Enbridge is applying principles from the Policy to guide the Aboriginal engagement and consultation activities for the Project, including: developing relationships; exchanging information about the Project; hearing Aboriginal concerns; responding to such concerns; and ensuring on-going dialogue about the Project, its potential impacts and benefits.

Aboriginal engagement and consultation for the Project is also guided by federal and provincial government consultation policies and requirements.

Enbridge uses a best-practices approach to Aboriginal consultation, taking into consideration existing land use practices by Aboriginal Communities, emerging case law, government policies and recent consultation experiences on other projects. In particular, Enbridge builds its history of meaningful engagement with Aboriginal Communities on other Enbridge pipeline projects recently constructed throughout Canada. As well, Enbridge makes every effort to involve both federal and provincial government agencies to ensure their Aboriginal consultation requirements are being met and to keep these agencies engaged in the consultation process.

Specific principles and goals of the Aboriginal engagement program for the Project are to:

- conduct meaningful engagement with Aboriginal Communities;
- initiate engagement with Aboriginal Communities early in the process and continue engagement through the regulatory process, as well as through the construction and operations phases of the Project;
- provide Aboriginal Communities with Project information in a timely, ongoing and respectful manner so they can consider such information in determining their interests, if any, in respect of the Project;

- develop consultation protocol principles with potentially affected Aboriginal Communities that are commensurate with the scope and potential impacts of the Project for each Aboriginal Community;
- assess the capacity of each Aboriginal Community to participate meaningfully in the consultation process for the Project, including the need for financial aid, training and professional support;
- identify traditional land uses within the immediate Project area;
- coordinate the Aboriginal engagement process to identify the location of Crown lands in relation to the Project and understand and, to the extent feasible, mitigate potential impacts on traditional land uses;
- provide opportunities to Aboriginal Communities to identify issues and potential Project impacts;
- provide opportunities for discussion and seek joint issue resolution, where possible;
- indicate how information and concerns of Aboriginal Communities have been considered and taken into account by Enbridge in the design and planning of the Project;
- seek guidance from applicable Ontario and Quebec government agencies and the federal Department of Aboriginal Affairs and Northern Development to ensure that Enbridge understands and meets the requirements of these agencies and departments for consultation with Aboriginal Communities;
- engage applicable Government of Canada agencies in the Aboriginal engagement process and provide information related to Enbridge consultation activities and any specific interests and concerns brought forth by Aboriginal Communities;
- increase knowledge of the potential environmental effects of the Project by incorporating existing and available traditional environmental knowledge, where appropriate, in developing mitigation measures;
- disseminate the results of the environmental assessment process;
- avoid, reduce or mitigate, as appropriate, potential detrimental effects of the Project on Aboriginal interests;
- meet or exceed all related legislative and government policy requirements in respect of consultation policies and associated guidelines;
- identify and explore opportunities for participation by Aboriginal people in the Project by way of education, employment and business opportunities;
- ensure Aboriginal engagement is objective and includes any identified economic and social impacts on Aboriginal Communities; and
- record all engagement and information activities and provide a detailed description of the consultation discussions.

5.2. Design and Implementation of the Aboriginal Engagement Program

The following sections outline the identification of Aboriginal Communities engaged for the Project as well as the engagement activities that have taken place or are planned.

5.3. Identification of Aboriginal Communities

The primary criteria used by Enbridge to determine which Aboriginal Communities to engage with respect to the Project included:

- proximity of Aboriginal Communities to the Project area (First Nations whose reserve lands are within approximately 50 km of the Enbridge Line 9B ROW); and

- Enbridge's knowledge of the Aboriginal Communities in the area, based on its history of operating pipelines and facilities in southern Ontario and Quebec for over 30 years.

Based on the above criteria, the focus of Enbridge's primary consultation activities has been with the following Aboriginal Communities.

- | | |
|---|----------------------------------|
| • Alderville First Nation | • Six Nations of the Grand River |
| • Hiawatha First Nation | • Kahnawake First Nation |
| • Mississaugas of the New Credit First Nation | • Kanasetake First Nation |
| • Mohawks of the Bay of Quinte | • Mohawks of Akwesasne |

Due to the nature and type of work to be undertaken as part of the construction and operation of the Project, and the level of interest in and heightened awareness of Enbridge activities in Eastern Canada, Enbridge also proactively engaged other First Nations communities within a close proximity to the entire Line 9 ROW. These include the following.

- | | |
|---------------------------------------|--|
| • Aamjiwnaang First Nation | • Chippewas of the Thames First Nation |
| • Walpole Island First Nation | • Munsee-Delaware First Nation |
| • Chippewas of Kettle and Stony Point | • Oneida Nation of the Thames |

Enbridge anticipates that there are no impacts of the Project on traditional land uses. Enbridge has a history of operating pipelines and facilities in Ontario and Quebec, including the existing Line 9 ROW, for over 30 years. During this time, Enbridge has not been made aware of any current use of these lands for the purposes of exercising traditional rights or activities. Further, throughout the course of its relationships with stakeholders and Aboriginal Communities in the area, Enbridge has not been made aware of any concerns related to its operations along the existing Enbridge pipeline ROW in Ontario or Quebec.

