March 11, 2015

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4

Dear Ms. Walli:

Re: EB-2015-0120 – Sudbury Expansion Project

Attached is an Application by Union Gas Limited for an Order granting leave to construct a natural gas pipeline and ancillary facilities in the City of Greater Sudbury.

The construction of the Proposed Pipeline will allow the Applicant to ensure the continued reliable and safe delivery of natural gas to serve the new FNX Victoria Mine site and to meet the growing demands in the City of Greater Sudbury.

Should you have any questions, please do not hesitate to contact me. I look forward to receipt of your instructions.

Yours truly,

[original signed by]

Mark Murray
Manager, Regulatory Projects and Lands Acquisition

Attach.

cc: P. Duguay
Z. Crnojacki

ONTARIO ENERGY BOARD

IN THE MATTER OF The Ontario Energy Board Act, 1998, S.O. 1998, c.15, Schedule B, and in particular, s.90 thereof;

AND IN THE MATTER OF an Application by Union Gas Limited for an Order granting leave to construct a natural gas pipeline and ancillary facilities in the Township of St. Clair, in the County of Lambton.

UNION GAS LIMITED

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1. Union Gas Limited (the "Applicant") hereby applies to the Ontario Energy Board (the "Board"), pursuant to Section 90(1) of the Ontario Energy Board Act (the "Act"), for an Order granting leave to construct 1.55 kilometers of NPS 12 natural gas pipeline and 2 kilometers of NPS 10 natural gas pipeline and 2.3 kilometers of NPS 6 natural gas pipeline in the City of Greater Sudbury.

2. Attached hereto as Schedule "A" is a map showing the general location of the proposed pipeline and the municipalities, highways, railways, utility lines and navigable waters through, under, over, upon or across which the proposed pipeline will pass.

3. The construction of the Proposed Pipeline will allow the Applicant to serve the new FNX Victoria Mine site, to meet the growing demands for natural gas in The City of Greater Sudbury and ensure the continued reliable, safe delivery of natural gas.

4. The Applicant requests that this Application be dealt with in accordance with Section 34 of the Board's Rules of Practice and Procedure for written hearings.

5. The Applicant now therefore applies to the Board for an Order granting leave to construct the proposed pipeline as described above.

Dated at Municipality of Chatham-Kent this 11th day of March, 2015.

[original signed by]

_____

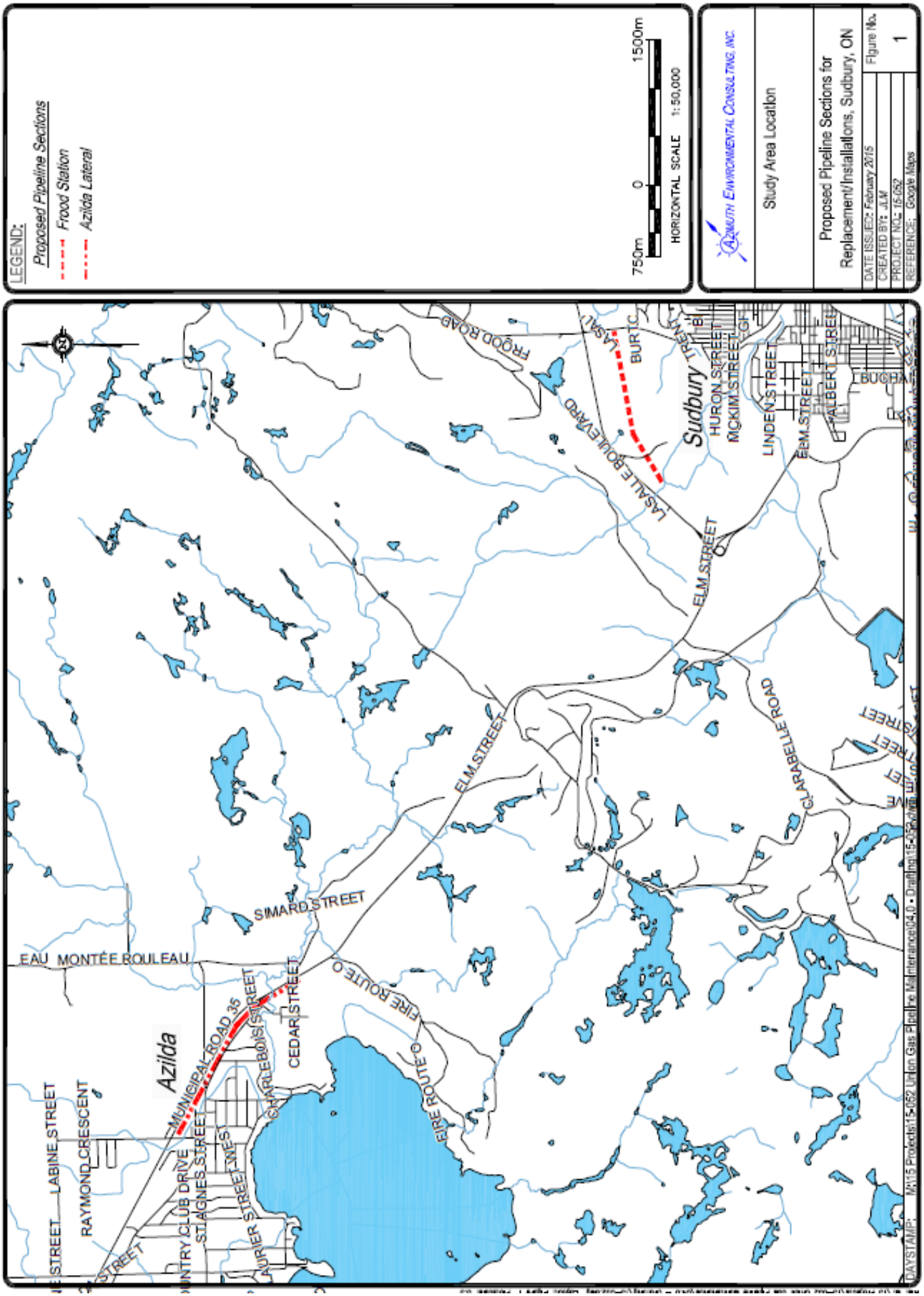
Per: Mark Murray
Manager, Regulatory Projects and Lands Acquisition
Union Gas Limited

Comments respecting this Application should be directed to:

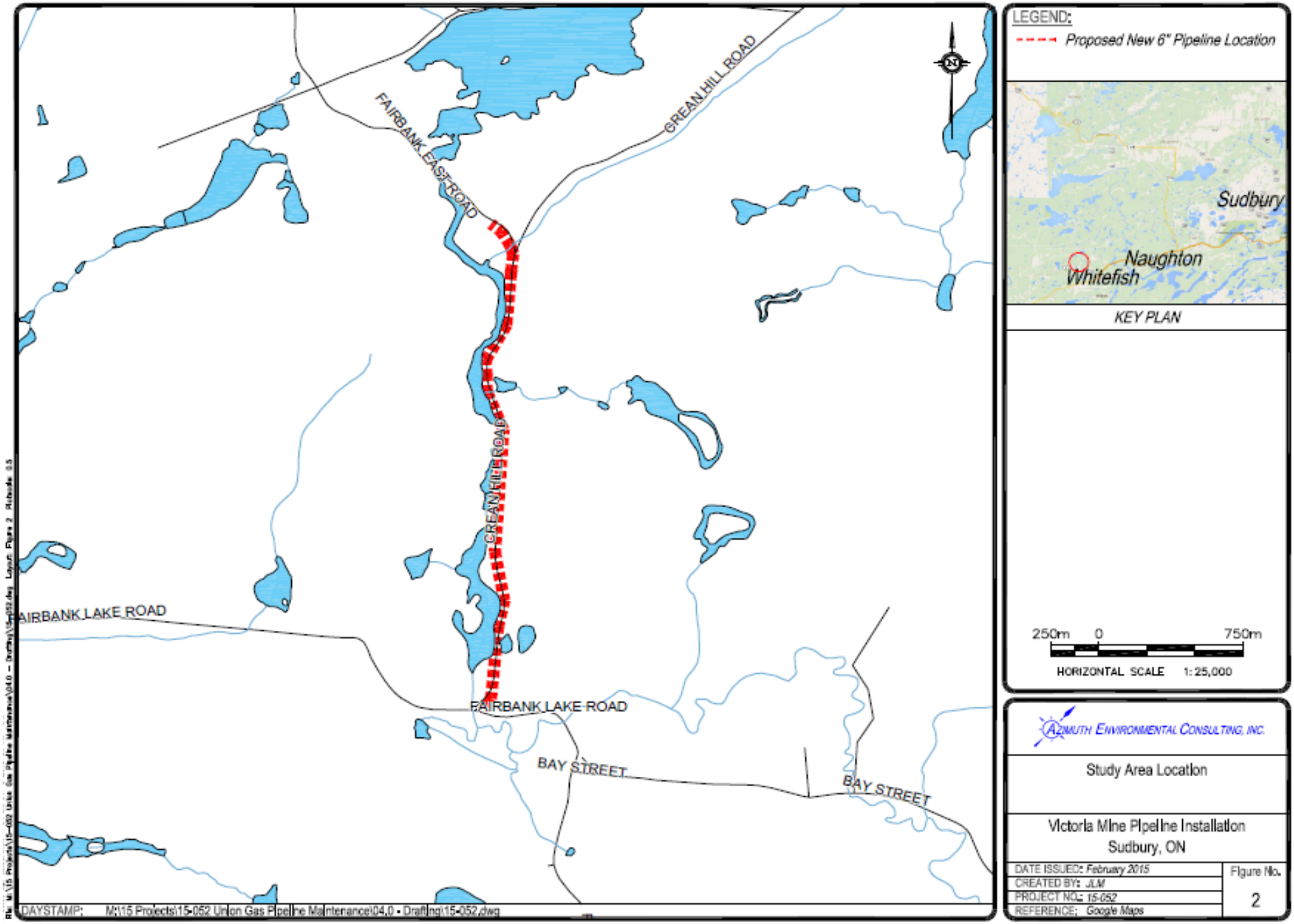
Mark Murray
Manager, Regulatory Projects & Lands Acquisition
Union Gas Limited
50 Keil Drive North
Chatham, Ontario
N7M 5M1
Telephone: 519-436-4601
Fax: 519-436-4641

Email:
mmurray@spectraenergy.com

SUDBURY EXPANSION PROJECT



VICTORIA MINE PIPELINE PROJECT



LEGEND:

Proposed New 6" Pipeline Location

KEY PLAN

250m 0 750m

HORIZONTAL SCALE 1: 25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Victoria Mine Pipeline Installation
Sudbury, ON

DATE ISSUED: February 2015	Figure No.
CREATED BY: JLM	
PROJECT NO.: 15-052	2
REFERENCE: Google Maps	

Sudbury Expansion Project

Applications

Leave to Construct

Prefiled Evidence

PROJECT SUMMARY

1. In response to a request for from KGHM International to provide natural gas service to the new FNX Victoria Mine (KGHMI) Victoria Mine Site ("FNX Victoria Mine") in the City of Greater Sudbury, and to meet the growing demands for natural gas and to ensure the continued safe operation of the Union Gas Limited ("Union") Sudbury pipeline system, additional pipeline facilities are required. Union is seeking an Order under Section 90.(1) of the Ontario Energy Board Act for leave to construct approximately 1.55 kilometers of NPS 12 natural gas pipeline and 2 kilometers of NPS 10 natural gas pipeline and 2.3 kilometers of NPS 6 natural gas pipeline in 2015 ("Proposed Facilities") in The City of Greater Sudbury. A map showing the Proposed Facilities can be found at Schedule 1.

2. Union is in the process of negotiating a Distribution Contract with FNX Victoria Mine for the Proposed Facilities. A Letter of Support has been provided by FNX Victoria Mine and is attached at Schedule 2.

3. Over the past several years Union has also experienced growth in residential, commercial and industrial segments on the Sudbury system. Resulting in the need for additional pipeline facilities to be constructed in The City of Greater Sudbury.

4. The total capital costs of the Proposed Facilities, including all pipeline and station costs, are estimated to be approximately $10.8 million.

5. An economic analysis has been completed for the FNX Victoria Mine portion of the project. This analysis shows that the Proposed Facilities have a profitability index of 1.0 which demonstrates their construction is in the public interest.

6. An Environmental Protection Plan "EPP" has been prepared for the Proposed Facilities. The EPP concludes that there will be no significant environmental impacts associated with construction of the Proposed Facilities given Union's standard construction procedures and the mitigation measures recommended in the EPP.

7. The FNX Victoria Mine requires natural gas service for commissioning by September 1, 2015 with an in-service date for the entire project by December 1, 2015. Union plans to construct the Proposed Facilities during the summer 2015 season in order to construct the pipeline during favourable weather conditions. Therefore, Union respectfully requests the timely approval of this application by July 2015.

NEED FOR PIPELINE

FNX Victoria Mine

8. FNX Mining Company Inc. is a mining company based in Sudbury Ontario that engages in the exploration, development, and production of copper, nickel, cobalt, platinum, palladium and gold at its mining properties located in the Sudbury basin. The FNX properties include McCreedy West, Levack, Podolsky, Kirkwood, and Victoria locations. FNX Mining Company Inc. has a workforce of approximately 600 people in the greater Sudbury area.

9. FNX Mining Company Inc., has commenced site construction work at its FNX Victoria Mine project located North of Whitefish in The City of Greater Sudbury in preparation for the sinking of an exploration shaft. Natural gas is required in September 2015 for power generation needed to sink the 6.7 meter diameter shaft that is scheduled to be completed by the end of 2016. The shaft will extend to a depth of 1,892 meters and once the shaft has been sunk, natural gas usage will shift from power generation to mine air heating along with building heat for various surface buildings.

10. The anticipated annual natural gas quantities are identified in Schedule 7.

11. Union is in the process of negotiating a Distribution Contract with FNX Victoria Mine for the Proposed Facilities. It is anticipated that a contract will be signed in the second quarter of 2015.

12. A copy of the Letter of Support from FNX Victoria Mine can be found at Schedule 2.

Residential and Small Commercial Growth in the Sudbury Area

13. Over the past 10 years, the average growth on the Sudbury system has been identified as a 1.3% attachment rate. The table below shows the growth patterns across the Sudbury system from 2004 to 2013.

System	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average	System Totals (Jan 2014)	Percent Growth
Hanmer	39	42	23	47	36	35	32	52	43	20	37	3,442	1.07
Val Therese	58	60	59	89	54	34	40	47	34	19	49	3,010	1.64
Val Caron	40	41	56	56	59	45	67	69	44	35	51	2,646	1.93
Azilda	18	12	22	21	31	30	26	31	30	29	25	1,611	1.55
Chelmsford	43	44	44	56	87	44	46	62	71	59	56	4,026	1.38
Espanola	17	13	12	15	17	10	19	22	13	22	16	1,603	1.00
Nairn	1	1	3	1	2	1	2	2	0	1	1	104	1.35
Walden/Whitefish	50	49	55	77	58	19	27	45	31	33	44	3,902	1.14
Sudbury	402	355	346	395	411	287	333	497	449	263	374	29,217	1.28
Coniston	10	12	5	16	21	9	12	15	15	11	13	1,508	0.84
Total	678	629	625	773	776	514	604	842	730	492	666	51,069	1.30

14. The sub-system totals represent 2014 values. The attachment rates by area were used to forecast the expected future growth.

Industrial Requirements on the Sudbury System

15. In the fall of 2014 the natural gas consumption of the Industrial Customers on the Sudbury system was reviewed.

16. This review encompassed the daily contract demand (CD), firm hourly quantity (FHQ), maximum hourly quantity (MHQ), whether the customer was metered on an overall or individual site basis, and what growth had occurred in the recent past for all industrial customers on the Sudbury system.

17. This review identified a system shortfall on a peak day indicating the system is operating below the minimum design specifications, and thus identifying a need for reinforcement.

18. The pipeline facilities required to meet the proposed residential growth and existing system shortfall are described in paragraph 27.

FACILITIES PLANNING

Existing Facilities

19. A schematic of the Sudbury System can be found at Schedule 3.

20. Sudbury currently receives gas from two transmission lines referred to as the Sudbury lateral system. The first line originates from the TransCanada Pipelines ("TCPL") system in the North Bay area and the second originates from the TCPL pipeline system near Marten River. The Sudbury lateral system covers a total distance of approximately 272 kilometers from North Bay and Marten River to Espanola and Chelmsford. This Sudbury lateral system services the City of Greater Sudbury along with numerous communities along the route.

21. The pipeline connecting the Sudbury lateral system with TCPL in the City of North Bay consists of a NPS 10 pipeline. The pipeline connecting the Sudbury lateral system with TCPL in the Marten River area consists of a NPS 12 pipeline.

22. The original NPS 10 line was installed in 1958 with the intent to provide natural gas service to The City of Greater Sudbury as well as other communities located between North Bay and The City of Greater Sudbury.

23. As a result of continued growth in the area, between 1972 and 1987, the NPS 10 line was looped in phases with an NPS 12 pipeline which extends from a TCPL interconnect at Marten River to the northwest end of The City of Greater Sudbury.

24. The design day for the Sudbury lateral system is a 51.9 degree day. A 51.9-degree day is Union's standard design day calculation and in this case corresponds to an effective daily average outdoor temperature of minus 33.9 degrees Celsius. This is the Union Gas standard for the Sudbury temperature zone.

Proposed Facilities and Alternatives Considered

Service to FNX Victoria Mine

25. The requested volumes from FNX Victoria Mine are provided in Schedule 7. A number of alternatives were evaluated to appropriately size the service required to connect this mine site to the existing Sudbury lateral system.

26. The proposed solution to connect FNX Victoria Mine is 2300 meters of NPS 6. This is in keeping with our standard service sizing guidelines. Union reviewed NPS 4, 6 and 8 pipeline alternatives to meet the requirements of the FNX Victoria Mine. The NPS 4 revealed a substantial pressure drop which indicates a greatly undersized design and did not meet FNX Victoria Mine's requirements. The NPS 8 alternative revealed negligible pressure drop which indicates an oversized design.

Other Facilities

27. The proposed solution to provide gas for the FNX Victoria Mine lateral and provide capacity for future growth to meet the needs of Union's current industrial customers is described as follows.

a. Install approximately 1550 meters of NPS 12 looping from Frood Town Border Station ("Frood") to LaSalle Road.

b. Install approximately 2000 meters of NPS 10 looping from the Azilda TBS toward the Azilda take off.

28. Looping options were considered in other locations; however, the proposed solution addresses existing limitations in the pipe network which would have to be addressed at a future date as the system continues to grow. Based on the forecasted growth rates provided in the table at paragraph 13 this proposed solution provides approximately 2-3 years of additional growth for residential and commercial customers in The City of Greater Sudbury.