In addition, the Project will take place within existing Enbridge properties and ROW, involves no Crown lands and minimal construction work will be required at Enbridge's existing facilities.

Should an Aboriginal Community or related organization that has not been previously engaged identify itself as being potentially affected by the Project, Enbridge will engage with that Aboriginal Community or related organization for the purposes of exchanging information respecting the Project, responding to concerns, and participating in ongoing dialogue about the Project and its potential impacts and benefits.

5.4. Aboriginal Engagement Activities

The Aboriginal engagement program for the Project has, and will continue to involve, a number of activities, including:

- mail outs of letters and Project information materials;
- follow-up telephone calls;
- Aboriginal Community open houses (where requested and appropriate);
- face-to-face meetings and Project presentations;
- community visits and information drop offs; and
- ongoing issues tracking and follow up activities.

During the pre-application phase of the Aboriginal engagement program, Enbridge undertook the following activities.

- Each Aboriginal Community identified above (see Section 5.3) was mailed a Project information package on May 17, 2012 (please refer to Attachment 4a). The Project information package included:
 - Line 9B Reversal Project Notification letter, dated May 17, 2012;
 - Line 9B Reversal Project overview map;
 - NEB brochure: A Proposed Pipeline or Power Line Project: What You Need to Know; and
 - NEB brochure: Living and Working Near Pipelines: Landowner Guide.
- Enbridge held or requested face-to-face meetings with each identified First Nation to introduce the Project and discuss any comments, issues or concerns that they may have.
- Introduction meetings included: general Project overview; anticipated Project timelines; maps; and general information on pipeline operations.
- Enbridge ascertained and respected consultation protocols for each Aboriginal Community and organization.
- Enbridge outlined its intentions to progress long-term relationship building with potentially affected Aboriginal Communities and organizations.
- Aboriginal Communities were made aware of Project application dates and informed about the regulatory process.
- Enbridge has followed up with each First Nation by telephone and distributed additional information by mail, including an updated Project scope.

A summary report of the Aboriginal engagement activities that have taken place up to and including November 6, 2012 is contained in Attachment 6.

5.5. Ongoing Aboriginal Engagement Activities

Enbridge will continue to actively engage all identified Aboriginal Communities and their affiliated organizations in meaningful dialogue concerning the Project. Enbridge will be available to meet with Aboriginal Communities, upon request, to provide information and updates about the Project, respond to inquiries, solicit Project-specific issues, obtain information and respond to concerns that may arise.

As stated above, should an Aboriginal Community or related organization that has not been previously engaged identify itself as being potentially affected by the Project, Enbridge will engage with that Aboriginal Community or related organization for the purposes of exchanging information respecting the Project, responding to concerns, and participating in ongoing dialogue about the Project and its potential impacts and benefits.

5.6. Key Comments and Concerns

Throughout the Aboriginal engagement program carried out to date, general issues raised by First Nations were focused on pipeline integrity, emergency response and economic participation. To date, no Project-specific concerns have been raised.

6. NOTIFICATION OF COMMERCIAL THIRD PARTIES
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1 Potentially affected third party shippers were notified of the Project through a combination of the Project
2 announcement released May 16, 2012 by a press release on Enbridge's website, and a notice of open
3 season issued on May 17, 2012 to all shippers on Enbridge's Mainline through Enbridge's online shipper
4 notification system. The open season for capacity on Enbridge's Line 9B reversal to Montreal was held
5 from May 17 until noon on June 15, 2012. To date, no concerns about the Project have been raised by
6 any commercial parties.

7. ENGINEERING

7.1. Engineering Philosophy

The facilities for the Project will be designed, constructed and operated in accordance with applicable regulations, and industry codes and standards.

The Project falls under the jurisdiction of the NEB. Enbridge will, therefore, comply with the latest NEB regulatory requirements. The primary applicable regulations are the *Onshore Pipeline Regulations, 1999* (“OPR-99”), which incorporate by reference the CSA Z662-11, *Oil and Gas Pipeline Systems* standard. These standards, in turn, reference other standards that will be followed in the design of the Project.

Canadian codes will be used. In the absence of applicable Canadian codes, American or international codes will be used.

The Project will also be designed and operated to meet the requirements of the most recent versions of Enbridge’s Engineering Standards and Guidelines. All of these Standards and Guidelines have been filed with the NEB.

7.2. Hydraulic Design

The Project includes a proposed increase in the annual capacity of Line 9 from 38,157 m³/day (240,000 bpd) to 47,696 m³/day (300,000 bpd). The existing Maximum Operating Pressure (“MOP”) of the pipeline will not change post reversal. The typical properties of the oil to be transported in Line 9B are shown below:

Table 7.2.1 Product Properties – Light Crude

Condition	Maximum	Minimum
Viscosity (cSt)	20	2
Density (kg/m ³)	876	800
Temperature (°C)	18.5	7.5
Vapour Pressure (kPa)	80	0

Table 7.2.2 Product Properties – Medium Crude

Condition	Maximum	Minimum
Viscosity (cSt)	100	20
Density (kg/m ³)	904	876
Temperature (°C)	18.5	7.5
Vapour Pressure (kPa)	60	0

Table 7.2.3 Product Properties – Heavy Crude

Condition	Maximum	Minimum
Viscosity (cSt)	350	100
Density (kg/m ³)	940	904
Temperature (°C)	18.5	7.5
Vapour Pressure (kPa)	60	0

DRA units will be required at each of Sarnia Terminal, North Westover Station, Hilton Station and Cardinal Station.

7.3. Pumps and Motors

Electrically powered mainline centrifugal pumps, connected in series, will be added to the existing Line 9 pipeline at Sarnia Terminal and North Westover, Hilton and Cardinal Stations. The following table summarizes the number and horsepower of the pumps necessary to achieve the design capacity for the pipeline.

Table 7.3.1 Proposed Mainline Pumps

Horsepower	2,237 kW (3,000 hp)
Pump Type	Centrifugal
Fuel Type and Source of Pump	No fuel required. To be driven by electric motors.
Suction Piping Outside Diameter Wall Thickness Material Type Grade	609.6 mm (NPS 24) WT: 12.7 mm CSA Z245.1 Grade 414
Discharge Piping Outside Diameter Wall Thickness Material Type Grade	609.6 mm (NPS 24) WT: 12.7 mm CSA Z245.1 Grade 414
Inlet Design Pressure	9,930 kPag (1,440 psig)
Outlet Design Pressure	4,282 kPag (621 psig)
Inlet and Outlet Temperature (Annual Average)	13°C

The existing mainline pump buildings at North Westover, Hilton and Cardinal Stations will be extended to accommodate these new pumps.

Pressures and flow rates for the pumping facilities will be remotely controlled from Enbridge's Edmonton control centre. Pressure Control Valves exist on the discharge side of the pumps to provide secondary station pressure control.

To improve efficiency and start-up of the mainline pumping units at Sarnia Terminal, one 2,237 kW (3,000 HP) VFD will be installed.

Additionally, Enbridge will install up to three new electrically powered centrifugal booster pumps, connected in parallel at the Sarnia Terminal. The booster pumps are required to achieve the new annual capacity for the pipeline.

1

Table 7.3.2 Proposed Booster Pumps at Sarnia Terminal

Horsepower	261 kW (350 hp)
Pump Type	Centrifugal
Fuel Type and Source of Pump	No fuel required. To be driven by electric motors.
Suction Piping Outside Diameter Wall Thickness Material Type Grade	406.4 mm (NPS 16) 9.52 mm CSA Z245.1 Grade 241
Discharge Piping Outside Diameter Wall Thickness Material Type Grade	355.6 mm (NPS 14) 9.52 mm CSA Z245.1 Grade 241
Maximum Operating Pressure	4,964 kPag (720 psig)
Inlet Design Pressure	4,964 kPag (720 psig)
Outlet Design Pressure	4,964 kPag (720 psig)
Inlet and Outlet Temperature (Annual Average)	13°C

2

7.4. Relief Tank and Associated Piping

3

The existing 795 m³ (5,000 barrels (“bbl”)) surge relief tank at Montreal Terminal will be replaced with a

4

new surge relief tank of similar size.

5

Table 7.4.1 Relief Piping Technical Specifications

Diameter (mm/in)	609.6 (NPS 24)
Wall Thickness (mm)	9.52
Grade (MPa)	CSA Z245.1 CAT. 1 Gr. 290
Piping Length (Approx.)	30 m (above ground) 60 m (below ground)
Coating	Polymer Coating (above ground) Epoxy Primer & Urethane Topcoat (below ground)
MOP (kPag)	4,964

6

Table 7.4.2 Relief Tank Specifications

Nominal Capacity (approx.)	795 m ³ (5,000 bbl)
Working Capacity (approx.)	636 m ³ (4,000 bbl)
Maximum Injection and Takeaway Flow Rates (approx.)	52,992 m ³ /day (333,333 bpd) 3,816 m ³ /day

7.4.1. Description of containment

Enbridge design standards will be followed with regards to the containment system to be installed for the new Montreal Terminal surge relief tank.

7.4.2. Containment Volume

The containment volume of the new Montreal surge relief tank will be approximately 874 m³ (5,500 bbl).