29. The proposed solution of 1550 meters of NPS 12 from Frood to LaSalle Road extends the looping of the Sudbury lateral system. The proposed solution of 2000 meters of NPS 10 from the Azilda TBS toward the Azilda take off will loop the existing undersized NPS 6 pipeline.

30. From the proposed solution detailed above, the portion of looping attributed to the FNX Victoria Mine is 94% of the NPS 12 section between Frood and LaSalle Road.

PROJECT COSTS AND ECONOMICS

Project Costs

31. The Proposed Facilities are described in Schedule 1. Total pipeline capital costs are estimated to be $10,201,000 and total station capital costs are estimated to be $624,000.

The total capital costs of the Proposed Facilities are estimated to be $10,825,000 and are summarized in Schedules 4 and Schedule 5.

32. For the total capital costs of $10,825,000;

- $6,592,000 is attributed to FNX Victoria Mine; and,
- $4,233,000 is attributed to system reinforcement and general service growth

33. Given the estimated capital costs outlined above, the project does not meet the capital pass-through criteria as determined from Union's 2014-2018 Incentive Regulation Mechanism proceeding (EB-2013-0202). The costs of the Proposed Facilities will be included in rates in Union's 2019 rebasing application.

34. The estimated costs associated with environmental measures are included in the total pipeline capital costs shown in Schedule 4 and are detailed separately in Schedule 16. These costs are identified as pre construction-related, construction related, and post-construction related. The estimated total environmental costs are $55,000.

Project Economics

35. The Proposed Facilities are required in order to meet growth for a specific customer, FNX Victoria Mine, to address security of supply issues, and to meet general distribution growth.

36. A standalone Discounted Cash Flow ("DCF") analysis was completed for the portion of the project serving FNX Victoria Mine. Union has employed an economic feasibility test

consistent with the Board's recommendations in the E.B.O. 188 Report on Natural Gas System Expansion.

37. The DCF for FNX Victoria Mine can be found at Schedule 6. This Schedule indicates a Net Present Value ("NPV") of zero and Profitability Index ("PI") of 1.0. The DCF is based on capital attributed to FNX Victoria Mine of $6,592,000 less aid to construction of $4,717,000 for a net investment of $1,875,000.

38. Schedule 7 provides the key inputs, parameters and assumptions used in completing the DCF analysis.

39. The Board has found that new facilities are in the public interest if no undue burden is placed on existing customers.

40. The portion of the project attributed to system reinforcement and general distribution growth is approximately $4,233,000 and is managed within the rolling portfolio in accordance with Union's normal business practice. With the inclusion of FNX Victoria Mine, system reinforcement and general distribution growth, the PI of Union's new business investment portfolio and Union's rolling portfolio, estimated to be estimated to be 1.20 and 1.41, respectively.

41. Union submits that the Proposed Facilities are economically feasible and in the public interest.

Other Public Interest Considerations

42. There are a number of other public interest factors for consideration as a result of the addition of the Proposed Facilities. These additional public interest considerations include the following:

Reduced Air Emissions - Natural gas, because of its cleaner-burning properties compared to other fossil fuels, has an increasingly important role to play in reducing the environmental impacts of energy use. Emissions from the combustion of natural gas are less than other fossil fuels on a per unit of energy basis.

Utility Taxes - A decision to proceed with this project will result in Union paying taxes directly to various levels of government. Income and municipal taxes paid by Union as a direct result of the project are included as costs in the economic analysis. These taxes are not true economic costs of the project, but rather represent transfer payments within the economy, as they are available for redistribution by the federal, provincial and municipal governments. Since these taxes have been included as a cost in the analysis, they must also be considered as a benefit in order to reflect the appropriate economic benefit on an overall basis.

Employment - The construction of this project will result in additional direct and indirect employment. There will be additional employment of persons directly involved in the construction of the project and the manufacture of pipe. There are also substantial indirect benefits or multiplier effects related to these activities. Therefore, as a result of the

construction of the Proposed Facilities, the Ontario economy will receive a positive employment benefit.

PIPELINE DESIGN AND CONSTRUCTION

Proposed Facilities

Service to FNX Victoria Mine

43. The service to FNX Victoria Mine will consist of 2.3 kilometers of NPS 6 pipeline to be constructed within the road allowance of Crean Hill Road. A map showing the location of this pipeline can be found at Schedule 8.

Other Facilities

44. Two sections of pipeline will be constructed:

- looping from the Frood to LaSalle Road
- looping the Azilda lateral near Azilda

45. In 2000 Union replaced the pipeline between Frood and Azilda with an NPS 12 pipeline adjacent to the existing pipeline. Union abandoned the existing pipeline in place. Union is proposing to remove the abandoned pipeline. A new NPS 12 pipeline will be constructed in the location where the abandoned pipeline was removed. A map showing the location of this pipeline can be found at Schedule 9.

46. Union is proposing a 2 kilometer loop of NPS 10 in the area adjacent to Azilda. This pipeline would be constructed within the road allowance of Regional Road 35. A map showing the location of this pipeline can be found at Schedule 9.

Construction Matters

47. The Proposed Facilities will be constructed using Union's standard practices and procedures and will be in compliance with the mitigation measures identified in the EPP. Union's construction procedures are continually updated and refined to minimize potential impacts to the lands and the public. A summary of Union's construction practices can be found at Schedule 10.

48. Material is readily available for the Project. Union is preparing to conditionally award the construction contract pending OEB approval. The EPP will be included as part of the construction contract documents.

49. Bedrock has been identified along the proposed route. It is anticipated that a combination of mechanical methods and blasting will be used to remove the bedrock, with the majority being removed by mechanical. Union will follow its standard rock removal specifications, which can be found at Schedule 11 as well as any additional recommendations outlined in the EPP for rock removal.

Construction Schedule

50. Schedule 12 provides the proposed construction schedule for the project. Construction of the Proposed Facilities is expected to begin in July 2015. The in-service date for the pipeline serving the FNX Victoria Mine is September 2015. The in-service date for the other facilities is December 2015.

Design and Pipe Specifications

51. All design, installation and testing of the natural gas pipelines are in accordance with the requirements of Ontario Regulation 210/01, Oil and Gas Pipeline Systems under the Technical Standards and Safety Act 2000. This regulation governs the installation of pipelines in the Province of Ontario. The minimum design and pipe specifications for the Proposed Facilities are outlined in Schedule 13.

52. The Ontario regulations include a classification system on land use and population density to determine the appropriate design factors.

53. A Class 1 location contains ten or fewer dwellings intended for human occupancy within a 200 m wide strip of land on either side of the centerline of any continuous 1.6 km length of pipeline.

54. A Class 2 location contains more than ten but fewer than 46 dwellings intended for human occupancy within a 200 m wide strip of land on either side of the centerline of any continuous 1.6 km length of pipeline. Further, a Class 2 location is designated to contain the following:

a. A building that is occupied by 20 or more persons during normal use;

b. A small, well-defined outside area that is occupied by 20 or more persons during normal use such as a playground, recreation area, outdoor theatre, or other place of public assembly; or

c. An industrial installation such as a chemical plant or hazardous substance storage area, where release of products from a pipeline could cause the industrial installation to produce a dangerous or environmentally hazardous condition.

55. A Class 3 location contains more than 46 dwellings intended for human occupancy within a 200 m wide strip of land on either side of the centerline of any continuous 1.6 km length of pipeline.

56. The Proposed Facilities are located within Class 1, Class 2 and Class 3 locations. The pipe line is designed to meet the requirements of a Class 3 location.

57. The MOP for the proposed NPS 12 pipeline is 3723 kPa, and will have an outside diameter of 323.9 millimeters.

58. The MOP for the proposed NPS 10 pipeline is 3723 kPa and will have an outside diameter of 273.1 millimeters.

59. The MOP for the proposed NPS 6 pipeline is 3723 kPa and will have an outside diameter of 168.3 millimeters.

60. The minimum depth of cover specified is 0.9 meters to the top of the pipe. Additional depth will be provided to accommodate existing or planned underground facilities, or in specific areas in compliance with the applicable regulated standards.

ENVIRONMENTAL MATTERS

61. Union has completed an EPP for the Proposed Facilities dated March 2015. Azimuth Environmental has completed an Environmental Report ("ER") on the environmental features found in the area and this review forms part of the EPP. The results of the ER indicate that the location of the Proposed Facilities are environmentally acceptable. Union believes that by following its standard construction practices and adhering to the mitigation measures identified in the ER, construction of this project will have negligible impacts on the environment. No significant cumulative effects are anticipated from development of the Proposed Facilities. A copy of the EPP can be found at Schedule 14.

62. A copy of the EPP was submitted to the Ontario Pipeline Coordination Committee ("OPCC") on March 11, 2015. Also, a copy of the EPP was sent to local municipalities, the Conservation Sudbury, First Nations, Métis and upon request to interested parties. A summary of the comments and Union's response to concerns from agencies and interested parties will be filed, when received, as Schedule 15.

63. The total estimated environmental mitigation costs associated with the construction of the Proposed Facilities are identified in Schedule 16. These costs are identified as pre-

construction related, construction-related and post-construction related. The estimated total environmental costs are $ 55,000.

64. There is 1 watercourse crossing associated with the construction of this project. Union will obtain all necessary permits associated with these crossings prior to construction.

65. When the project is constructed, the most up-to-date construction specifications will be followed.

66. Union will ensure that the recommendations in the EPP, commitments and the conditions of approval are followed. An environmental inspector will monitor construction activities and ensure that all activities comply with all conditions of approval.

67. The results of the EPP indicate that the environmental and socio-economic effects associated with construction of the project are generally short-term in nature and minimal. There are no significant cumulative effects as a result of this pipeline construction.

LAND MATTERS

Land Requirements

68. For the portion of the pipeline between Frood and LaSalle Road the majority of the pipeline will be constructed within Union's existing easement. A short section of new easement will be required to tie in the new pipeline with the existing NPS 12 pipeline. Temporary lands will be required along the route of the Proposed Facilities.

69. For the looping of the Azilda lateral the pipeline will be constructed within road allowance. No land rights will be required as the pipeline will be constructed under Union's franchise agreement with The City of Greater Sudbury.

70. The pipeline servicing the FNX Victoria Mine site will be constructed within the road allowance of Crean Hill Road. No land rights will be required as the pipeline will be constructed under Union's franchise agreement with The City of Greater Sudbury.

71. Union will require crossing permits or agreements with Municipalities, Conservation Authority, railways and other utilities along the pipeline route.

72. Union will not require fee simple purchases of land.

73. Union has met or spoken with all of the directly affected landowners along the Proposed Facilities route.

74. Union requires permanent and temporary land rights from Vale Canada Limited to construct the Frood to LaSalle Road section of pipeline. Initial discussions have been held with Vale Canada Limited and no concerns were identified.

75. Schedules 8, 9 are maps that show the running line of the pipeline. Schedule 17 identifies the landowners and the land rights required for the pipeline.

76. Union's form of easement is attached as Schedule 18 this form will be offered to all new landowners where permanent easements are required. This easement covers the installation, operation and maintenance of one pipeline. The main restrictions imposed upon the individual landowner by having this easement is that the landowner cannot erect buildings or privacy fencing in the easement. In addition, the landowner cannot excavate on the easement or install structures which would impede access to Union's pipeline. The landowner can, however, install service pipe or utility lines or develop the easement into a laneway or driveway entrance upon prior written approval by Union.

77. Temporary Land Use Agreements are usually required for a period of two years. This allows Union the opportunity to return in the year following construction to perform further clean-up and remediation work as may be required. Union will offer a form of Temporary Land Use Agreement form previously approved by the Board and utilized by Union in the past on similar pipeline projects.

78. At the conclusion of construction, Union will seek a Full and Final Release from each of the directly affected landowners. This Full and Final Release will include compensation for any damages caused or attributed to the pipeline construction.

Landowner Issues

79. Union has implemented a comprehensive program to provide landowners, tenants, and other interested persons with information regarding the Proposed Facilities. Project information was distributed through correspondence and meetings with the public.

80. Union has assigned a land agent to the project to assist with responding to any issues or questions from landowners during construction of the project. Union's Complaint Resolution System will be used in this project to record, monitor, and ensure follow-up on any complaint or issue received by Union related to the construction. This process assists in resolving complaints and tracking the fulfillment of commitments. A process chart and explanatory notes that describe the Complaint Resolution System are found in Schedule 19. The land agent will conduct pre-construction and post-construction interviews to capture any concerns (so that they can be resolved, if at all possible) and document specific landowner concerns and comments (so that they can be considered in the planning of future projects).

81. After construction, negotiations with landowners will continue, where necessary, to settle any damages that were not foreseen or compensated for, prior to construction.

FIRST NATIONS AND MÉTIS CONSULTATION

82. Union has a long standing practice of consulting with First Nations and Métis, and has programs in place whereby Union works with them to ensure they are aware of Union's

projects and have the opportunity to participate in both the planning and construction phases of the project.

83. Union has an extensive data base and knowledge of First Nations and Métis organizations in Ontario and consults with the Tribal organizations and the data bases of the Ontario Ministry of Aboriginal Affairs and the Federal Department of Aboriginal Affairs and Northern Development Canada to ensure consultation is carried out with the most appropriate groups.

84. Union has signed a General Relationship Agreement with the Métis Nation of Ontario which describes Union's commitments to the Métis when planning and constructing pipeline projects.

85. The following First Nations and Métis were notified by letter regarding the Project.

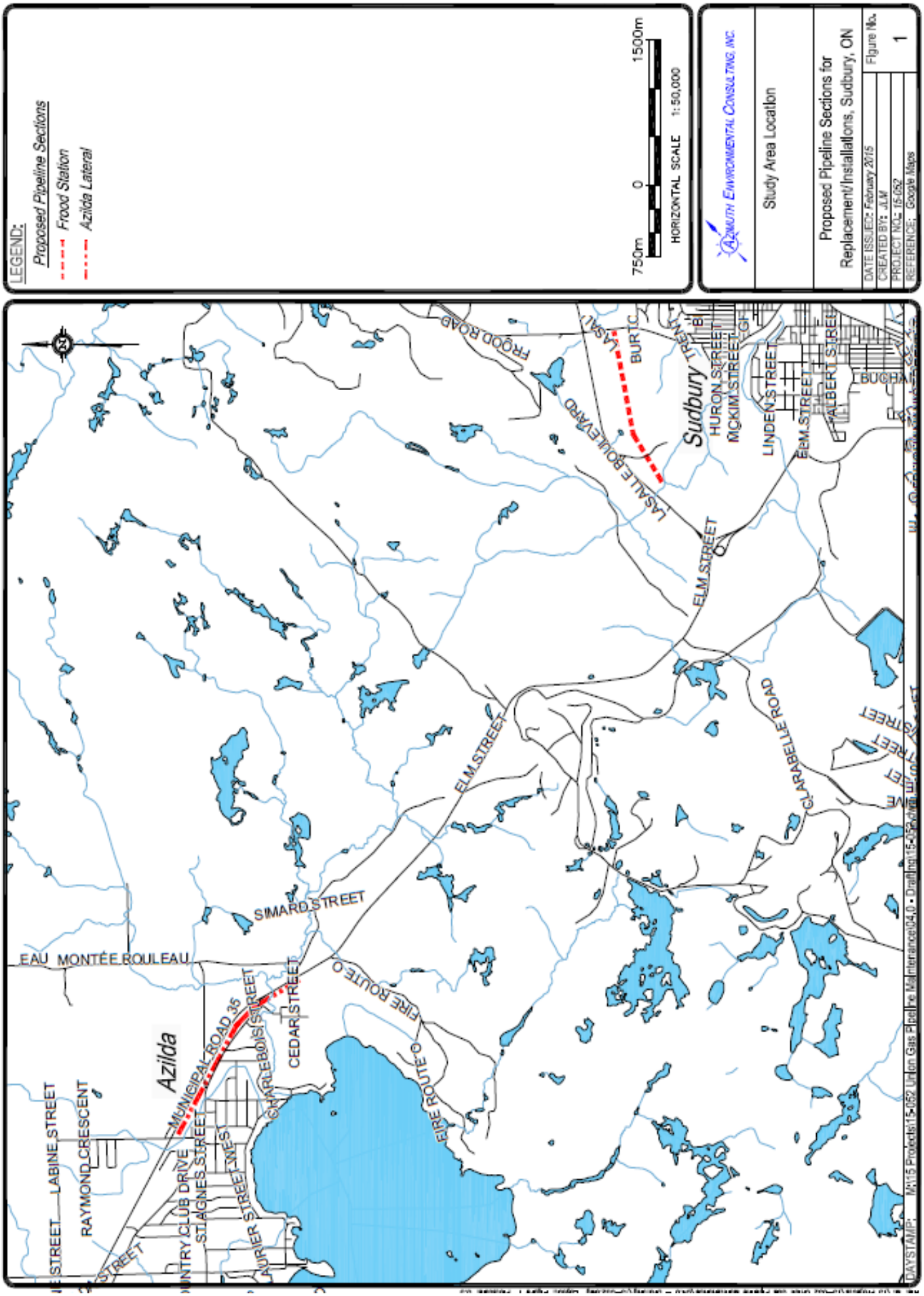
Chief Ted Roque	Wahnapitaie First Nation
Chief Steve Miller	Whitefish First Nation
Councillor Juliette Denis	Region 5 Métis Nation of Ontario
Steve Sarrazin	LRC Coordinator Sudbury Métis Nation of Ontario

86. Union will continue to meet and consult with the First Nations and the Métis organizations noted above.

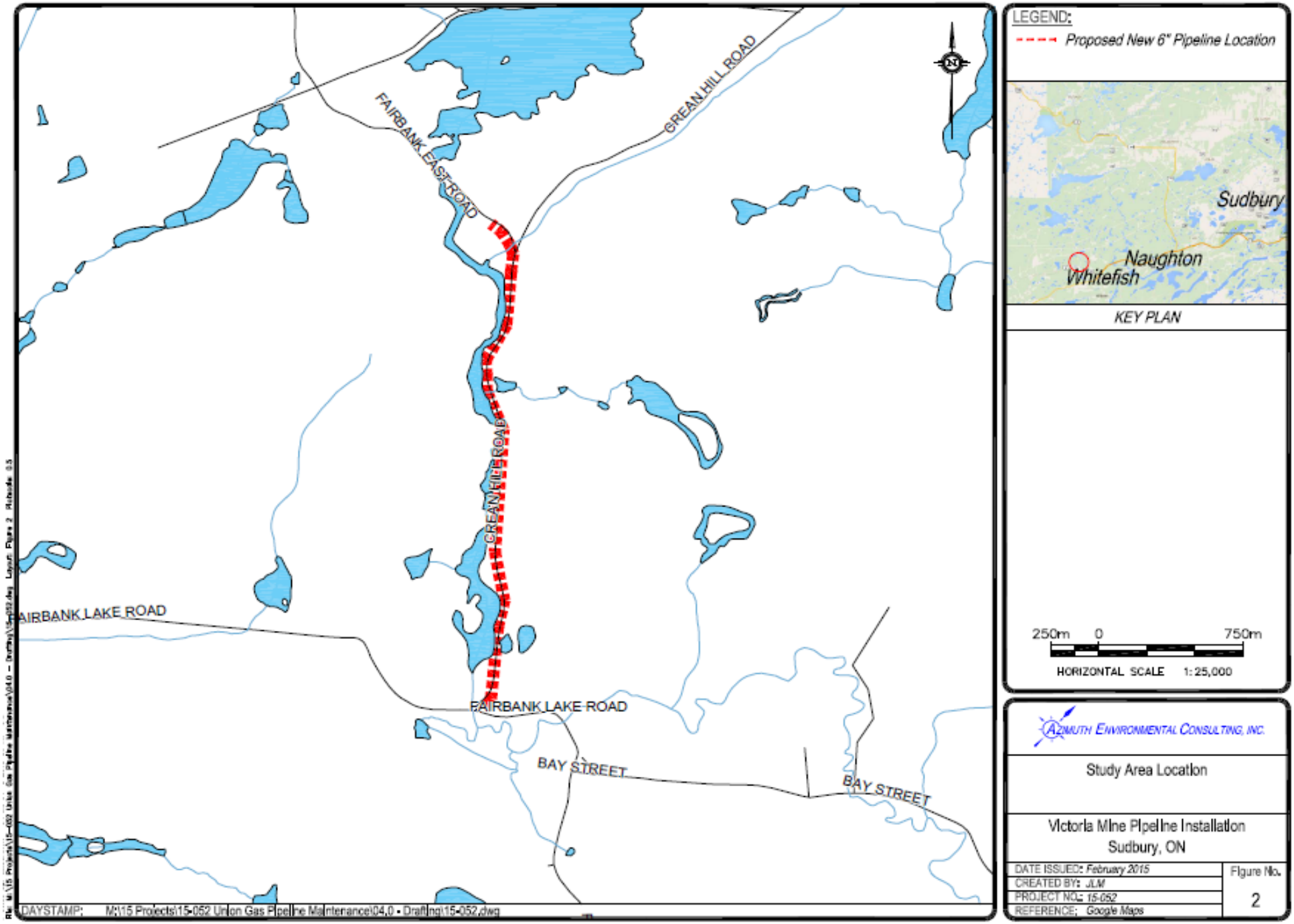
87. During construction, Union has inspectors in the field who are available to First Nations and Métis organization as a primary contact to discuss and review any issues that may arise during construction.