7.4.3. Overflow Prevention System

Level transmitters will be installed on the new surge relief tank, with high level shutdowns to prevent overflow. Enbridge design standards also call for a level switch to provide an independent and redundant alarm indication of tank high-high level, in addition to that provided by the level transmitter.

7.4.4. Description of overpressure system

There is no overpressure system installed on a relief tank because the tank is not under pressure.

7.5. Electrical Systems

Enbridge will utilize the existing power distribution systems located at terminals and stations. Existing substation infrastructure is not anticipated to change for this Project. Station service transformers at some sites may be upgraded.

7.6. Piping

Below is a summary of the technical specifications for the piping to be installed for the Project at each facility.

Table 7.6.1 Piping Technical Specification at Sarnia Terminal

Diameter (mm/in)	355.6 (14)	406.4 (16)			457.2 (18)	609.6 (24)			762 (30)	
Wall Thickness (mm)	9.52	9.52	9.52	12.7	12.7	9.52	9.52	12.7	12.7	15.9
Grade (MPa)	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 359	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 414	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 448
Piping Length (m)	10	10	10	20	10	50	50	10	10	25
Coating	Epoxy Primer & Urethane Topcoat (above grade) & Polymer Coating (below grade)									
MOP (kPag)	4,964	1,896	4,964	9,930	9,930	1,896	4,964	9,930	4,964	9,930

1 **Table 7.6.2 Piping Technical Specification at North Westover Station**

Diameter (mm/in)	406.4 (16)	457.2 (18)	508 (20)	609.6 (24)	762 (30)		
Wall Thickness (mm)	12.7	12.7	9.52	12.7	12.7	12.7	15.9
Grade (MPa)	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 359	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 359	CSA Z245.1 CAT. 1 Gr. 414	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 448
Piping Length (m)	10	10	20	20	70	160	60
Coating	Epoxy Primer & Urethane Topcoat (above grade) & Polymer Coating (below grade)						
MOP (kPag)	9,930	9,930	4,964	9,930	9,930	4,964	9,930

2 **Table 7.6.3 Piping Technical Specification at Hilton Station**

Diameter (mm/in)	406.4 (16)	457.2 (18)	508 (20)	609.6 (24)	762 (30)		
Wall Thickness (mm)	12.7	12.7	12.7	12.7	12.7	15.9	
Grade (MPa)	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 359	CSA Z245.1 CAT. 1 Gr. 359	CSA Z245.1 CAT. 1 Gr. 414	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 448	
Piping Length (m)	15	10	10	80	160	80	
Coating	Epoxy Primer & Urethane Topcoat (above grade) & Polymer Coating (below grade)						
MOP (kPag)	9,930	9,930	9,930	9,930	4,964	9,930	

3 **Table 7.6.4 Piping Technical Specification at Cardinal Station**

Diameter (mm/in)	406.4 (16)	457.2 (18)	508 (20)	609.6 (24)	762 (30)		
Wall Thickness (mm)	12.7	12.7	12.7	12.7	12.7	15.9	
Grade (MPa)	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 359	CSA Z245.1 CAT. 1 Gr. 359	CSA Z245.1 CAT. 1 Gr. 414	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 448	
Piping Length (m)	10	10	10	70	110	120	
Coating	Epoxy Primer & Urethane Topcoat (above grade) & Polymer Coating (below grade)						
MOP (kPag)	9,930	9,930	9,930	9,930	4,964	9,930	

1

Table 7.6.5 Piping Technical Specification at Terrebonne Station

Diameter (mm/in)	406.4 (16)	508 (20)
Wall Thickness (mm)	9.52	9.52
Grade (MPa)	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 241
Piping Length (m)	30	15
Coating	Epoxy Primer & Urethane Topcoat (above grade) & Polymer Coating (below grade)	
MOP (kPag)	4,964	4,964

2

Table 7.6.6 Piping Technical Specification at Montreal Terminal

Diameter (mm/in)	304.8 (12)		406.4 (16)	508 (20)	609.6 (24)		762 (30)		
Wall Thickness (mm)	9.52	9.52	9.52	9.52	9.52	9.52	9.52	12.7	15.9
Grade (MPa)	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 241	CSA Z245.1 CAT. 1 Gr. 290	CSA Z245.1 CAT. 1 Gr. 448
Piping Length (m)	100	200	20	80	120	10	20	160	20
Coating	Epoxy Primer & Urethane Topcoat (above grade) & Polymer Coating (below grade)								
MOP (kPag)	1,896	4,964	4,964	4,964	1,896	4,964	1,896	4,964	9,930

3 Corrosion control measures will include painting all above-ground equipment and facilities. Cathodic
4 protection and coating will be provided for underground steel components.

5 7.7. Meters

6 Below is a summary of the technical specifications for the meters to be installed at Montreal Terminal.
7 Eight identical meters will be installed, with four meters being located on each new manifold. Only three of
8 the four meters in each manifold will be in operation at any given time.

9

Table 7.7.1 Proposed Custody Transfer Meters at the Montreal Terminal

Size	304.8 (NPS 12)
Flow Capacity	916 m ³ /hr (Max = 1,140 m ³ /hr)
Repeatability	+/- 0.02%
Meter Type	Positive Displacement
Number of Meters	8
Proving Method	Bidirectional Sphere Prover

7.8. Traps

The existing receiving traps will be replaced at North Westover Station and Montreal Terminal. Enbridge design standards only allow two types of trap closures. The closure for the new receiving traps will be either a Tube Turns double yoke or TDW D2000 clamp ring closure. Each trap will be rated to 9,930 kPag, and each will be installed as per Enbridge design standards. The corrosion control measures will include coating on all above-ground equipment and cathodic protection and coating for underground steel components.

7.9. Construction

With the exception of the temporary workspace required for the installation of the relocated densitometer near Enbridge's North Westover Station, the Project will take place within existing Enbridge properties and ROW. Higher than normal vehicle traffic and noise at Sarnia Terminal, North Westover Station, Hilton Station, Cardinal Station, Terrebonne Station and Montreal Terminal may occur during the Project construction period.

Subject to receipt of regulatory approvals, the construction of the Project is scheduled to commence in Q4 2013. Construction for the Project is expected to be completed by the end of Q2 2014.

7.10. Material Supply Chain Information

Project Procurement will implement and coordinate quality processes and requirements with the Project Quality Manager. These work processes and requirements will address quality checks during the procurement cycle, including third party inspection at vendor facilities. The processes and requirements will include:

- use of Enbridge pre-qualified vendors;
- quality checks during materials requisitioning and purchasing activities;
- review and approval of quality inspection and testing plans; and
- third-party inspection at vendor facilities.

Quality inspection at vendor facilities will be performed by third-party inspectors. Inspection reports will be submitted for Enbridge's review after each inspection.

Project Procurement will coordinate reviews of the inspection reports with the Project Quality Manager and respective discipline leads for acceptance and/or further action.

Any materials and equipment received at site or at Enbridge staging facilities that are assessed by Enbridge and its representatives as being non-conforming in any technical aspect will be quarantined and managed in accordance with Enbridge quality procedures.

8. SYSTEM OPERATIONS

1 All facilities associated with the Project will be monitored and operated from Enbridge's control centre,
2 located near Edmonton, Alberta. They will be operated in accordance with all applicable regulatory
3 requirements, certificate conditions, licenses and Enbridge's own operating requirements. Field
4 maintenance and operations staff will ensure the safe and reliable operation of the equipment and
5 facilities in accordance with Enbridge's operating and maintenance procedures and preventative
6 maintenance program.

9. PIPELINE SYSTEMS CONTROL

9.1. Pipeline Control System

Enbridge's Supervisory Control and Data Acquisition ("SCADA") includes redundancy of SCADA systems and associated hardware within the Edmonton control centre and a redundancy of control centres through the implementation of a backup control centre. The telecommunications system used to monitor and control the pipeline and facilities uses a combination of wide area network, telephone line, satellite communication circuits and radio communications to Remote Terminal Units and/or Programmable Logic Controllers ("PLCs") at all terminals, pump stations and automated valve locations along the pipeline.

The SCADA system provides automatic backup pressure protection through a number of subroutines, including an extension to the Line Pressure Monitor ("LPM") alarm system. The LPM alarm system monitors station discharge and suction pressures and can initiate set-point reductions, unit shutdowns, or entire line shutdowns as necessary to avoid overpressure situations. In addition to SCADA's primary functions, it runs several analytical tools, including the generation of preconfigured or customized graphical trends and reports that may be used in the analysis of pipeline operations and that assist in the assessment of the accuracy of SCADA data and the volume and content of alarms. The graphical trends and reports may also support initiatives to modify operations where necessary.

Locally, a pump station's control system is comprised of numerous instrumentation and electrical devices that are all connected directly or indirectly to a PLC. The PLC's main function is to control, monitor and protect the station and various electrical equipment from overpressure, surges, abnormal operating conditions, and other anomalies by shutting down and locking out the appropriate equipment in order to protect the environment, facilities, public and station personnel. Depending on the problem encountered, the PLC will simply shut down individual mainline pumps; the PLC will isolate individual mainline pumps by closing valves and opening up power sources; or the PLC will isolate the entire station by closing valves, shutting down all of the mainline pumps, and opening up power sources until an Enbridge representative arrives at the site to investigate. This information is monitored 24/7 by the pipeline controllers at the control centre through the SCADA system. For other remote sites, such as critical valve sites, redundant systems ensure that communication and valve actuation are available in the event of a main power interruption.