88. When Union completes the necessary archaeological assessments for the project Union will consult with and provide the result of the surveys to any First Nations or Métis upon their request.

SUDBURY EXPANSION PROJECT



VICTORIA MINE PIPELINE PROJECT



LEGEND:

Proposed New 6" Pipeline Location

KEY PLAN

250m 0 750m

HORIZONTAL SCALE 1: 25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Victoria Mine Pipeline Installation
Sudbury, ON

DATE ISSUED: February 2015	Figure No.
CREATED BY: JLM	
PROJECT NO.: 15-052	2
REFERENCE: Google Maps	

KGHM INTERNATIONAL

VICTORIA PROJECT
Operated by:
FNX Mining Company Inc.

March 2, 2015

Ontario Energy Board
P.O. Box 2319
2300 Yonge Street
Toronto, Ontario, Canada
M4P 1E4

Subject: **Construction of Natural Gas Services by Union Gas to the FNX Mining (KGHMI) Victoria Mine Site Located in Whitefish, Ontario**

Dear OEB:

FNX Mining Company Inc., a wholly owned subsidiary of KGHM International, is proceeding with its Victoria Advanced Exploration Project located 40 km West of Sudbury, ON. This project is an important venture for both our company and for the economic development of the Sudbury region. As the project is moving towards a fully operating 3500 tonnes per day mine, a significant amount of natural gas is required for mine air heating, general site heating and temporary power generation. As such, we are presently in negotiations with Union Gas for a supply contract (with options for a 10 year term) as our minimum life of mine is forecast to be at least 15 years. It is our hope that this contract will be signed no later than May 2015 in order to meet the present construction schedule demands.

Union Gas has responded well to the tight construction schedules required of the project and as such, have completed engineering and modelling to facilitate the construction of the required 6" gas line to site from the 10" lateral located at Regional Road 4. In order to maintain these timelines, we are working closely with Union Gas in moving these efforts forward with great vigor, and would appreciate any cooperation that the OEB can provide in the advancement of this project in terms of accelerating the approval of the overall application.

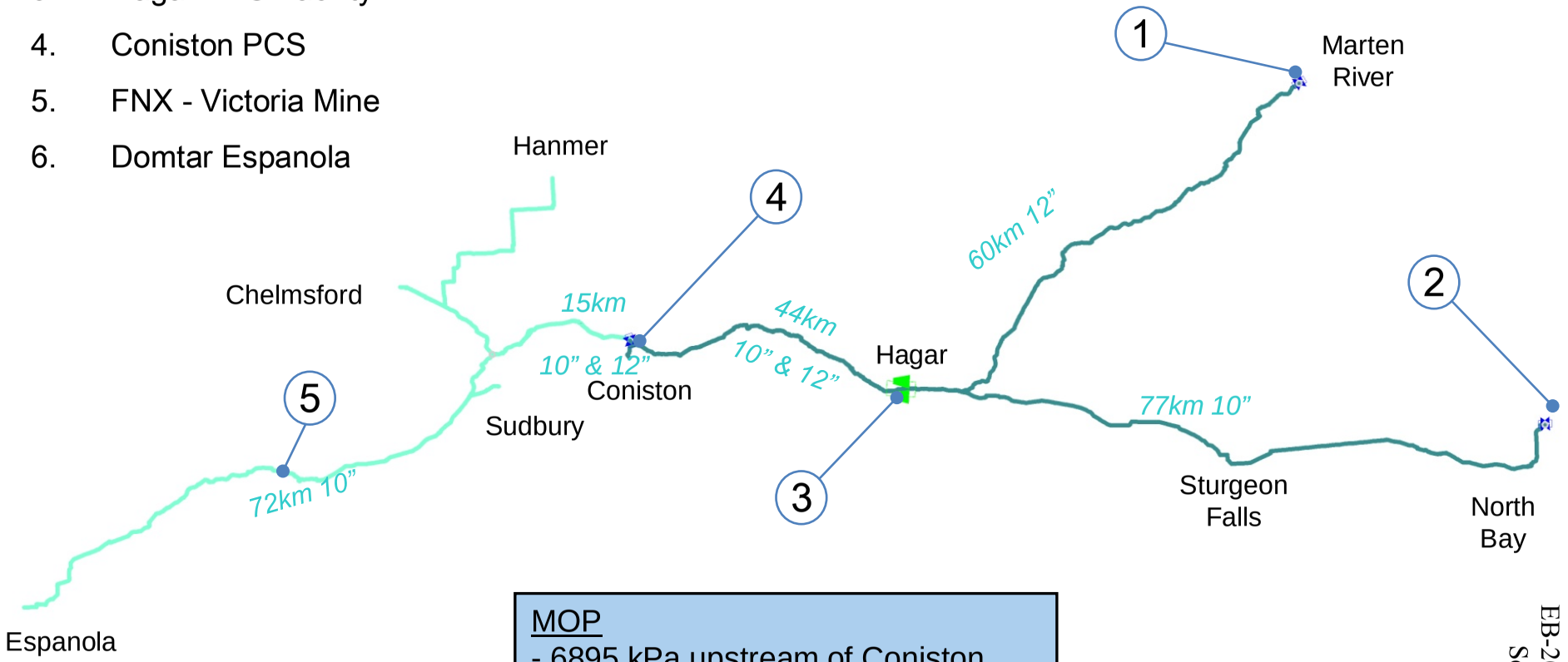
If you require any further information or have questions and concerns, please feel free to contact us for clarification.

Sincerely yours,

Dino Titon, P.Eng.
Energy Infrastructure Manager
KGHM International, Victoria Project
Tel: 705-885-1535 Ext 2028, Mobile: 705-920-4790
Dino.Titon@kghm.com

Sudbury System Overview

1. Marten River Control Valves
2. North Bay Control Valves
3. Hagar LNG Facility
4. Coniston PCS
5. FNX - Victoria Mine
6. Domtar Espanola



MOP
- 6895 kPa upstream of Coniston
- 3725 kPa downstream of Coniston

EB-2015-0120
Schedule 3

Sudbury Expansion Project Including Vic. Mine
Pipeline Costs

2015 Construction	
Pipeline and Equipment	
2300 m of NPS 6	$94,000
2000 m of NPS 10	$188,000
1550 m of NPS 12	$140,000
Fittings	$273,000
Total	
Construction and Labour	
Lay NPS 6	$1,715,000
Lay NPS 10	$2,655,000
Lay NPS12	$2,074,000
NPS 6 Company Labour, Inspection, X-Ray, Construction Survey, Legal, Environmental, Archeology, and Permitting	$216,000
NPS 10 Company Labour, Inspection, X-Ray, Construction Survey, Legal, Environmental, Archeology, and Permitting	$664,000
NPS 12 Company Labour, Inspection, X-Ray, Construction Survey, Easements, Lands, Damages & Regulatory	$851,000
Subtotal Pipeline Equipment, Construction, and Labour	$8,870,000
Contingencies	$1,331,000
Interest During Construction	$0
Total Estimated Pipeline Capital Costs	**$10,201,000**

Sudbury Expansion Project Including Vic. Mine
TOTAL ESTIMATED STATION CAPITAL COSTS

2015 Construction
Station Equipment and Labour

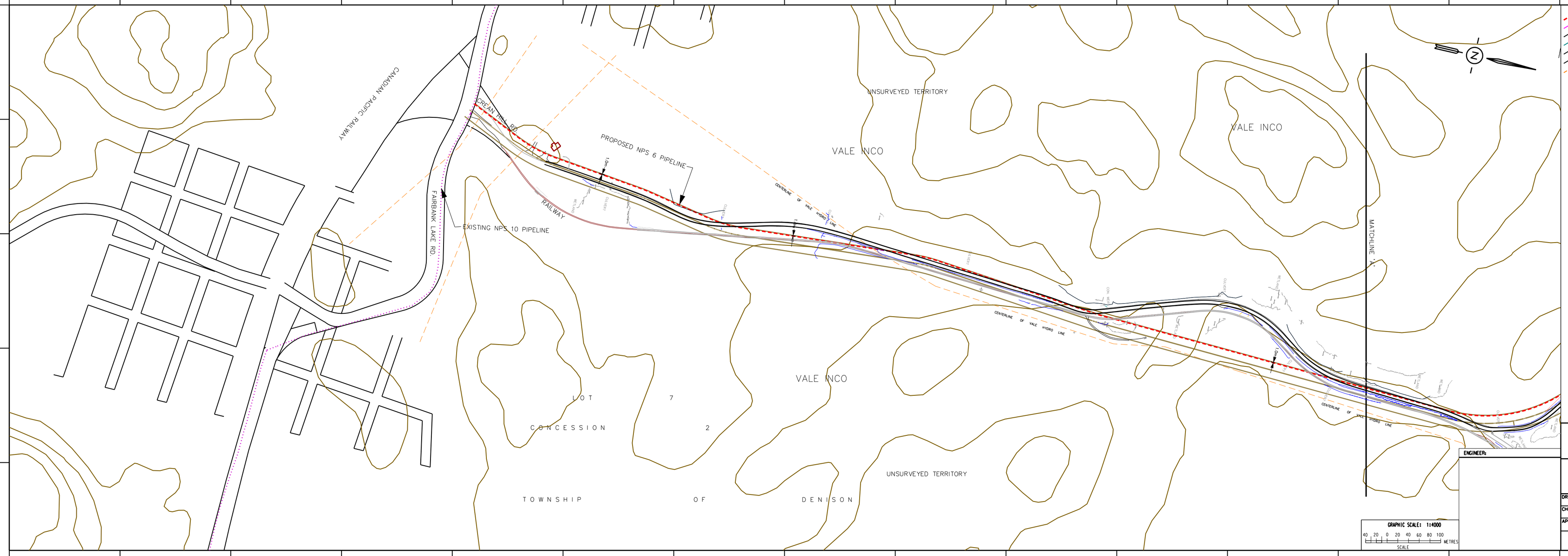
Station Equipment	$145,000
Construction and Labour	$389,000
Company Labour, Inspection, X-Ray, Construction Survey, Legal, Environmental, Archeology, and Permitting	$30,000
Easements, Lands, Damages & Regulatory	$3,000
Subtotal Station Equipment, Construction, and Labour	$567,000
Contingencies	$57,000
Interest During Construction	$0
Total Estimated Station Capital Costs	**$624,000**

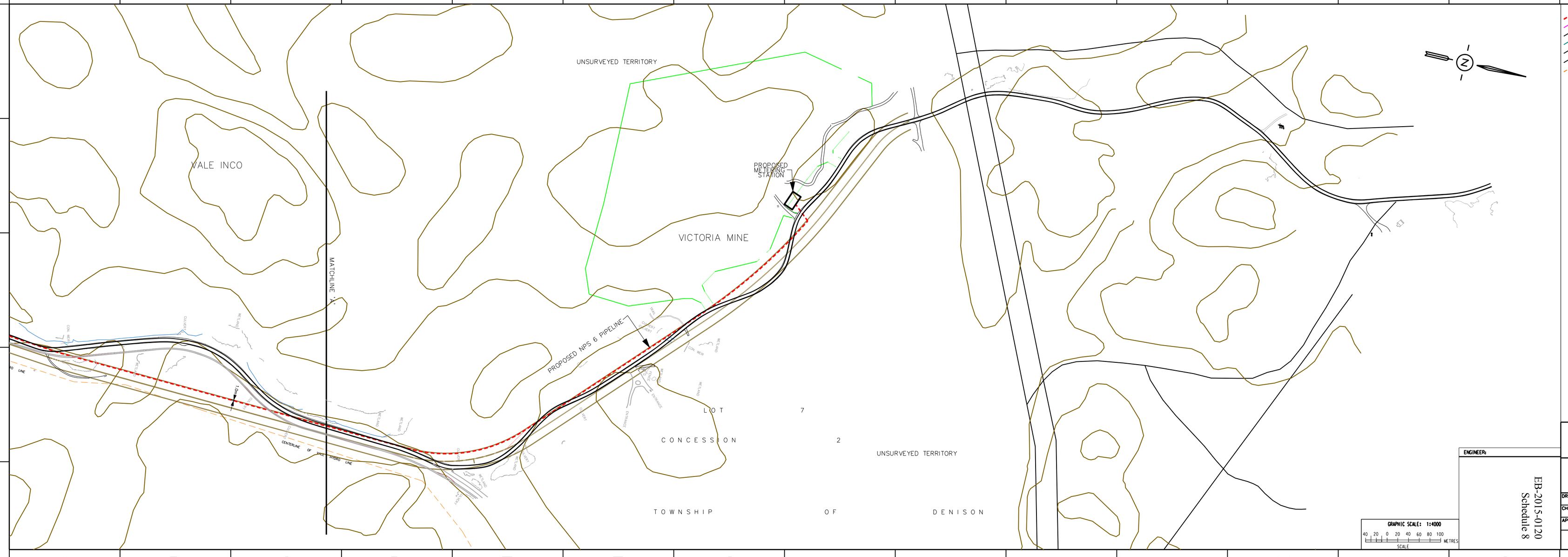
Project Year ($000's)	1	2	3	4	5	6	7	8	9	10
Cash Inflow										
Revenue	326	314	309	309	312	318	321	321	321	322
Expenses:										
O & M Expense	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(61)
Municipal Tax	(14)	(14)	(15)	(15)	(15)	(15)	(16)	(16)	(16)	(17)
Income Tax	(68)	(51)	(51)	(52)	(54)	(57)	(59)	(60)	(62)	(47)
Net Cash Inflow	243	248	243	241	242	244	245	243	242	197
Cash Outflow										
Incremental Capital (net of aid to construction)	1,846	28	-	-	-	-	-	-	-	-
Change in Working Capital	0	0	0	0	0	0	0	0	0	3
Cash Outflow	1,846	28	0	0	0	0	0	0	0	3
Cumulative Net Present Value										
Cash Inflow	237	467	681	882	1,074	1,258	1,433	1,598	1,754	1,875
Cash Outflow	1,846	1,873	1,873	1,873	1,873	1,873	1,873	1,873	1,873	1,875
NPV By Year	(1,609)	(1,406)	(1,193)	(991)	(800)	(615)	(440)	(275)	(119)	-
Project NPV	-									
Profitability Index										
By Year PI	0.1285	0.2494	0.3634	0.4708	0.5731	0.6715	0.7649	0.8531	0.9364	1.0000
Project PI	1.0000									

SUDBURY EXPANSION PROJECT
(DCF Analysis Specific to Victoria Mine)

Stage 1 DCF - Listing of Key Input Parameters, Values and Assumptions ($000'S)

Discounting Assumptions	
Project Time Horizon	10 years commencing at facilites in-service date of September 1, 2015 (coincides with contract dates)
Discount Rate	Incremental after-tax weighted average cost of capital of 5.28%
Key DCF Input Parameters, Values and Assumptions	
Net Cash Inflow:	
Incremental Distribution Revenue:	
Rate 20	Approved per EB-2014-0356 Effective January 1, 2015
Firm Distribution Contract Demand	100,000 m^3
Annual Volumes	Year — Annual Volume (m^3): 2015 (Sept - Dec) 1,400,000; 2016 3,679,000; 2017-2018 718,000; 2019 773,000; 2020 1,586,000; 2021 - 2024 2,888,000; 2025 (Jan - Aug) 2,216,000
Operating and Maintenance Expense	Estimated incremental cost
Incremental Tax Expenses:	
Municipal Tax	Estimated incremental cost
Income Tax Rate	2015 = 26.5%
CCA Rates:	
CCA Classes:	Declining balance depreciation rates by CCA class:
Eligible Capital Expenditure (ECE)	7%
Class 51 (Distribution Mains)	6%
Class 51 (Distribution Services)	6%
Class 51 (Measuring & Regulating Equipment)	6%
Cash Outflow:	
Incremental Capital Costs Attributed	Capital attributed to Victoria Mine $6,592; Less aid to construction 4,717; Net capital investment $1,875
Change in Working Capital	5.0513% applied to O&M