Each terminal and station on the line is equipped with a pressure control valve along with an emergency shutdown device to protect from overpressure scenarios. Where required, relief systems exist and have been designed to be capable of handling overpressure scenarios on the pipeline and all stations/terminals.

9.2. Leak Detection System

Enbridge uses multiple approaches for leak detection on its oil pipelines. These approaches are designed to provide comprehensive and overlapping leak detection capabilities. Four primary methods of monitoring for possible leaks are used on Enbridge pipelines. Each of these four leak detection techniques has a different focus and a different application of technology, resources and timing. These methods include controller monitoring, visual surveillance and reports, scheduled line balance calculations and Computational Pipeline Monitoring ("CPM"). The CPM for Line 9 will be designed in accordance with OPR-99, CSA Z662-11 Annex E, the U.S. Department of Transportation CFR 49 part 195 and API 1130. The CPM applications will reside on dedicated high-capacity servers that are separate from the SCADA servers.

A standardized model design is used as the basis for the CPM; this is then adapted for each particular pipeline. All CPM systems have the same functional design and engineering hydraulic calculations. The models are designed to handle the entire range of liquids transported by Enbridge.

CPM models are integrated with the pipeline control system through Enbridge's SCADA system. The SCADA system collects real-time pipeline measurements including pressures, flows, valve status, temperatures, and densities and passes them to the CPM leak detection software. The CPM software processes this data with the pipeline model data (i.e. pipe diameter, elevation, valve location, etc.) to create an accurate real-time simulation of the continually changing state of the pipeline. The CPM uses commercial software for hydraulic calculations.

Volume balance calculations are based on pipeline sections bounded by flow meters. The CPM continuously calculates imbalances between the expected product amount in a pipeline section and the CPM measured amount.

Imbalance thresholds are assigned, which address measurement and modeling uncertainty. A CPM imbalance alarm is activated when the imbalance threshold is exceeded. Material balance calculation windows are standardized to five minutes, 20 minutes and two hours.

Leak detection thresholds are line specific to reflect the pipeline's unique design, fluids shipped, and operation. The thresholds are established by CPM system tuning during application development and using test data. Alarm thresholds will be established during the tuning period of the new system development. Imbalance alarms from the material balance sheet mainline leak detection system are annunciated in the control centre. With an imbalance alarm, the control centre response procedures for possible pipeline leak situations would be initiated. Extensive graphical and tabular displays have been developed for CPM monitoring and alarm analysis at the control centre.

10. SYSTEM INTEGRITY

- 1 The Pipeline Engineering Assessment (“EA”) that demonstrates the integrity and suitability of Line 9B to
- 2 flow in a reversed direction and for Line 9 to flow at an increased annual capacity and to transport heavy
- 3 crude oil is included in Attachment 7. The Facilities EA that demonstrates the integrity and suitability of
- 4 the facilities proposed to be used as part of the Project is included as Attachment 8.

11. ENVIRONMENT AND SOCIO-ECONOMIC IMPACT ASSESSMENT

Stantec Consulting Ltd. has prepared a detailed Environmental and Socio-Economic Impact Assessment (“ESEIA”) for the Project. A copy of the ESEIA is provided as Attachment 9 of this Application.

The ESEIA was developed to meet the requirements of the NEB Filing Manual (2012).

The Project will be limited to work at six existing, fenced-in stations and terminals and two densitometer sites on the existing Enbridge ROW. The Project does not include installation of pipeline on the ROW or acquisition of new ROW and does not trigger the *Canadian Environmental Assessment Act*. The ESEIA includes the following main sections:

- Section 1 provides an overview of the Project, introduces the proponent and provides the regulatory context for the Project;
- Section 2 provides a description of the Project and reference to the environmental management measures included in the design process to mitigate the effects of the Project;
- Section 3 provides a detailed summary of the consultation activities undertaken as part of the ESEIA process;
- Section 4 provides a description of the environmental and socio-economic baseline setting of the Project including the biophysical and socio-economic components;
- Section 5 provides an account of the anticipated interactions of the Project with the environment and an assessment of the significance of these interactions;
- Section 6 provides an assessment of the effects of the environment on the Project and how these effects are mitigated; and
- Section 7 provides an assessment of accidents, malfunctions and unplanned events and how Enbridge is prepared to prevent and mitigate their effects.

Enbridge has developed general, and will develop Project-specific, programs to ensure that the recommended mitigation measures and commitments made in the ESEIA are implemented throughout the construction and operations phases of the Project. Taking into account the implementation of these programs and mitigation measures, the ESEIA concludes that the Project is not anticipated to result in a significant negative residual environmental effect.

In the course of conducting noise modeling for the Project noise assessment, Enbridge determined that the current sound levels at two stations, Hilton Station and Cardinal Station, slightly exceed applicable Ontario noise guidelines due to existing conditions at the sites unrelated to the Project. Enbridge commits to implementing the recommended mitigation measures prior to the Project going into service and to conducting post-construction noise monitoring at these sites to ensure compliance with the applicable noise guidelines.