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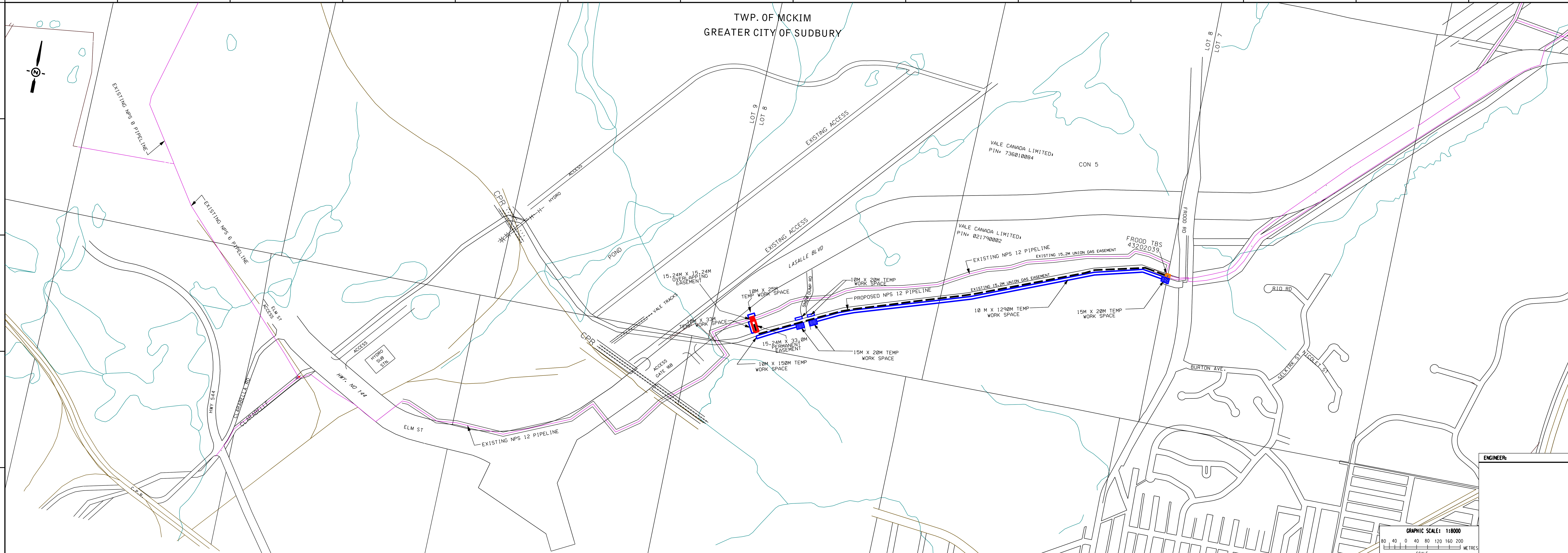
A Spectra Energy Company

VICTORIA MINE NPS 6
PROPOSED PIPELINE

DRAWN BY N.R.N.	DATE 2015/02/15	PLOT SPEC: 1:1	
CHECKED BY	DATE	CAD CODE: PL733-1_2GL-VM.dgn	
APPROVED BY	DATE	FILE REVISION DATE:	
SIZE D	SHEET 1 of 2	DRAWING No. PL773-1_2GL-VM	

EB-2015-0120
Schedule 8



LEGEND

- PROPOSED 12" PIPE
- EXISTING GAS PIPELINE
- EXISTING EASEMENT
- WATER FEATURE
- ROADS
- LOT LINES
- TEMPORARY WORK SPACE
- PERMANENT EASEMENT
- EXISTING STATION

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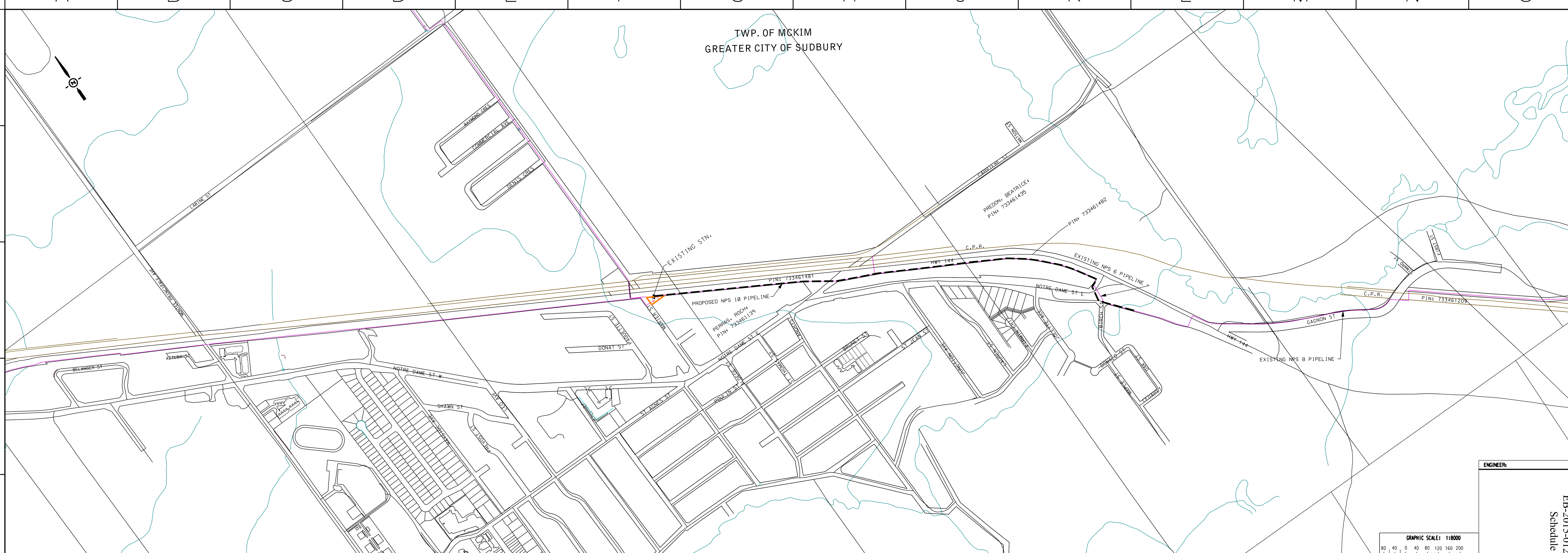
ENGINEER:

SUDBURY EXPANSION PROJECT

DRAWN BY N.R.N.	DATE 2015/03/05	PLOT SPEC: 1:1	
CHECKED BY	DATE	CAD CODE: PL733-1_2GL.dgn	
APPROVED BY	DATE	FILE REVISION DATE:	
SIZE D	SHEET 1 of 2	DRAWING No. PL773-1_2GL	



LEGEND

- PROPOSED 12" PIPE
- EXISTING GAS PIPELINE
- EXISTING EASEMENT
- WATER FEATURE
- ROADS
- LOT LINES
- TEMPORARY WORK SPACE
- PERMANENT EASEMENT
- EXISTING STATION

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ENGINEER:

EB-2015-0120
Schedule 9

SUDBURY EXPANSION PROJECT

DRAWN BY N.R.N.	DATE 2015/03/05	PLOT SPEC: 1:1	
CHECKED BY	DATE	CAD CODE: PL733-1_2GL.dgn	
APPROVED BY	DATE	FILE REVISION DATE:	
SIZE D	SHEET 2 of 2	DRAWING No. PL773-1_2GL	

GENERAL TECHNIQUES AND METHODS OF CONSTRUCTION

1. Union Gas Limited ("Union") will provide its own inspection staff to enforce Union's construction specifications and *Ontario Regulation 210/01 under the Technical Standards and Safety Act 2000, Oil and Gas Pipeline Systems*.
2. Pipeline construction is divided into several crews that create a mobile assembly line. Each crew performs a different function, with a finished product left behind when the last crew has completed its work.
3. Union's contract specifications require the contractor to erect safety barricades, fences, signs or flashers, or to use flag persons as may be appropriate, around any excavation across or along a road.
4. It is Union's policy to restore the areas affected by the construction of the pipeline to "as close to original condition" as possible. As a guide to show the "original condition" of the area, photos and/or a video will be taken before any work commences. When the clean-up is completed, the approval of the landowner or appropriate government authority is obtained.
5. Construction of the pipeline includes the following activities:

Locating Running Line

6. Union establishes the location where the pipeline is to be installed ("the running line"). For pipelines within road allowances, the adjacent property lines are identified and the running line is set at a specified distance from the property line. For pipelines located on private easement, the easement is surveyed and the running line is set at the specified distance from the edge of the easement. The distance from the start of the pipeline (or other suitable point) is marked on the pipeline stakes and the drawings.

Clearing and Grading

7. The right-of-way is prepared for the construction of the pipeline. When required, bushes, trees and crops are removed and the ground leveled. When required, the topsoil is stripped and stored, and/or sod is lifted.

Removing Existing Pipeline

8. The existing trench is excavated exposing the existing pipeline. The spoil material is placed onto the easement. The existing NPS 10 pipeline will be removed from the trench, cut into sections and trucked off site.

Stringing

9. The joints of pipe are laid end-to-end on supports that keep the pipe off the ground to prevent damage to the pipe coating.

Welding

10. The pipe is welded/fused into manageable lengths. The welds in steel pipe are radiographically inspected and the welds are coated.

Burying

11. Pipe may be buried using either the trench method or the trenchless method. All utilities that will be crossed or paralleled by the pipeline are located by the appropriate utility prior to installing the pipeline. Prior to trenching, all such utilities will be hand-located or hydro vacuumed.

    Trench Method: Trenching is done by using a trenching machine or hoe excavator depending upon the ground conditions. Provisions are made to allow residents access to their property, as required. All drainage tiles that are cut during the trench excavation are flagged to signify that a repair is required. All tiles are measured and recorded as to size, depth, type and quality. This information is kept on file with Union. If a repair is necessary in the future, Union will have an accurate method of locating the tile. Next, the pipe is lowered into the trench. For steel pipe, the pipe coating is tested using a high voltage electrical tester as the pipe is lowered into the trench. All defects in the coating are repaired before the pipe is lowered in. Next, if the soil that was excavated from the trench is suitable for backfill, it is backfilled. If the soil is not suitable for

backfill the trench is backfilled with suitable material such as sand. After the trench is backfilled, drainage tile is repaired.

Rock Excavation: Rock in solid beds or masses will be removed by "Hoe Ram", where practical. Where rock that is too hard to "Hoe Ram" is encountered, blasting will be permitted in accordance to Union's construction procedures and the *Canadian Explosives Act*. The contractor shall obtain all necessary permits and shall comply with all legal requirements in connection with the use, storage and transportation of explosives.

Trenchless Method: Trenchless methods are alternate methods used to install pipelines under railways, roads, sidewalks, trees and environmentally sensitive areas. The trenchless method proposed for the NPS 12 pipeline is directional drilling. This method involves setting up a receiving hole and an exit hole, drilling a pilot hole on the design path, reaming the pilot hole larger by passing a cutting tool and pulling the pipe back through the bored hole.

Tie-Ins

12. The sections of pipelines that have been buried using either the trench or trenchless method are joined together (tied-in).

Cleaning and Testing

13. To complete the construction, the pipeline is cleaned, tested in accordance with Union's specifications using water.

Restoration

14. The final activity is the restoration. The work area is leveled, the sod is replaced in lawn areas and other grassed areas are re-seeded. Where required, concrete, asphalt and gravel are replaced to return the areas to as close to the original conditions as possible.

Specification for Rock Excavation

3.10.1 Application

This specification applies to all solid rock (in its original formation) encountered in trenching for pipelines and which must be removed. Throughout this specification, all sections applicable to rock excavation using the Swartklip Boulder Buster are identified with the statement "applicable to the Swartklip Boulder Buster."

3.10.2 EHS References

- Construction Regulations, Sections 196-206

3.10.3 General Requirements

Exercise great care to prevent damage to underground structures such as cables, conduits, and pipelines, water wells, springs and other underground water courses. Consult Environmental Construction Permitting when blasting near water courses. If the techniques of the Contractor appear to be injurious to these installations or formations, the Company maintains the right to require the cessation of work.

Solid rock, as classified by the Engineer, will be removed to a depth of 100 mm below the standard ditch depth to allow for padding between the rock and the pipe. The excavated ditch will be padded to a minimum thickness of 100 mm with earth, sand (free from rock), or other protective material approved by the Engineer. The padding material is to be placed in the trench in such a manner as to protect the pipe and the pipe coating from any hard points of rock. Use rockshield in locations designated by the Engineer.

Applicable to the Swartklip Boulder Buster - All Boulder Buster Operators must be certified and must carry proof of such certification while operating this equipment.

3.10.4 Use of Explosives

3.10.4.1 General

The Engineer will be notified of the Contractor's intention to use any explosive and may give consent to such use only after careful examination of the particular site of such use. After a careful inspection of the site, if there is an existing pipeline within 30 m of any proposed blasting, Form 2707, Blasting Information Request is to be filled out for blasting approval. When it is necessary to use explosives, blasting will not be done until occupants of nearby buildings, stores, houses, places of business and landowners have been notified in writing by the Contractor sufficiently in advance to protect property and livestock. The Qualified Individual will be present during blasting.

Take every precaution to protect the public and its workers from any injury or harm which might arise from the use of explosives. Only thoroughly experienced workers in handling explosives will be permitted to supervise, handle, haul, load or detonate explosives.

Blasting is not permitted within 5 m of an existing operating pipeline without a consultant's recommendation and Pipeline and Station Operations Engineering written approval. However, in no event will any explosives be used at a point where, in the opinion of the Engineer, the use of such explosives would be dangerous to the existing pipeline(s) of the Company. A minimum of 48 hours notice must be given to the Company so that mainline valves may be inspected for accessibility and operability before blasting.

Where specified by the Engineer, furnish the necessary equipment to employ air bubble curtains at water crossings for the protection of fish and wildlife during blasting operations.

3.10.4.2 Blasting Consultant

The Contractor will employ, at his expense, the services of a blasting specialist to advise on drilling, loading patterns, and vibration levels as necessary.

3.10.4.3 Storage and Handling

Under no circumstances will detonating caps be stored with explosives. Store detonating caps in a separate place according to applicable codes and regulations. Do not prime or fuse explosives until just before use. Under no circumstances are loaded and fused holes to be left overnight.

3.10.4.4 Flyrock and Matting

Blanket all shots using heavy duty rubber blasting mats in good condition (e.g., joined tires). Do not use mats that have suffered a significant loss of rubber laminations. Do not use overburden material and sandfill as matting material.

Keep all flyrock to an absolute minimum and do not allow flyrock to be deposited outside the right-of-way. If flyrock is scattered over the right-of-way or adjacent property, clean up such flyrock to the satisfaction of the landowner and his tenants. Haul the flyrock to a location satisfactory to the Engineer for disposal. If, in the opinion of the Qualified Individual, the amount of rock scattered over the right-of-way or adjacent property is unwarranted, the Company maintains the right to require the cessation of work.

Notwithstanding the above requirements, place the mats over the blast area with the following minimum laps:

1. Within 50 metres of any house, building, structure, hydro tower, overhead wire or parked car, the mats will be double layered with lapped joints.
2. Use a 25% (minimum) lap at each abutting mat elsewhere.

Lay additional mats, as necessary, to control flyrock and to protect seismographic equipment at blast monitoring locations.

3.10.4.5 Warning Signals

Give distinct warning signals with an air horn during all blasting.

- Give five short signals to warn of pending detonation and need to clear the area.
- Give three short signals immediately before the blast.
- Give one long signal after the blast to indicate the safe completion of the blast.

3.10.4.6 Blasting

Do not blast before 8:00 am or after 7:00 pm, nor on Sundays and Statutory Holidays. In addition, do not start loading for any blast unless the loading can be completed and the blast matted and detonated no later 7 pm.

3.10.4.7 Vibration Limits

During all blasting operations, the Contractor will limit the ground vibration operated by each blast to the following limits:

- Where blasting is occurring within 30 m of an existing operating pipeline, the vibration will be controlled to a maximum peak particle velocity (PPV) of 50 mm/s above the pipeline.
- Where blasting is occurring within 200 m of any structure and any other sites as required by the Company, the peak particle velocity will not exceed 50 mm/s.
- In ground adjacent to concrete or grout in place less than 60 hours, the peak particle velocity will not exceed 10 mm/s.

The above limits refer to the intensity of the ground vibrations generated by blasting in any of the three mutually perpendicular planes, measured at the nearest point above a line to the location of the blasting. Vibration monitoring shall be supplied by the contractor at his expense.

The Contractor must submit revised blasting patterns to the Company, and as set out in this specification, if unable to maintain satisfactory levels of vibration during blasting.

3.10.4.8 Monitoring Procedures for Blasting Near Existing Pipeline

The Blasting Contractor will retain the services of a Blasting Consultant to monitor vibration levels on existing Company pipelines during each blast if:

- The pipeline is greater than NPS 12; or
- The pipeline, at the time of blasting, is operating at a pressure greater than 1,723 kPa; or
- The maximum explosive charge per delay values exceed those given in Table 3.10.1.

3.10
Specification for Rock Excavation

The blasting consultant will also monitor the vibration and air overpressure levels at any nearby houses and structures within a minimum of 200 m from the blast and any other sites as required by the Company.

The monitoring equipment will consist of a portable seismograph capable of producing on-site printouts that include the following information:

- Ground vibrations up to 200 millimetres per second (mm/s) of peak particle velocity (PPV) in the three mutually perpendicular directions.
- Frequency of all three mutually perpendicular directions.

Set up the transducers at the nearest point above a line to the location of the blasting.

The Contractor will assist the blasting consultant in setting up the equipment, in the event that monitoring is required on an existing pipeline. All excavation in the vicinity of existing pipelines will be carried out in the presence of a Qualified Individual and only after the pipe location has been established by electronic means.

The printout of each seismographic reading will be given to the Qualified Individual immediately after each blast.