12. ECONOMICS

12.1. Supply

The Project is expected to move a variety of crude oils sourced from western Canada and the U.S. Bakken region. Given the refinery configurations in the Quebec market, this supply will be comprised of a predominately light crude slate, although some heavy crude oil is expected to be transported on Line 9. All commodities must meet or exceed the crude oil characteristics established on the Enbridge Mainline system (the source for all crude transported to Sarnia for delivery to Line 9).

Attachment 10 is the revised Rules and Regulations Tariff for Line 9 (the “Revised Tariff”), which includes specifications for allowable crude types. It is expected that crudes normally categorized as light, medium and heavy will flow on Line 9 once the Project goes into service. Enbridge hereby applies to the NEB under Part IV of the NEB Act for the approval of the Revised Tariff. The quality specifications set out in Clause 4 of the Revised Tariff address the safe operation of Line 9; they are the same specifications as those included in the Rules and Regulations Tariff for the Enbridge Mainline, which has safely transported the same type of heavy crude petroleum as will be transported on Line 9 for many years. As specified in Section 1 of the Pipeline EA (Attachment 7) and Section 1 of the Facilities EA (Attachment 8), Line 9 will be able to safely transport all allowable crude types, including heavy crude oil.

The Canadian Association of Petroleum Producers (“CAPP”) June 2012 forecast (<http://www.capp.ca/forecast/Pages/default.aspx>) projects substantial growth in western Canadian light crude oil supply, with an increase of approximately 448,000 bpd from 2012 to 2022 (please refer to figure 12.1.1 circled values). In addition to the growth from Western Canada, light sweet crude production from the Bakken region in North Dakota is forecast to be sustained at over 1,000,000 bpd past 2015 through 2025 (North Dakota Pipeline Authority). The impact of the growth in light crude oil supply will be exacerbated by the completion over the next two years of large refinery conversion projects to accommodate heavier crude slates at the following refineries: BP Whiting; Marathon Detroit; and ConocoPhillips Wood River. These refinery conversions are expected to release a total of more than 430,000 bpd of light crude oil back into the market.

The CAPP forecast shows even stronger growth in Western Canadian heavy crude supply. CAPP expects that supply will grow by 1,837,000 bpd between 2012 and 2022.

APPENDIX B.2 2012 – 2030 Western Canadian Crude Oil Supply

Blended Supply to Trunk Pipelines and Markets thousand barrels per day

		Actuals		Forecast																		
CONVENTIONAL	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Total Light and Medium	570	606	702	739	782	814	827	835	834	832	827	820	810	800	789	777	763	744	724	708	690	
Net Conventional Heavy to Market	309	312	323	320	321	317	316	313	307	305	303	298	292	289	287	287	283	280	276	274	272	
TOTAL CONVENTIONAL	879	917	1,025	1,059	1,103	1,132	1,142	1,148	1,140	1,137	1,129	1,117	1,102	1,090	1,076	1,063	1,046	1,024	1,000	982	962	
OIL SANDS																						
Upgraded Light (Synthetic) ¹	660	705	804	926	954	983	1,012	974	976	1,020	1,083	1,128	1,144	1,130	1,135	1,169	1,157	1,118	1,104	1,094	1,079	
Oil Sands Heavy ²	1,134	1,296	1,310	1,483	1,647	1,775	1,971	2,173	2,304	2,496	2,734	2,932	3,178	3,386	3,661	3,947	4,041	4,276	4,481	4,618	4,830	
TOTAL OIL SANDS AND UPGRADE	1,794	2,001	2,115	2,409	2,601	2,758	2,983	3,147	3,280	3,516	3,817	4,060	4,322	4,516	4,796	5,116	5,199	5,394	5,585	5,712	5,909	
Total Light Supply	1,229	1,311	1,506	1,665	1,736	1,797	1,839	1,809	1,809	1,852	1,909	1,948	1,954	1,931	1,924	1,945	1,920	1,862	1,828	1,802	1,769	
Total Heavy Supply	1,444	1,608	1,633	1,803	1,968	2,092	2,267	2,486	2,611	2,801	3,037	3,229	3,470	3,675	3,947	4,233	4,325	4,556	4,757	4,893	5,102	
WESTERN CANADA OIL SUPPLY	2,673	2,918	3,139	3,468	3,705	3,890	4,125	4,295	4,420	4,653	4,946	5,177	5,424	5,606	5,871	6,179	6,244	6,418	6,585	6,695	6,870	

Notes:

1. Includes upgraded conventional.

2. Includes: a) imported condensate b) manufactured diluent from upgraders and c) upgraded heavy volumes coming from upgraders.