Table 3.10.1

Stand-off distance from facility (m)	Maximum Explosive Charge (kg per delay)
5	1.00
6	1.44
7	1.96
8	2.56
9	3.24
10	4.00
12	5.76
14	7.84
16	10.24
18	12.96
20	16.00
22	19.36
24	23.04
26	27.04
28	31.36
30	36.00

3.10.4.9 Excessive Vibration Readings

If there is any one seismographic reading in excess of the limits set out above, the following will apply:

1. Should any two consecutive seismographic readings fall between 50 and 80 mm/s PPV, the Blasting Contractor will cease all further blast hole loading other than those required for a third reading. The pipe will be exposed and a third reading will be taken on the pipe.
   - **If this third reading is below 50 mm/s PPV,** blasting may continue.
   - **If the third reading exceeds 50 mm/s PPV**, the Blasting Contractor will cease all blasting in the area and move to a new area and continue blasting. The Blasting Contractor will then submit a revised loading pattern to the Company for review in the area where blasting has been discontinued.
2. Should any one seismographic recording be in excess of 80 mm/s PPV, the Contractor will cease all further blast hole loading other than those required for one subsequent reading. The pipe will be exposed and the subsequent reading will be taken on the pipe.
   - **If this reading is below 50 mm/s PPV**, blasting may continue.
   - **If this reading exceeds 50 mm/s PPV,** the Contractor will cease all blasting in the area and move to a new area and continue blasting. The Contractor will then submit a revised loading pattern to the Company for review in the area where blasting has been discontinued.
3. In any area where blasting has been discontinued, blasting may only be resumed when permitted by the Qualified Individual.

3.10.4.10 Excavating and Backfill

When excavating loose rock from the trench after blasting, the Contractor must keep loose rock separate from any overburden that has previously been stripped. This can either be done by piling the overburden on the "spoil" side of the trench and the loose rock on the "work" side of the trench to be hauled out, or by piling both the overburden and the loose rock separately on the spoil side of the trench. The method to be used will depend upon the amount of overburden, width of the trench, and the type of terrain. The Qualified Individual will decide the preferred method and the material to haul away.

After backfilling operation is complete, the Contractor will remove excess material from the right-of-way. The material will be disposed of at a location satisfactory to the Engineer. This is also applicable to the Swartklip Boulder Buster.

3.10.4.11 Permits

Any permits necessary for blasting will be obtained by and at the expense of the Contractor, unless specified in the work description in the construction contract. Comply with all legal requirements in connection with the use, storage and transportation of explosives, including but not limited to the Canadian Explosives Act. Proper notification will be made to the authority having jurisdiction when required and conformance with all legal requirements will be made.

3.10
Specification for Rock Excavation

3.10.5 Damages

The Contractor will take all necessary precautions not to damage any structure owned by others. If damage should occur, the owner of the damaged structure will be contacted jointly by representatives of the Company and the Contractor and the repairs will be made at the Contractor's expense under the direction and to the satisfaction of the owner. This also includes damage to Company pipelines. This is also applicable to the Swartklip Boulder Buster.

3.10.6 Measurements

Rock removed for the clearing of right-of-way will not be considered as rock excavation.

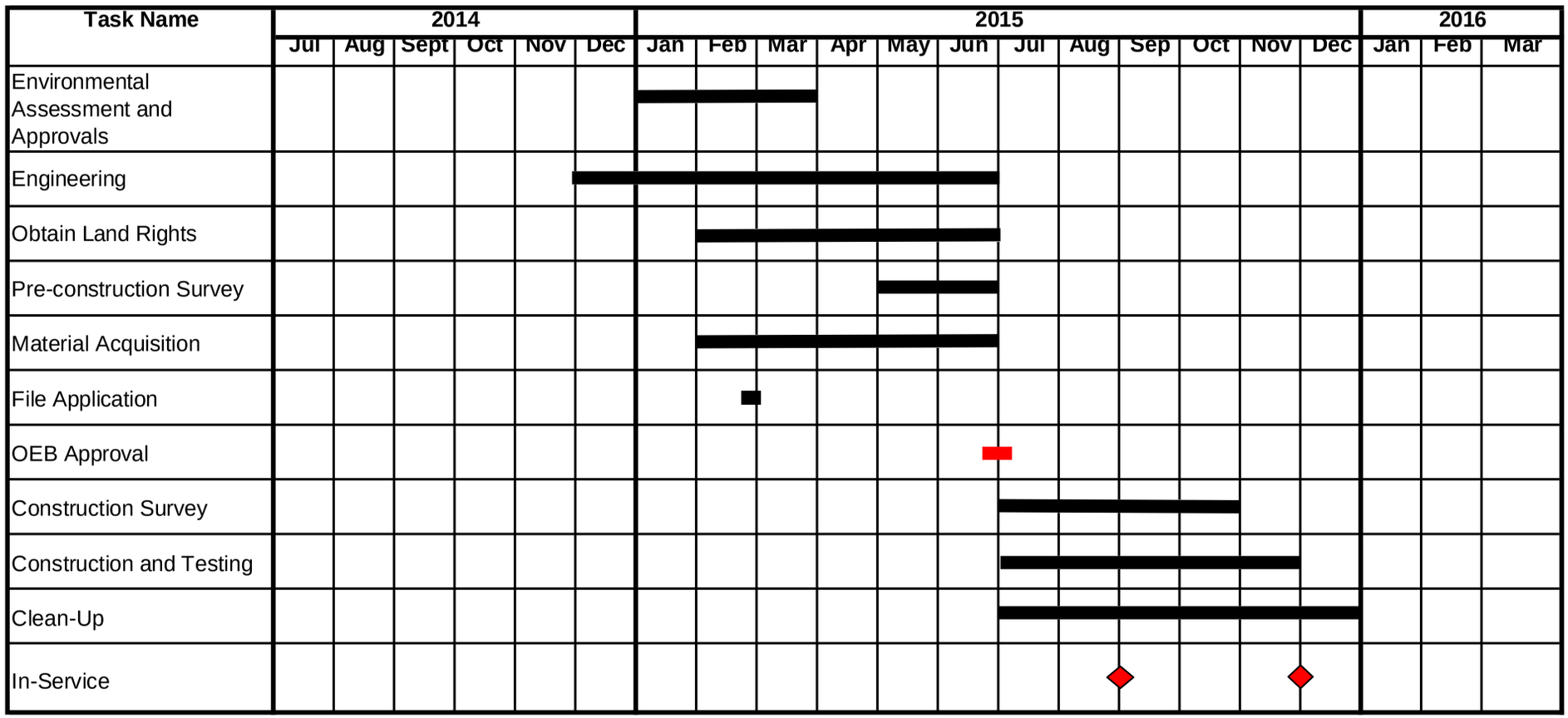
A record of the location and quantities of all trench excavation classified as solid rock will be made for each property by the Inspector. This record will be submitted to the Contractor for acceptance and signature, after acceptable trench has been completed across the property. When signed by authorized representatives for both parties, this record will form the basis for calculating the compensation due to the Contractor for trenching in solid rock.

All areas to be considered as loose rock requiring removal by backhoe must be authorized by the Qualified Individual at the time the trench is being dug. No other areas will be considered as loose rock excavation. This is also applicable to the Swartklip Boulder Buster.

3.10.7 Basis of Payment

Solid rock excavation will be paid for at the unit price per linear metre as covered in Item 18 (a) (b) or (c) of the Schedule of Unit Prices. Loose shale rock that must be removed by backhoe will be paid for at the price per linear metre as given in item 18 (d), or (e) but will not include rock already paid for in item 18 (a), (b), or (c). Earth or sand padding in bottom of trench salvaged from spoil and disposal of rock spoils, will be considered as part of the cost of rock excavation.

Sudbury Expansion
Pipeline Construction Schedule



Sudbury Reinforcement / Victoria Mine

DESIGN AND PIPE SPECIFICATIONS

Design Specifications: NPS 12, 10, 6

Class Location (existing)	-	Class 1, 2 and Class 3
Design Class Location	-	Class 3
Design Factor	-	0.8
Location Factor (General)	-	0.700
Location Factor (Roads/Railways)	-	0.625
Location Factor (Stations)	-	0.625
Maximum Design Pressure	-	3723 kPa
Maximum Operating Pressure	-	3723 kPa (current)
Test Medium	-	Water
Test Pressure	-	5212 kPa
Valves/Fittings	-	PN 100
Minimum Depth of Cover	-	0.9 m

Pipe Specifications:

Size	-	NPS-12
Outside Diameter	-	323.9 mm
Wall Thickness	-	5.6 mm
Grade	-	359 MPa
Type	-	Electric Resistance Weld
Description	-	C.S.A. Standard Z245.1-14
Category	-	Cat. I, M5C
Coating	-	Yellow Jacket, Dual Layer FBE
% SMYS	-	30%

Size	-	NPS-10
Outside Diameter	-	273.1 mm
Wall Thickness	-	6.4 mm
Grade	-	359 MPa
Type	-	Electric Resistance Weld
Description	-	C.S.A. Standard Z245.1-14
Category	-	Cat. I, M5C
Coating	-	Yellow Jacket, Dual Layer FBE
% SMYS	-	22.1%

Size	-	NPS-6
Outside Diameter	-	168.3 mm
Wall Thickness	-	4.8 mm
Grade	-	359 MPa
Type	-	Electric Resistance Weld
Description	-	C.S.A. Standard Z245.1-14
Category	-	Cat. I, M5C
Coating	-	Yellow Jacket
% SMYS	-	18.1%

SUDBURY EXPANSION PROJECT

ENVIRONMENTAL PROTECTION PLAN

Prepared By: Union Gas Limited
Environmental Permitting
March, 2015

TABLE OF CONTENTS

1.0 INTRODUCTION

This Environmental Protection Plan (EPP) has been prepared to document a plan by Union Gas Limited (Union) for the protection of the environment during the replacement and upsizing of the Sudbury Lateral Line natural gas system in the City of Greater Sudbury. The project will provide additional gas volumes to businesses in the Sudbury area. Maps showing the general locations of the project areas can be found in Appendix 1.

Specifically this report will:

- Describe the proposed work necessary for the Project.
- Describe the procedures that will be followed during construction of the facilities.
- Identify potential environmental impacts and recommend measures to minimize those impacts.

Some sections of pipeline to be replaced were originally installed in the late 1950's as part of the "Sudbury Lateral System". This system commences at both North Bay and Martin River joining together at Warren where it continues west to the eastern boundary of Sudbury. The pipeline then extends north around Sudbury with branch systems supplying the Towns of Capreol, Val Caron, Rayside, Balfour and Onaping and a branch continuing west to serve Espanola.

Union is proposing to construct the pipelines in 3 sections

Section 1

This project will involve the installation of approximately 2.3 kilometres of a new NPS 6 inch steel natural gas pipeline to supply the KGHM International, FNX -Victoria Mine. The pipeline will commence with a tie-in point at the corner of Fairbank Lake Rd. and Crean Hill Rd. where it will proceed north on the west side of the road within road allowance to a customer station.

Section 2

In the year 2000, Union Gas replaced and abandoned an existing NPS 10 inch natural gas pipeline installing a new NPS 12 pipeline within a new adjacent easement from the Frood Road Town Border Station to LaSalle Rd. This project will involve the removal of a portion of the abandoned NPS 10 inch natural gas pipeline and its replacement with a new NPS 12 inch pipeline from the Frood Station to

LaSalle Road for a distance of approximately 1600 metres. The existing abandoned NPS 10 inch pipeline will be removed and replaced with the NPS 12 inch within the same easement.

Section 3

This project involves the installation of a new NPS 10 inch pipeline that will support the growing demands in the Sudbury area. The pipeline will commence at the Azilda Town Border Station at the corner of Marier St. and Regional Highway 35 in Town of Azilda and proceed south within the municipal road allowance for approximately 2.0 km to a tie-in point at an existing NPS 6 inch pipeline on the south side of Regional Highway 35.

This EPP defines the environmental features potentially affected by the proposed pipelines and documents the various environmental protection measures that will be implemented by Union during pipeline construction to reduce the effect on these features. Union has retained Azimuth Environmental Consulting (Azimuth) to prepare an Environmental Report. The report addresses the environmental implications of the installation of the new and replacement pipelines as they relate to the potential effects on existing and proposed land use and natural heritage features. The report can be found in Appendix 2.

2.0 PLANNING PROCESS

2.1 Key Activities

The following is a summary of the key activities for the development of the Sudbury Expansion Project.

Project Initiation	January 15, 2015
Determination of Route Alternatives	February, 2015
Agency Contact	February, 2015
Environmental Background Information Collection	January/February 2015
Confirmation of Pipeline Route	February, 2015
Finalize Environmental Report	March, 2015
Ontario Energy Board Application	March, 2015
Ontario Energy Board Decision	Summer, 2015
Phase I Construction	Summer/Fall, 2015
Pipeline In Service	Fall, 2015
Post Construction Monitoring	Spring 2016

Agencies, First Nations, Métis Nation and directly affected landowners have and will continue to be consulted regarding this project. As a result of the short lengths of pipe, the fact that some sections will be placed within existing easements and the limited number of parties impacted by the pipeline replacements, Union determined that a public open house was not required for this project. A notice will be posted in the local newspapers informing the public about the project following the Ontario Energy Board filing. Any issue raised by the general public will be documented and Union will make every effort to resolve the issue prior to construction.

Meetings have been held with KGHM, Vale, the City of Greater Sudbury, First Nations and Métis Nation regarding the project. These groups as well as other agencies will provide Union with general information pertaining to the project areas. No significant environmental concerns, which could not be mitigated using Union's standard construction practices, have been brought forward thus far in response to the meetings. Presently, Union is not aware of any significant landowner or public concerns associated with the construction of this pipeline project.

Union has discussed the project with the Ministry of Natural Resources and Forestry (MNRF) pertaining to Species at Risk information and Conservation Sudbury (CS). A permit will be required from CS for the watercourse crossings.

3.0 DESCRIPTION OF PROJECT AREA

The project will be constructed in 3 sections.

Section 1 will be located within the south west area of the City of Greater Sudbury and will consist of approximately 2.3 kilometres of a new NPS 6 inch steel natural gas pipeline to service the Victoria Mine, installed within the road allowance of Crean Hill Rd.

Section 2 involving the reinforcement of the Sudbury Lateral System is located in the City of Greater Sudbury. The general location of the study area can be found in Appendix 1. The areas in which pipeline construction will be located includes an existing Union Gas easement within the Vale property.

The Vale area consists of vacant land which is generally composed of bedrock, rock fill or mineral soil in low areas between bedrock.

Section 3 will be located entirely within municipal road allowance between the Azilda Town Border Station at the corner of Marier St. and Regional Highway 35 in Town of Azilda within the City of Greater Sudbury

4.0 ROUTING

4.1 Route Selection

In Section 1 the new NPS 6 inch pipeline that will service the Victoria mine will be installed within the municipal road allowance of Crean Hill Road as instructed by the municipality. This road is scheduled for upgrades to support the mine in early 2015 by KGHM but will remain a municipal road.

Union's preferred location for Section 2 on the Sudbury reinforcement looping will utilize the existing easements of the abandoned NPS 10 inch pipeline where the NPS 10 inch line will be removed and the new NPS 12 inch pipeline installed within the same easement.

As an existing NPS 6 inch natural gas pipeline exists within the road allowance on the west side of Regional Highway 35, Section 3 will be installed within the same corridor paralleling the NPS 6 inch pipeline.

5.0 CUMULATIVE IMPACTS

The following section considers the cumulative effects of construction on the lands due to the project. The definition of cumulative effects used in this report is: "changes to the environment that are likely to result from a particular project in combination with other projects or activities that have been or will be carried out". It is expected that construction of these natural gas pipeline systems will result in both positive and minor negative cumulative effects.

There may be cumulative impacts between the new NPS 6 inch pipeline to the Victoria mine and the scheduled Crean Hill Rd. upgrade in the early spring of 2015. With the establishment of the mine the road will be upgraded and widened to contend with the added traffic. Union is proposing to install the pipeline following the road construction. Additional noise, dust and traffic could be an issue during construction however the benefits of having this facility will, in the long term, be a positive impact.

In view of the fact that the reinforcement sections of pipeline will be installed in existing easements or within road allowance, it is not anticipated there will be any cumulative effects. The short lengths of pipeline, the limited number of landowners and the fact that portions of the project will be replaced within an existing trench, limits the impacts of the project.

6.0 POTENCIAL IMPACTS AND MITIGATION

6.1 General Environmental Features

Watercourse Crossings

It will be necessary to cross 1 watercourse during the reinforcement sections of this project. A number of techniques will be utilized to complete these crossings. Where ground conditions permit, an attempt will be made to use the horizontal directional drill (HDD) method where there is flowing water following the procedures as outlined in Unions Generic Sediment Control Plan – Horizontal directional Drill. The drawing can be found in Appendix 3.

Where it is not possible to HDD or there is no water in the watercourse, the crossing will be performed using the Dam and Pump techniques as per the Union Gas Limited and Fisheries and Oceans Canada – Ontario Great Lakes Area Agreement (DFO-OGLA/UGL AGREEMENT 2008), described in the Union Gas / DFO endorsed Generic Sediment Control Plans – Dam and Pump Crossing. The drawing can be found in Appendix 3.

Union will acquire all necessary permits from the Ministry of Natural Resources, Department of Fisheries and Oceans and Conservation Sudbury when crossing or working in the vicinity of a watercourse.

Tree Clearing

It will be necessary to remove shrubs and sapling size trees within the existing abandoned NPS 10 Union Gas easement. This vegetation is generally between 1 to 3 metres in height and are scattered along the pipeline route.

Any necessary tree clearing will be restricted from occurring between April 1 to August 31 in accordance with the Migratory Bird Convention Act and Migratory Bird Regulations, to avoid the avian nesting period. If project scheduling requires the removal of trees or shrubs during the nesting period, a qualified ornithologist will be required to assess the area of removal for evidence of nesting activity prior to removal to avoid any potential loss of active nests.

Archaeology

Union will retain the services of an archaeological consultant to initiate a Stage I and Stage II Archaeological Survey. The survey will take place prior to construction in accordance with the Ministry

of Tourism, Culture and Sport guidelines to identify known or potential archaeological planning constraints within the project study area. The survey will serve to confirm the presence of significant archaeological resources subject to potential impact from the proposed Project activities.

If deeply buried cultural remains are encountered during construction, all activities will be suspended and the archaeological consultant as well as the Ministry of Culture will be contacted to determine the appropriated course of action.

Water Wells

A hydrogeologist will review the area before construction. Based on this preconstruction assessment, if necessary a water well monitoring program will be implemented in areas where the hydrogeologist believes that pipeline construction may affect water wells. The hydrogeologist will also be available during construction in the event that there are complaints regarding water wells.

Blasting

Blasting will be necessary for pipeline construction on portions of the reinforcement pipelines. Union will follow its standard Rock Excavation Specification 3.10. during pipeline construction.

Contaminated Soils

Union will follow its standard procedures relating to contaminated soils on the project. Based on the initial review of the sites and previous work completed in the same area, Union does not expect to encounter any contaminated material along the pipeline route.

6.2 Mitigation Summary

Table 1 provides a general summary of the potential impacts as well as the proposed mitigation measures that will be implemented during construction to minimize impacts on the environment.

7.0 CONSTRUCTION, OPERATION AND MAINENANCE

7.1 General Construction Practices

The following is a summary of the general construction of the practices that will occur during pipeline construction:

Clearing and Grading
This prepares the right-of-way to allow for the construction of the pipeline. Brush and trees removed and the ground levelled.

Stringing
The pipe is strung next to the proposed pipeline location. The sections of pipe are laid end to end and set on supports that keep the pipe off the ground and prevent damage to the pipeline coating.

Trenching
To install the pipeline a trench will be dug. The trench is usually excavated using a Backhoe or Hoe-ram. The Hoe-ram is used to break up rock without the use of blasting similar to a jackhammer. Some areas will require blasting however. The excavator will dig the trench and place the spoil in a pile beside the trench. Once the trench is excavated, the pipeline will be installed and if the spoil is suitable, it will be placed back in the trench. Any unsuitable spoil will be removed from the site and disposed of in an appropriate manner.

Cleaning and Testing
To complete construction, the pipeline is cleaned and pressure tested in accordance with the Energy Act.

Restoration
It is Union's policy to restore the affected areas to "as close to original" condition as practicable.

Road Crossings
It is proposed that all paved road crossings will be bored. The procedure of boring is essentially drilling a hole under the roadway, removing the auger and inserting the pipeline into the hole. To set the auger in place, sending and receiving pits or boring bays must be dug on either side of the road. The length of the crossing and the size of the pipe determine the size of the boring equipment and bore bays.
In the event that it is not possible to bore the crossings, they will be open cut after discussions with the local roads authority. The public will be notified of any road closures. Union will attempt to maintain one lane of traffic at all times.

7.2 Operation and Maintenance Practices

Once the pipeline system is installed it has to be maintained and serviced on a regular basis. The following paragraphs will describe the most common work to be performed by Union personnel after the gas main has been installed.

Locates

Union provides a free locate service to any person or business who may be working near a pipeline. The pipeline locator is comprised of two parts, a transmitter and a receiver. To perform a locate, the transmitter is connected to the gas facility. The transmitter sends a small current through the facility, which is picked up by the receiver. The location of the pipeline is then marked using stakes or yellow paint. No excavation is required.

Leak Surveys

To ensure that there are no leaks in the system, a company representative or agent will "leak survey" the pipeline. The leak surveyor will walk along the gas main and carry a small machine that can detect natural gas. No excavation is required to complete the leak survey. However, if leaks are detected, excavations will be required to repair the pipeline. These repairs will be completed as soon as possible after they are detected.

8.0 SUMMARY AND RECOMMENDATIONS

This Environmental Protection Plan describes a strategy for the protection of the environment during the construction of a natural gas pipeline in the Sudbury area. The plan has been developed by noting the environmental features in the area and the potential impacts of construction. The plan recommends a number of measures to reduce the impacts of the development.

It is recommended that the pipeline be monitored the year after construction to ensure that restoration measures were effective. If additional restoration measures are required, they should be completed as soon as possible. It is also recommended that landowners have access to Union personnel in order to address any concerns that may arise during construction.

With the implementation of the recommended mitigation measures, and Union's ongoing landowner and agency communication program, the Sudbury Expansion Project is not anticipated to have any significant adverse environmental or socio-economic effects.

TABLE 1: MITIGATION SUMMARY
PIPELINE CONSTRUCTION

Issue	Potential Impact	Proposed Mitigation
Paved Driveways and Roadways	Disruption to local traffic, landowners	• All paved roadways and driveways to be bored if practical. • If it is not possible to bore driveways and roads, steel plates will be on site to provide access to landowners. The Company will attempt to keep one lane of traffic open if possible. Traffic controls will be implemented as required. • Driveways will be repaired as soon as possible. • For driveways that require cutting, the excavation is to be filled with sand and granular material and compacted.
Gravel Driveways and Roadways	Disruption to landowners and tenants	• Roadways and driveways will be open cut. • Maintain one lane of traffic if possible. Implement traffic controls as required. • Steel plates will be kept on site to provide access to landowners. • Driveways will be repaired as soon as possible.
Traffic	Disruption to local citizens	• At least one lane of traffic will be maintained at all times. • Flag persons and warning devices will be used to notify traffic of the construction zone in accordance with Ministry of Transportation standards.
Public Safety	Public safety concerns	• Company inspectors to ensure public safety on construction site. • Ensure proper signage and flag persons if required.
Commercial/Retail Businesses and Recreational Areas	Disruption to businesses	• Ensure access at all times. • Restore area as soon as possible after construction. • Schedule construction with owners or managers, where necessary.
Construction Noise	Disturbance to landowners.	• Construction to be carried out during daylight hours whenever possible. • Ensure equipment is properly muffled.
Nuisance Dust	Disturbance to landowners.	• Control dust as required.
Construction Equipment	Disturbance to landowners.	• Equipment will be stored off road shoulders whenever possible when not in use.
Landowner Concerns	Disturbance to landowners.	• The Company to provide landowners and tenants with the telephone numbers of supervisory personnel.
Front Yards	Disturbance to landowners.	• Landowners and will be notified prior to construction. • Restore lawns and yards to original condition

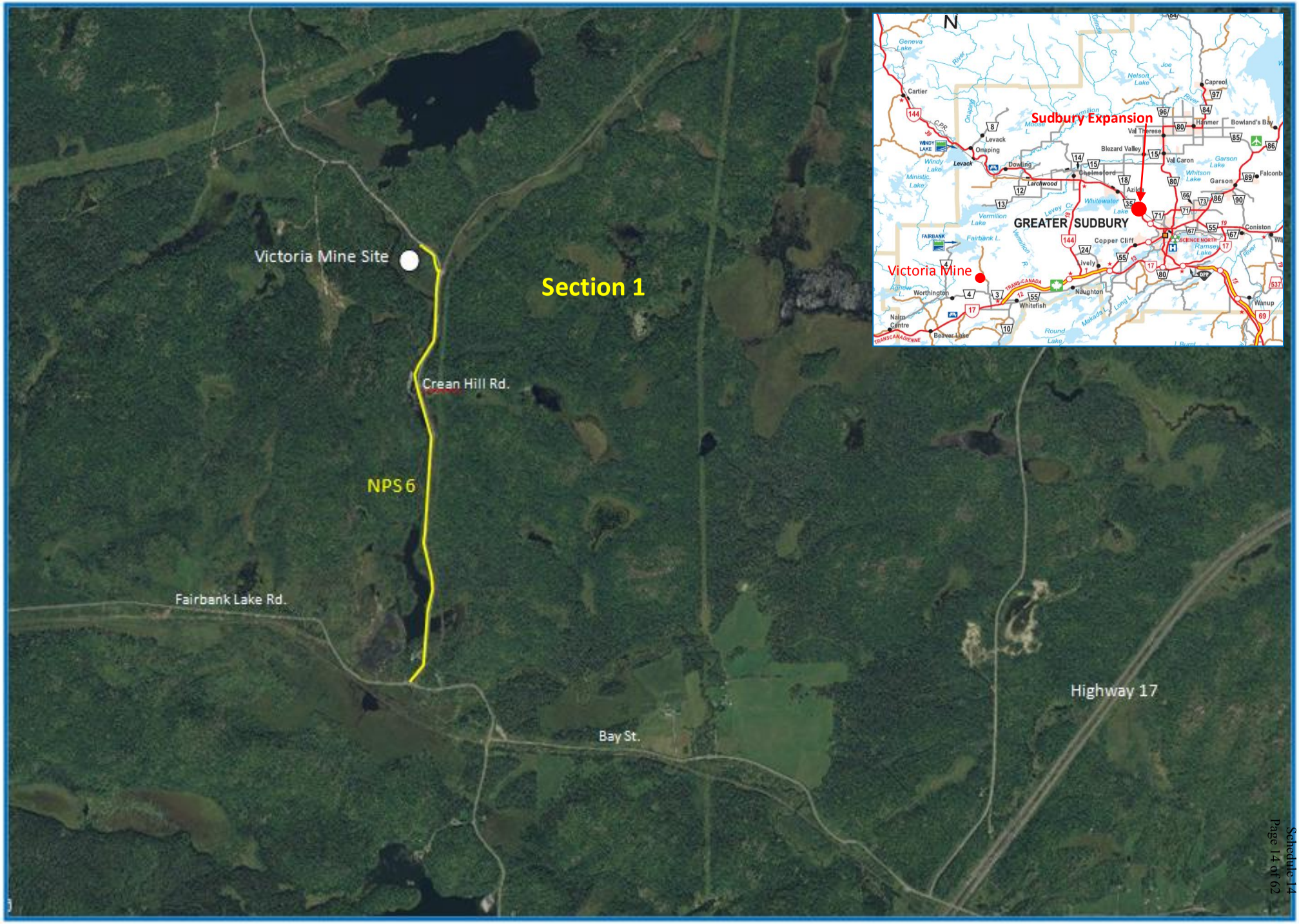
TABLE 1: MITIGATION SUMMARY (Continued)

Issue	Potential Impact	Proposed Mitigation
Mailboxes	Disruption to Landowners	• Notify landowners prior to construction. • Restore as soon as possible. • Provide temporary alternative if necessary.
Underground Utilities	Disruption of services	• Obtain "locates" from all utilities. • If utilities are damaged, repair as soon as possible.
Archaeology	Disturbance of heritage resources	• Stop construction if artifacts are encountered. • Notify Ontario Ministry of Citizenship, Culture and Recreation. • Assist archaeologist in developing mitigation measures.
Water Wells	Disruption to water supply	• If water quality/quantity problems occur as a result of construction activities, the Company will supply potable water until the situation has been corrected. • Conduct hydrogeology investigation and monitor wells as required.
Vegetation Cover	Loss of vegetative cover leading to soil erosion	• Small trees and shrubs to be removed outside of avian nesting window. • Restore cover by means of seeding or hydro-seeding as soon as possible.
Watercourse Crossings	Water quality concerns	• Union will comply with all permit conditions. • Union will adhere to all Company specifications and Department of Fisheries and Oceans endorsed Generic Sediment Control plans for watercourse crossings.
Natural Areas	Sedimentation run-off	• Ensure sediment barriers such as straw bales/sediment fencing are used where there is a potential for run-off.
Soils: Erosion	Introduction of sediment/ silt to adjacent lands	• Restore disturbed soils as soon as possible after construction following municipal and Company specifications.
Road Side Ditches	Water quality concerns	• Ensure ditches are returned to pre-construction condition as quickly as possible. • Install rock rip rap/straw bale check dams as required.
Spills	Public safety issue	• Ensure the Ministry of Environment is notified. • Clean up spilled material.
Contaminated Soils	Dealing with contaminated materials Public safety issue	• Ensure the Ministry of Environment is notified, if necessary. • Clean up contaminated material following Company and MOE procedures.
Site Restoration	Disturbance to public and private properties	• Construction area to be restored as soon as possible upon completion of pipe installation. • Disturbed areas to be replaced as close as possible to preconstruction conditions.

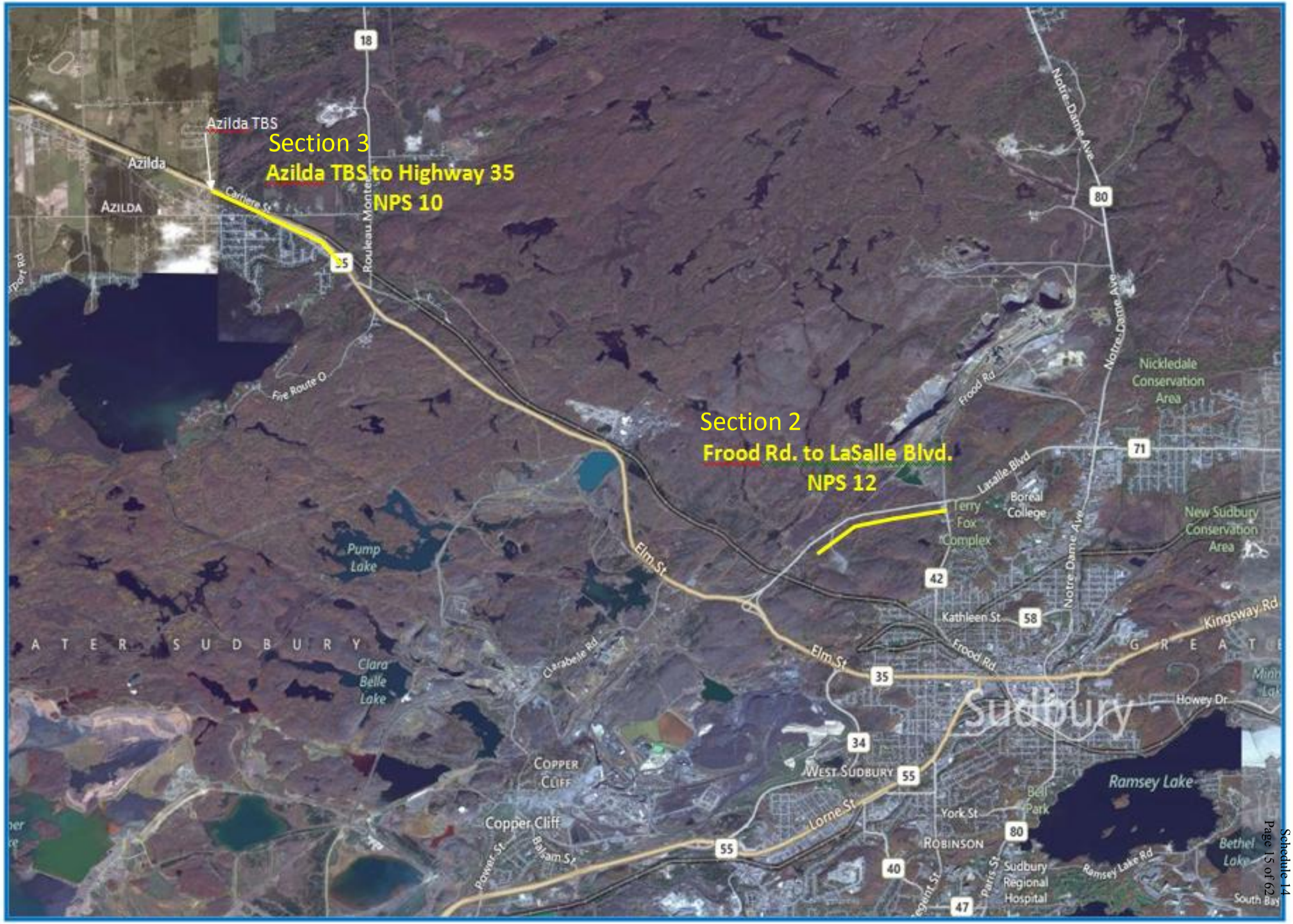
APPENDIX 1

LOCATION MAPS

VICTORIA MINE PIPELINE PROJECT



SUDBURY EXPANSION PROJECT



APPENDIX 2

ENVIRONMENTAL REPORT

Environmental Report

Sudbury Expansion Project

Prepared for:
Union Gas

Prepared by:
Azimuth Environmental
Consulting, Inc.

March 2015

AEC 15-052; AEC 15-083

AZIMUTH ENVIRONMENTAL CONSULTING, INC.
Environmental Assessments & Approvals

March 5th, 2015 AEC 15-052; AEC 15-083

Union Gas
750 Richmond St.
Chatham, ON
N7M 5M1

Attention: Norm Dumouchelle, Environmental Planner

Re: Environmental Report for Sudbury Expansion Project, City of Greater Sudbury

Dear Mr. Dumouchelle:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to provide our Environmental Report for the proposed pipeline work described above. The project involves the installation of the Victoria Mine pipeline and installation of two pipeline sections in the City of Sudbury. It is our understanding that the study is required to assess the potential environmental impacts associated with the project and identify the appropriate mitigation/restoration measures to ensure impacts can be minimized during construction and operations of the pipelines.

The proposed pipeline work will not affect Provincially Significant Wetlands (PSW), Areas of Natural and Scientific Interest (ANSI), Significant Woodlands, Valley Lands, Wildlife Habitat, habitat for Endangered and Threatened Species, Shoreline Habitat or Fish Habitat on or adjacent (i.e. within 120m) to the property if the appropriate mitigation measures are implemented through the development and construction process.

Wildlife in the area will continue to utilize the naturalized communities of the property and adjacent lands. Given the nature of the development and the extensive use of road allowances, easements, and existing pipeline trenches, the natural character of the area will be maintained post development.

Please contact us if you have any questions.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Paul Neals, B.Sc.Agr.
Vice-President

Roger Holmes, MSc.
Aquatic Ecologist

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1.0 INTRODUCTION

Azimuth Environmental Consulting Inc. (Azimuth) was retained by Union Gas Limited to complete an Environmental Report (ER) for the Sudbury Expansion Project. The Sudbury Expansion Project includes installing natural gas pipelines in three sections in the Sudbury area to meet an increase need in flow capacity, including the installation of a new natural gas pipeline to the Victoria Mine. All proposed construction activities are within the Greater Sudbury area and are explained in further detail in later sections of this report. This report is divided into three sections, which assess the environmental concerns of each construction project individually (i.e., Frood Station-Lasalle Boulevard, Azilda Lateral, Victoria Mine).

The locations which the proposed projects are taking place were studied for environmentally sensitive areas (ESAs), Species at Risk (SAR), areas of natural or scientific interest (ANSIs) and other areas that could be affected.

Consultation was completed with both the Ministry of Natural Resources and Forestry (MNRF) and the Municipality of Greater Sudbury, as well as with First Nations in the area, in order to receive information on the natural features of the area and understand their opinions/concerns regarding the proposed construction activities.

2.0 BACKGROUND INFORMATION

2.1 Climatology

In Sudbury the mean annual temperature is 4°C, the mean annual daily maximum and minimum is 9°C, and -1°C respectively. The annual frost-free period averages 136 days; the last frost usually occurs around the middle of May and the first frost in early October. The mean annual precipitation is 903 mm; of which 676 millimetres falls as rain, and 263 centimetres as snow. The January average daily minimum and maximum temperatures are -18°C and -8°C respectively, and the July average daily minimum and maximum temperatures are 13°C and 25°C respectively (Environment Canada, 2015).

2.2 Geology

The rock of the area lies within the Southern Province of the Canadian Shield, which is nearby the Sudbury Basin and Sudbury Igneous Complex (SIC) to the north. The Sudbury area is known for having one of the world's largest Ni-Cu-PGE magmatic

sulphide deposits. Other significant byproducts of the area include cobalt, platinum, palladium, gold, silver, and iridium (Pearson & Pitblado, 1995).

2.3 Landscape Features

The Sudbury area was shaped by the Laurentide ice sheet more than 12,000 years ago. Along with several previous ice advances, the land was stripped of soil and overburden, which gouged the landscape, deepened existing rock basins, and exposed bare bedrock. The landscape can generally be described as being dominated by rocky hills and ridges, with numerous lakes and rivers throughout the area. Surficial soils are typically well drained, consisting of stoney sandy soils. Vegetation in the Sudbury area ranges from white pine-dominated forest stands further north, to mixed and deciduous stands in the south (Greater Sudbury Natural Heritage Report, 2013; Pearson & Pitblado, 1995).