Figure 12.1.1 CAPP Crude Oil – Forecast, Markets & Pipelines June 2011

12.2. Transportation Matters

12.2.1. Pipeline Capacity - Contractual Arrangements & Open Season

In support of the Project, Enbridge held a formal binding open season from May 17 until June 15, 2012 for shippers interested in committing to a long term ship-or-pay TSA. The open season was advertised through a combination of the Project announcement released on May 16, 2012 as a press release on Enbridge's website, and a notice of open season issued on May 17, 2012 to all shippers on Enbridge's Mainline through Enbridge's online shipper notification system.

Shippers were given the opportunity to subscribe for capacity on a 10-year term with one five-year renewal option. The TSA provides shippers with priority access to capacity in exchange for their significant ship-or-pay commitment to the Project.

Leading up to and during the course of the open season, more than 10 companies signed confidentiality agreements to review the Project details. Upon the close of the open season, Enbridge had received executed TSAs from three counterparties with refining interests in Eastern Canada, for a total volume commitment in excess of the firm capacity offered.

As a result of the market demand for firm capacity on the Project, Enbridge has adjusted its capacity offering and will be able, subject to regulatory approvals, to accommodate 275,000 bpd of the requested commitments while maintaining a minimum of 25,000 bpd of space for spot, or uncommitted, volumes. The annual capacity of Line 9 will be 300,000 bpd.

Enbridge submits that 25,000 bpd of spot capacity on Line 9 is sufficient for Enbridge to meet its common carrier requirements under the NEB Act. Line 9 terminates in Montreal, and the only two refineries in Quebec have both signed binding TSAs in support of the Project. In addition, all three shippers that indicated interest in the Project through the execution of TSAs received firm capacity on Line 9. Accordingly, Enbridge submits that leaving slightly less than 10% of the line's capacity available for spot shipments is responsive to the requirements of the eastern Canadian refinery market and in accordance with Enbridge's common carrier obligations.

12.2.2. Throughput

The ship-or-pay commitments received coupled with the historical usage and expected demand of Quebec-based refineries located at or near the terminus of the pipeline will ensure near full utilization of Line 9 for the foreseeable future.

12.3. Markets

Given the commitments received in the TSAs, it is expected that the reversed Line 9B will be used to serve the two refineries located in the province of Quebec. These refineries, operated by Suncor Energy Products Partnership Inc. and Ultramar Ltd., have capacity to refine 135,000 and 265,000 bpd respectively. This represents 133% of the capacity of the Project. Line 9A will continue to serve the Imperial Oil Limited Nanticoke refinery in Ontario.

The Project will receive volumes from the Enbridge Mainline system at Sarnia and deliver volumes to shippers at the terminus of Line 9B in Montreal.

12.4. Financing

The Project will be financed using internally generated funds.

13. LANDS

1 All station and terminal modifications required for the Project will occur within existing site boundaries on
2 lands owned by Enbridge. No new permanent land rights, including new footprint or new or modified
3 rights over existing footprint, are required for the Project. Temporary workspace (approximately 0.33 ha in
4 size) will be required to construct a new building for the relocation of an existing densitometer to the Line 9
5 ROW at KP 2989 (MP 1857). Enbridge has entered an agreement for this temporary workspace with the
6 landowner.

14. SECURITY MANAGEMENT

Enbridge is aware of and will follow the Proposed Regulatory Change 2010-01 and has a security management program in operation for all of its pipeline systems and facilities. The security management program includes:

- security policies and procedure manuals;
- regional security response plans;
- security vulnerability assessments;
- threat monitoring and analysis;
- physical security measures;
- monitoring and tracking of security incidents; and
- training and support of operations personnel.

Physical security measures reflect the size, location, risk, and criticality of the assets that require protection. These measures generally include perimeter fencing, manual or automated gates, intrusion alarms, access control, surveillance systems and lighting.

Enbridge works with local and federal policing authorities, and industry associations to identify and monitor trends and issues.

The Project will be incorporated into the existing Enbridge security management program and assessment process. All existing security plans and programs will be updated to include the new facilities as appropriate.

Construction of the new facilities will not negatively impact Enbridge's security response plans.

Any security issues identified during construction will be managed under the existing security management program.

15. EMERGENCY MANAGEMENT

- 1 Enbridge is aware of and will follow the NEB letter dated 24 April 2002 entitled *Security and Emergency*
- 2 *Preparedness and Response Programs*. A comprehensive emergency response plan is in place for all of
- 3 Enbridge's pipelines. The plan includes many preventive measures, such as advance education of the public
- 4 regarding pipeline crossings and encroachment issues.
- 5 Enbridge communicates regularly with stakeholders along its pipeline corridors, including landowners,
- 6 government agencies and emergency response officials (such as police agencies and health care providers).
- 7 Enbridge pipelines are marked at regular intervals with emergency contact information. A 24-hour
- 8 emergency call centre, located in the Edmonton control centre, can respond efficiently and effectively to
- 9 public concerns or emergency situations.