3.0 SUDBURY EXPANSION PROJECT - FROOD STATION TO LASALLE BOULEVARD

3.1 Proposed Location

In the year 2000, Union Gas replaced and abandoned an existing NPS (Nominal Pipe Size) 10 inch natural gas pipeline and installed a new NPS 12 inch pipeline within a new adjacent easement from the Frood Road Town Border Station to the Azilda Lateral Take-Off. This project will involve the removal of a portion of the abandoned NPS 10 inch natural gas pipeline and replacement with a new NPS 12 inch pipeline for a distance of approximately 1600 metres within the same easement (Figure 1). All construction related works will be limited to the existing easement, except for a 50 metre easement that will be required for a cross over from the existing NPS 12 to the NPS 12 inch pipeline, or temporary work areas with the approval of the affected landowner. The right-of-way will be restored to the preconstruction condition in accordance with Union Gas construction and restoration practices.

3.2 Land Uses

The land use of the area where the pipeline is proposed is classified as Mining/Mineral Reserve as per Schedule 1a – Land Use Overview of the City of Greater Sudbury Official Plan (2015). The Mining/Mineral Reserve classification allows for lands to be used for mining and mining-related purposes, such as structures associated with mining.

Land within the proposed pipeline location is within an existing easement where an abandoned pipeline currently exists. This section of pipeline will be almost entirely within this easement, which runs adjacent to LaSalle Boulevard.

3.2.1 Adjacent Land Uses

Similarly to the land use where the pipeline is proposed, the adjacent land use of the area is classified as Mining/Mineral Reserve as per Schedule 1a – Land Use Overview of the City of Greater Sudbury Official Plan (2015). There should be no adverse effects to adjacent lands from the pipeline installation due to the localized nature of the pipeline construction within the existing easement/road allowance.

3.2.2 Heritage Features and Environmentally Protected Areas

There are no Areas of Natural and Scientific Interest (ANSI) or Provincially Significant Wetlands (PSW) within or adjacent to the proposed pipeline construction area as per Schedule 3 – Natural Heritage of the Official Plan (2013). There are small wetland features along Frood Road and Lasalle Boulevard in proximity to where the proposed

pipeline will go, but these are not classified as PSWs (Official Plan, 2013). Due to the presence of the previously abandoned pipeline and plans to use the existing trench for the new pipeline, there should be no additional environmental impacts from the proposed pipeline construction. Application of standard mitigation and restoration measures within the easement is expected to fully mitigate the construction and operation activities. Mitigation measures (e.g., sediment fencing) should still be taken to ensure that these wetlands are not impacted during construction, and that SAR (e.g., Blanding's turtle) associated with wetlands are restricted from being able to access the work area.

3.2.3 Hazard Lands

Hazard Lands are identified in Schedule 4 of the Official Plan, and can be classified as natural hazards (flood-prone areas and unstable soils) or hazards that are the result of human activity (mine hazards, abandoned pits and quarries, contaminated sites and waste disposal areas). There are no Hazard Lands within or adjacent to this proposed pipeline section as shown in Schedule 4 (City of Greater Sudbury Official Plan (2013b).

3.3 Forest and Vegetation Features

The land within the proposed pipeline section is classified as Non-Forested Developed Land and Rock by Figure 2 – Vegetation Cover Types (City of Greater Sudbury, 2009). Tree species and vegetation species that are present in the proposed construction area appear to be those typically found in the Canadian Shield. These include, but are not limited to, Black Spruce, Tamarack, and sphagnum moss in seasonally flooded areas or swamps, along with Balsam Fir, Red Spruce, White Pine, and Paper Birch on flats, low ridges, or near water. Hardwood tree species can also be found on upland sites, such as Sugar Maple and American Beech. There appears to be no designated significant woodlands or vegetation features where this pipeline section is proposed. All species present are commonly found in Northern Ontario.

3.4 Wildlife

Some of the typical wildlife species that would be expected to be found in forests surrounding the Sudbury area are White-Tailed Deer, Moose, Black Bear, Wolf, Racoon, Skunk, and many others that call the Canadian Shield home (Greater Sudbury Natural Heritage Report, 2013). This section is located near a roadway and the City of Sudbury, and should not have any significant impact on wildlife or their associated habitat in the area.

3.5 Species at Risk

There are no known Species at Risk (SAR) in the proposed construction area based on available data. Table 1 lists potential SAR and their associated habitat that are known to be in the Sudbury region, and mitigation measures are listed below if a SAR is encountered on the construction site.

The Ontario Breeding Bird Atlas (OBBA, 2009) was consulted to identify sensitive avian species that could be utilizing the area for breeding purposes. Data for the atlas is presented in 100km^2 data squares, each with a unique identifier. The property is located within the 17MM95 square, which contains species such as the Peregrine Falcon, Least Bittern, Common Nighthawk, Whip-poor-will, Chimney Swift, Eastern Meadowlark and Golden-winged Warbler (Appendix A). Table 2 presents a Species at Risk habitat suitability assessment in relation to this pipeline section. While there is potential habitat for a few species within this pipeline location, the probability of directly impacting their habitat is low because of the use of an existing pipeline trench.

MNR Sudbury district was contacted for an addition SAR screening assessment (Appendix C) but a response has not been received at this time.

3.6 Aquatic Resources and Riparian Zones

No watercourses will be crossed in this section of the pipeline replacement. However, construction will be adjacent to a small watercourse (< 5 metres wide) near LaSalle Boulevard. Application of standard construction and restoration mitigation measures should be implemented to ensure construction work does not impact the watercourse.

3.7 Summary and Proposed Mitigation Measures

The proposed construction works associated with the Frood Station to Lasalle Boulevard section of the Sudbury Expansion Project should not have any significant impacts on surrounding natural heritage features or wildlife. The use of an existing trench/easement to install the pipeline will not increase the footprint of the pipeline on the landscape. To help minimize any potential issues during construction, the following mitigation measures should be followed.

- Diligent application of sediment and erosion controls (e.g., erosion and sediment control fencing) is recommended during construction work in proximity to the wetland feature and watercourse along LaSalle Boulevard and the railway. This should alleviate the risk of sediment runoff into adjacent water features.

- If a SAR is encountered, all works within the vicinity of the species should cease until the animal has left the area of work. The MNR District Office must be contacted if the species must be relocated for works to proceed.
- Vegetation removal should occur outside of the sensitive breeding bird window, to prevent interruption of any avian life cycle that may occur on the property. For this pipeline location, the timing window typically falls between May 1 and July 31, but is dependent on seasonal variation. If vegetation removal is required outside this timing window, the site should be inspected for active bird nests prior to construction.

4.0 SUDBURY EXPANSION PROJECT – AZILDA LATERAL

4.1 Proposed Location

The pipeline will commence at the Azilda Town Border Station at the corner of Marier St. in Azilda and proceed south within municipal road allowance for approximately 2 kilometres to a tie-in point at an existing NPS 6 inch pipeline (Figure 1).

4.2 Land Uses

Land within the proposed pipeline location is within a municipal road allowance on the south side of Highway 35. The land on which the proposed pipeline section is being installed, along with adjacent lands, is classified as Living Area 1 and Mixed Use Commercial at the north end of the pipeline section (approximately 1.5 kilometres), and Rural at the south end of the pipeline section (approximately 500 metres) as per Schedule 1a – Land Use Overview of the City of Greater Sudbury Official Plan.

4.2.1 Adjacent Land Uses

The majority of the land use adjacent to where the pipeline is proposed is classified as Living Area 1 and Rural as per Schedule 1a – Land Use Overview of the City of Greater Sudbury Official Plan (2015). There should be no adverse effects to adjacent lands from the pipeline installation due to the localized nature of the pipeline construction within the road allowance.

4.2.2 Heritage Features and Environmentally Protected Areas

There are no Areas of Natural and Scientific Interest (ANSI) or Provincially Significant Wetlands (PSW) within or adjacent to the proposed pipeline construction area as per Schedule 3 – Natural Heritage of the Official Plan.

4.2.3 Hazard Lands

Hazard Lands are identified in Schedule 4 of the Official plan, and can be classified as natural hazards (flood-prone areas and unstable soils) or hazards that are the result of human activity (mine hazards, abandoned pits and quarries, contaminated sites and waste disposal areas). There are Hazard Lands near the southern end of the proposed pipeline location, which are flood plain lands associated with a small watercourse at the southern end of the proposed pipeline. Construction for utility purposes is generally permitted in flood plains according to Section 10.2.2 of the Official Plan.

4.3 Forest and Vegetation Features

The majority of land within this proposed pipeline section is classified as Non-Forested Developed Land and Developed Agricultural Land by Figure 2 – Vegetation Cover Types (City of Greater Sudbury, 2009). Forest and vegetation features are minimal in this area because of the proximity to Highway 53 and commercial development. Approximately 500 m of the southern end of the proposed pipeline section, where the Rural land use designation exists, has grass and herbaceous species that are commonly found along roadways. The southern end of the section is classified as Shade Intolerant Mixed Forest Type by Figure 2 – Vegetation Cover Types (City of Greater Sudbury, 2009). Site specific aerial photos show no tree species within the proposed pipeline section along the roadway. Thus, there appears to be no significant impacts to forest or vegetation features where this pipeline section is proposed.

4.4 Wildlife

Some of the typical wildlife species that would be expected to be found in forests surrounding the Sudbury area are White-Tailed Deer, Moose, Black Bear, Wolf, Racoon, Skunk, and many others that call the Canadian Shield home (Greater Sudbury Natural Heritage Report, 2013). This section is located near a roadway and should not have any significant impact on wildlife or their associated habitat in the area.

4.5 Species at Risk

There are no known Species at Risk (SAR) in the proposed construction area. Table 1 lists potential SAR that are known to be in the Sudbury region, and mitigation measures are listed below if a SAR is encountered on the construction site.

The Ontario Breeding Bird Atlas (OBBA, 2009) was consulted to identify sensitive avian species that could be utilizing the area for breeding purposes. Data for the atlas is presented in 100km^2 data squares, each with a unique identifier. The property is located within the 17MM95 square, which contains species such as the Peregrine Falcon, Least Bittern, Common Nighthawk, Whip-poor-will, Chimney Swift, Eastern Meadowlark and Golden-winged Warbler (Appendix A). Table 2 presents a Species at Risk habitat suitability assessment in relation to this pipeline section.

MNR Sudbury District was contacted for an addition SAR screening assessment (Appendix C) however a response has not been received at this time.

4.6 Aquatic Resources and Riparian Zones

Schedule 3 – Natural Heritage of the Official Plan indicates that there is a small watercourse (< 5 metres wide) that crosses Highway 35 near the south end of the pipeline section in the Rural land use classification. Mitigation measures (e.g., sediment fencing) should be taken to ensure that this watercourse is not impacted during construction.

4.7 Summary

The proposed construction works associated with this section of the Sudbury Expansion Project should not have any significant impacts on surrounding natural heritage features or wildlife. The use of an existing road allowance to install the pipeline will not increase the footprint on the landscape. To help minimize any potential issues during construction, the following mitigation measures should be followed.

- Diligent application of sediment and erosion controls (e.g., erosion and sediment control fencing) is recommended during construction work in proximity to the watercourse feature that crosses Highway 35 near the southern end of the proposed pipeline location. This should alleviate the risk of sediment runoff into the watercourse features.
- If a SAR is encountered, all works within the vicinity of the species should cease until the animal has left the area of work. The MNR District Office must be contacted if the species must be relocated for works to proceed.
- Vegetation removal should occur outside of the sensitive breeding bird window, to prevent interruption of any avian life cycle that may occur on the property. For this pipeline location, the timing window typically falls between May 1 and July 31, but is dependent on seasonal variation. If vegetation removal is required during this time, the site should be inspected for active bird nests prior to construction.

5.0 SUDBURY EXPANION PROJECT – VICTORIA MINE

5.1 Proposed Location

The Victoria Mine Project is located north of Whitefish in Greater Sudbury, Ontario (Figure 2). The installation of a new natural gas pipeline is required to provide natural gas service to the mine in fall 2015. The pipeline will be within the existing road allowance along Clean Hill Road, and will consist of approximately 2.3 kilometres of a new NPS 6 inch steel natural gas pipeline. The pipeline will commence with a tie-in point at the corner of Fairbank Lake Rd. and Crean Hill Rd. where it will proceed north on the west side of the road within the road allowance to a customer station.

5.2 Land Uses

The proposed pipeline location is within the road allowance on the west side of Crean Hill Rd. The proposed pipeline section is on Rural and Mining/Mineral Reserve land as classified by Schedule 1a – Land Use Overview of the City of Greater Sudbury Official Plan. The Mining/Mineral Reserve classification permits for lands to be used for mining and mining-related purposes, which includes structures associated with mining. The Rural designation also allows for Industrial/Commercial uses, particularly those that provide rural economic benefits that are balanced with protection of the natural environment and the agricultural resource base. Placing the pipeline in the road allowance and providing an energy source to the mine for its operation complies with this policy.

5.2.1 Adjacent Land Uses

Similarly to the land use where the pipeline is proposed, the adjacent land use of the area is classified as Rural and Mining/Mineral Reserve as per Schedule 1a – Land Use Overview of the City of Greater Sudbury Official Plan (2015). There should be no adverse effects to adjacent lands from the pipeline installation due to the localized nature of the pipeline construction within the existing road allowance along Crean Hill Road.

5.2.2 Heritage Features and Environmentally Protected Areas

There are no Areas of Natural and Scientific Interest (ANSI) or Provincially Significant Wetlands (PSW) within the proposed pipeline construction area as per Schedule 3 – Natural Heritage of the Official Plan. There is a wetland feature on the west side of Crean Hill Rd along the majority of the proposed pipeline section. Mitigation measures (e.g., sediment fencing) should be taken to ensure that the wetland feature is not impacted during construction, and that SAR associated with these features (e.g., Blanding's turtle)

are protected through educating the construction force on the potential species present and the measures to be undertaken if they are observed.

5.2.3 Hazard Lands

Hazard Lands are identified in Schedule 4 of the Official plan, and can be classified as natural hazards (flood-prone areas and unstable soils) or hazards that are the result of human activity (mine hazards, abandoned pits and quarries, contaminated sites and waste disposal areas). There are no Hazard Lands within or adjacent to the proposed area of this pipeline section.

5.3 Forest and Vegetation Features

The proposed pipeline location along Crean Hill Road is split between areas that have forested patches and areas that run along a wetland feature. The land within this proposed pipeline section is classified as Lowland Deciduous and Shade Intolerant Mixed by Figure 2 – Vegetation Cover Types (City of Greater Sudbury, 2009). The southern forested section adjacent to Fairbank Lake Road is classified as Developed Land by Figure 2 – Vegetation Cover Types, but aerial photos show that this land is still forested (City of Greater Sudbury, 2009). Aerial photos indicate that the forested patches are dominated by deciduous species that are common in the southern Canadian Shield (e.g., Paper Birch, Sugar Maple), with coniferous species (e.g., Balsam Fir, White Pine) intermixed throughout. Ground cover within the treed patch consists of areas with exposed bedrock and shrub/herbaceous species. The land between the road and wetland feature is dominated by grasses and herbaceous species.

5.4 Wildlife

Wildlife species that would be expected to be found in the forested patches are those that are common to the Canadian Shield and surrounding Sudbury area, such as White-Tailed Deer, Moose, Black Bear, Wolf, Racoon, Skunk, etc. The proposed pipeline section should not have any significant impact on wildlife or their associated habitat in the area, and should not impact the larger landscape in terms of connectivity or habitat function.

5.5 Species at Risk

There are no known Species at Risk (SAR) in the proposed construction area. Table 1 lists potential SAR that are known to be in the Sudbury region, and mitigation measures are listed below if a SAR is encountered on the construction site.

The Ontario Breeding Bird Atlas (OBBA, 2009) was consulted to identify sensitive avian species that could be utilizing the area for breeding purposes. Data for the atlas is

presented in 100km^2 data squares, each with a unique identifier. The property is located within the 17MM74 square, which contains species such as the Peregrine Falcon, Least Bittern, Common Nighthawk, Whip-poor-will, Chimney Swift, Eastern Meadowlark and Golden-winged Warbler (Appendix B). Table 2 presents a SAR habitat suitability assessment in relation to this pipeline section. The rural location and proximity to the wetland feature presents opportunities for some of these species to be present. However, the small footprint of the pipeline section and its construction within the road allowance will limit the impact on any potential SAR in the area.

MNR Sudbury District was contacted for an addition SAR screening assessment (Appendix C) however a response has not been received at this time.

5.6 Aquatic Resources and Riparian Zones

The wetland/lake feature mentioned above on the west side of Crean Hill Road is in proximity (< 25m metres) to the road for approximately half of the proposed pipeline location. Mitigation measures (e.g., sediment and erosion control fence) should be implemented to ensure construction work does not impact these natural heritage features.

5.7 Summary and Proposed Mitigation Measures

The proposed construction works associated with the Victoria Mine pipeline installation are planned to take place within a road allowance and are in proximity to a wetland feature. The pipeline construction works should not have significant impacts on surrounding natural heritage features or wildlife and the use of an existing road allowance to install the pipeline will not increase the footprint on the landscape. To help minimize any potential issues during construction, the following mitigation measures should be followed.

- Diligent application of sediment and erosion controls (e.g., erosion and sediment control fencing) is recommended during construction work in proximity to the wetland/lake feature along Crean Hill Road. This should alleviate the risk of sediment migration or erosion into adjacent wetland features. Additionally, construction machinery should not be placed within the wetland/lake feature and refueling should not occur in proximity to these features to avoid potential contamination from spills or leaks.
- If a SAR is encountered, all works within the vicinity of the species should cease until the animal has left the area of work. The MNR District Office must be contacted if the species must be relocated immediately for works to proceed.
- Vegetation removal should occur outside of the sensitive breeding bird window, to prevent interruption of any avian life cycle that may occur on the property. For

this property, the timing window typically falls between May 1 and July 31, but is dependent on seasonal variation. If vegetation removal is required during this time, the site should be inspected for bird nest prior to construction.

6.0 CONCLUSIONS

The proposed pipeline works associated with the Sudbury Expansion Project will not affect Provincially Significant Wetlands (PSW), Areas of Natural and Scientific Interest (ANSI), Significant Woodlands, Valley Lands, Wildlife Habitat, habitat for Endangered and Threatened Species, Shoreline Habitat or Fish Habitat on or adjacent (i.e. within 120m) to the property if the appropriate mitigation measures are implemented through the development and construction process.

Wildlife in the area will continue to utilize the naturalized communities of the properties and adjacent lands where the pipeline replacement/installations are proposed. Given the nature of the development and the extensive use of road allowances, easements, and existing pipeline trenches, the natural character of the area will be maintained post development. Implementation of standard mitigation and restoration measures will effectively minimize the potential environmental impacts.

7.0 REFERENCES

City of Greater Sudbury Official Plan (2014). Planning Services Division, Growth and Development Department. City of Greater Sudbury.

City of Greater Sudbury Official Plan (2015). Schedule 1a – Land Use Overview. Planning Services Division, Growth and Development Department. City of Greater Sudbury.

City of Greater Sudbury Official Plan (2013a). Schedule 3 – Natural Heritage. Planning Services Division, Growth and Development Department. City of Greater Sudbury.

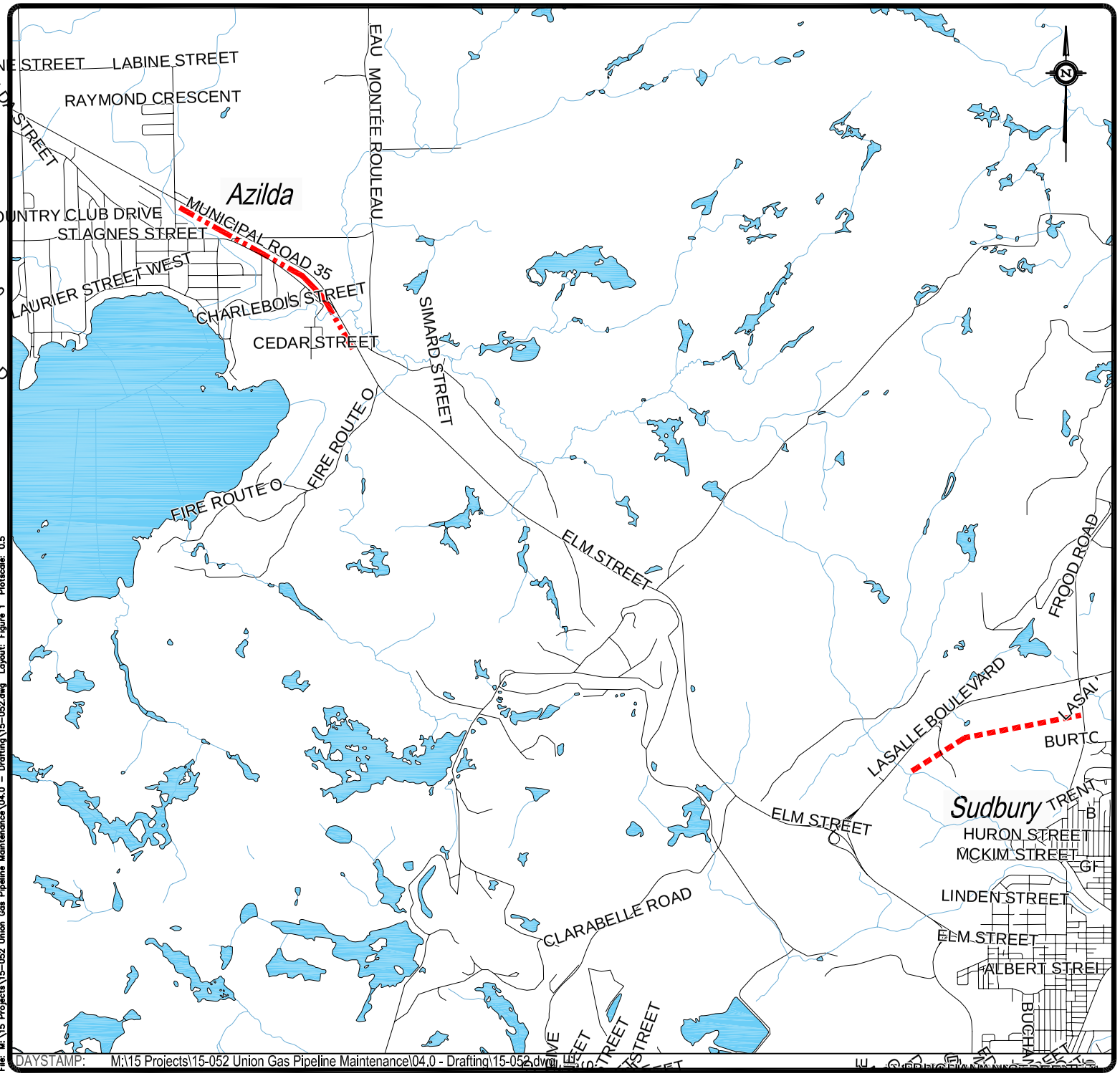
City of Greater Sudbury Official Plan (2013b). Schedule 4 – Hazard Lands. Planning Services Division, Growth and Development Department. City of Greater Sudbury.

City of Greater Sudbury (2009). Figure 2 – Vegetation Cover Types. Background Studies, Environmental Initiative Group, Planning Services Division.

Environment Canada. (2015). Canadian Climate Normals 1981-2010 Station Data. Station A – Sudbury.

Greater Sudbury Natural Heritage Report. (2013). Environmental Planning Initiatives, Planning Services Division. City Of Greater Sudbury.

Pearson, D. A., & Pitblado, J. R. (1995). Geological and geographic setting. *Restoration and Recovery of an Industrial Region* (pp. 5-15). Springer New York.



LEGEND:

Proposed Pipeline Sections

Frood Station

Azilda Lateral

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Proposed Pipeline Sections for Replacement/Installations, Sudbury, ON

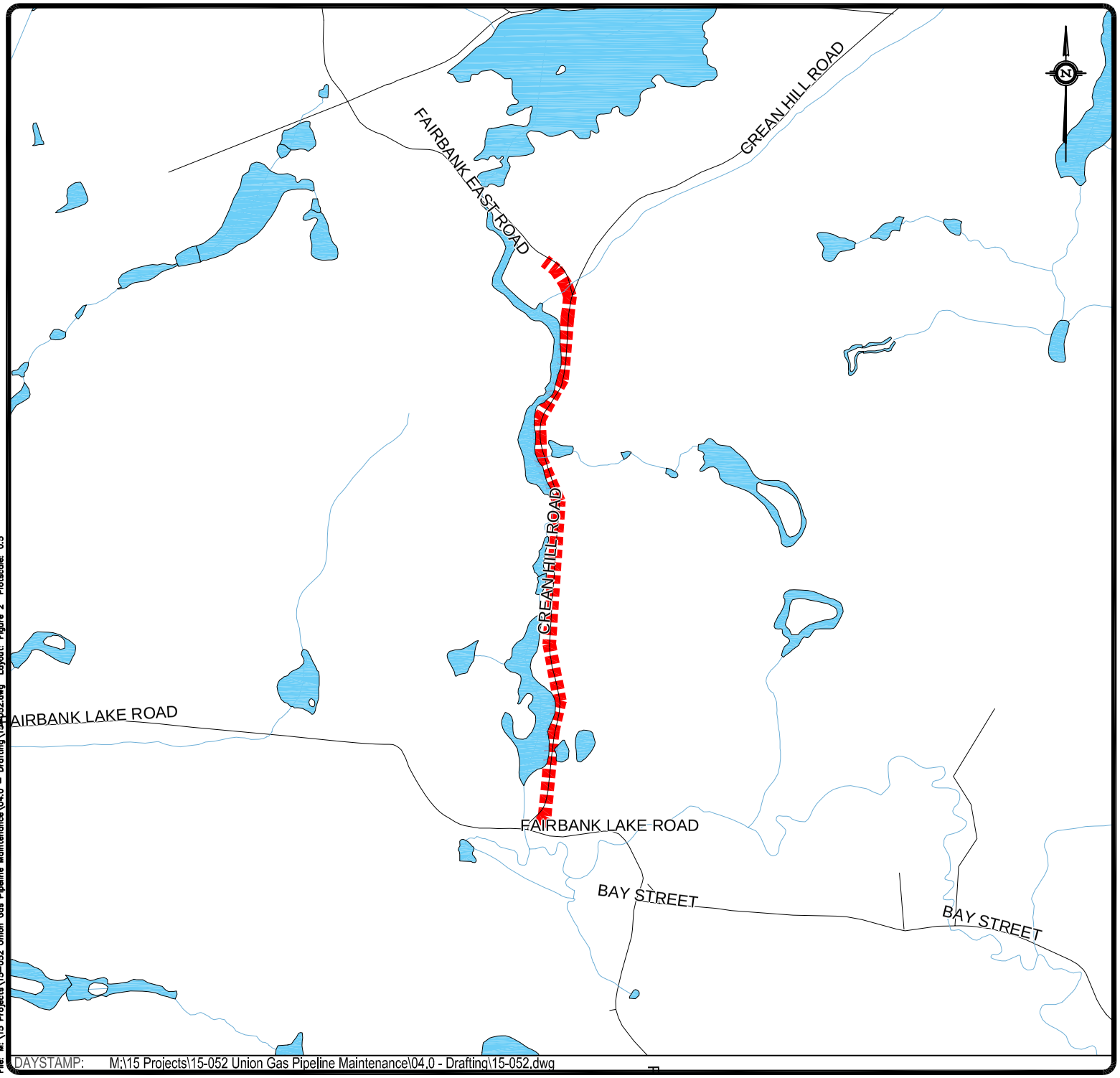
DATE ISSUED: *February 2015*
CREATED BY: *JLM*
PROJECT NO.: *15-052*
REFERENCE: *Google Maps*

Figure 1

DAYSTAMP: M:\15 Projects\15-052 Union Gas Pipeline Maintenance\04.0 - Drafting\15-052.dwg

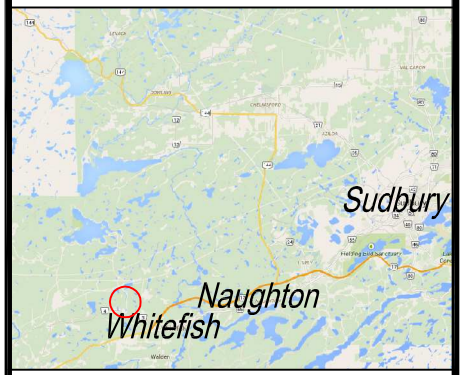
Plotted by: JMCCARTNEY on March 5, 2015 at 9:26am
File: M:\15 Projects\15-052 Union Gas Pipeline Maintenance\04.0 - Drafting\15-052.dwg Layout: Figure 1 Plotscale: 0.5

EB-2015-0120
Schedule 14
Page 26 of 62



LEGEND:

Proposed New 6" Pipeline Location



KEY PLAN

250m 0 750m

HORIZONTAL SCALE 1:25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Victoria Mine Pipeline Installation
Sudbury, ON

DATE ISSUED:	February 2015
CREATED BY:	JLM
PROJECT NO.:	15-052
REFERENCE:	Google Maps

Figure 2

Plotted by: JMCCARTNEY on March 4, 2015 at 11:44am
File: M:\15 Projects\15-052 Union Gas Pipeline Maintenance\04.0 - Drafting\15-052.dwg Layout: Figure 2 Plotscale: 0.5

Table 1 – Species at Risk in Greater Sudbury Area **Union Gas - Sudbury Expansion Project**

Latin Name	Common Name	National Status	Provincial Status	G-Rank	S-Rank	Habitat Preference[1]
Haliaeetus leucocephalus	Bald Eagle	NAR	Special Concern	G4	S3B	Require large continuous area of deciduous or mixed woods around large lakes, rivers; require area of 255 ha for nesting, shelter, feeding, roosting; prefer open woods with 30 to 50% canopy cover; nest in tall trees 50 to 200m from shore; require tall, dead, partially dead trees within 400 m of nest for perching; sensitive to toxic chemicals
Chlidonias niger	Black Tern	NAR	Special Concern	G4	S3B	Wetlands, coastal or inland marshes; large cattail marshes, marshy edges of rivers, lakes or ponds, wet open fens, wet meadows; returns to same area to nest each year in loose colonies; must have shallow (0.5 to 1 m deep) water and areas of open water near nests; requires marshes >20 ha in size; feeds over adjacent grasslands for insects; also feeds on fish, crayfish and frogs.
Wilsonia canadensis	Canada Warbler	Threatened	Special Concern	G5	S4	An interior forest species; dense mixed coniferous and deciduous forests with closed canopies, wet bottomlands of cedar or alder; shrubby undergrowth in cool moist mature woodlands; riparian habitat; usually requires at least 30 ha.

Latin Name	Common Name	National Status	Provincial Status	G-Rank	S-Rank	Habitat Preference[1]
Vermicora chrysoptera	Golden-winged Warbler	Threatened	Special Concern	G4	S4	Early successional habitat; shrubby, grassy abandoned fields with small deciduous trees bordered by low woodland and wooded swamps; alder bogs; deciduous damp woods; shrubbery clearings in deciduous woods with saplings and grasses; brier-woodland edges; requires >10ha of habitat.
Caprimulgus vociferus	Whip-poor-will	Threatened	Threatened	G5	S4B	Dry, open, deciduous woodlands of small to medium trees; oak or beech with lots of clearings and shaded leaflitter; wooded edges, forest clearings with little herbaceous growth; pine plantations; associated with >100 ha forests; may require 500 to 1000 ha to maintain population
Chaetura pelagica	Chimney Swift	Threatened	Threatened	G5	S4B, S4N	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water
Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	G5	S3	Permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites; may nest at some distance from water; often hibernate together in groups in mud under water; home range size ~28 ha
Chordeiles minor	Common Nighthawk	Threatened	Special Concern	G5	S4B	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.

Table 1 – Species at Risk in Greater Sudbury Area **Union Gas - Sudbury Expansion Project**

Latin Name	Common Name	National Status	Provincial Status	G-Rank	S-Rank	Habitat Preference[1]
Contopus cooperi	Olive-sided Flycatcher	Threatened	Special Concern	G4	S4	Semi-open, conifer forest, prefers spruce; near pond, lakes, streams; treed wetlands for nesting; burns with dead trees for perching.
Dolichonyx Oryzivorus	Bobolink	Threatened	Threatened	G5	S4B	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.
Falco peregrinus	Peregrine Falcon	Special Concern	Special Concern	G5	S2B	Rock cliffs, crags, especially situated near water; tall buildings in urban centres; threatened by chemical contamination; reintroduction efforts have been attempted in numerous locations throughout Ontario
Emydoidea Blandingii	Blanding's Turtle	Threatened	Threatened	G4	S3	Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks; surrounding natural habitat is important in summer as they frequently move from aquatic habitat to terrestrial habitats; hibernates in bogs.
Hirundo rustica	Barn Swallow	Threatened	Threatened	G5	S4B	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near bodies of water
Asio flammeus	Short-eared Owl	Special Concern	Special Concern	G4	S2B	grasslands, open areas or meadows that are grassy or bushy; marshes, bogs or tundra; both diurnal and nocturnal habits; ground nester; destruction of wetlands by drainage for agriculture is an important factor in the decline of this species; home range 25 -125 ha; requires 75-100 ha of contiguous open

Latin Name	Common Name	National Status	Provincial Status	G-Rank	S-Rank	Habitat Preference[1]
						habitat
Lampropeltis triangulum	Milksnake	Special Concern	Special Concern	G5	S3	Farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; river bottoms or bog woods; hides under logs, stones, or boards or in outbuildings; often uses communal nest sites.
Chelydra serpentina	Snapping Turtle	Special Concern	Special Concern	G5	S3	Permanent, or semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south facing slopes for nesting sites; may nest at some distance from water; often hibernate together in groups in mud under water; home range size ~28 ha.
Sturnella magna	Eastern Meadowlark	Threatened	Threatened	G5	S4B	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.
Podiceps auritus	Horned Grebe	NAR	Special Concern	G5	S1S2B	Deep water marshes or sloughs with a mix of open water, emergent vegetation; small freshwater ponds or protected bays of larger lakes with emergent vegetation; territories are about 1 ha, but birds are very territorial.
Ixobrychus exilis	Least Bittern	THR	THR	G5	S4B	Deep marshes, swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails; intolerant of loss of habitat and human disturbance.

Table 1 – Species at Risk in Greater Sudbury Area **Union Gas - Sudbury Expansion Project**

Latin Name	Common Name	National Status	Provincial Status	G-Rank	S-Rank	Habitat Preference[1]
Aquila chrysaetos	Golden Eagle	NAR	END	G5	S1B	Wild, arid plateaus, deeply cut by streams and canyons or sparsely treed slopes and rock crags.
Charadrius melodusE	Piping Plover	Endangered	Endangered	G3	S1B	Dry, sandy outer beaches; upper stretches near dunes, usually large open, grassless areas, but sometimes with sparse scattering of beach grass; recreational uses of beaches results in habitat loss
Melanerpes carolinus	Red-Headed Woodpecker	Threatened	Special Concern	G5	S4B	Open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees; feeds on insects and stores nuts or acorns for winter; loss of habitat is limiting factor; requires cavity trees with at least 40 cm dbh; require about 4 ha for a territory
Lanius ludovicianus	Loggerhead Shrike	END	END	G4	S2B	Grazed pasture, marginal farmland with scattered hawthorn shrubs, hedgerows; fence posts, wires and associated low-lying wetland; located on core areas of limestone plain adjacent to Canadian Shield; probably needs at least 25 ha of suitable habitat.
Dendroica cerulea	Cerulean Warbler	Endangered	Special Concern	G4	S3B	Mature deciduous woodland of Great Lakes-St. Lawrence and Carolinian forests, sometimes coniferous; swamps or bottomlands with large trees; area sensitive species needing extensive areas of forest (>100 ha).

Latin Name	Common Name	National Status	Provincial Status	G-Rank	S-Rank	Habitat Preference[1]
Icteria virens	Yellow-breast chat	NAR	Special Concern	G5	S2S3B	Thickets, tall tangles of shrubbery beside streams, ponds; overgrown bushy clearings with deciduous thickets; nests above ground in bush, vines etc.

[1] Ministry of Natural Resources – Fish and Wildlife Branch. 2000. Significant Wildlife Habitat Technical Guide.

Table 2 –Species at Risk Habitat Availability **Union Gas – Sudbury Expansion Project**

Latin Name	Common Name	Habitat Availability[1]		
		Frood-Lasalle	**Azilda Lateral**	**Victoria Mine**
Haliaeetus leucocephalus	Bald Eagle	No	No	Possible
Chlidonias niger	Black Tern	No	No	Probable
Wilsonia canadensis	Canada Warbler	No	No	Possible
Vermicora chrysoptera	Golden-winged Warbler	Possible	Possible	Probable
Caprimulgus vociferus	Whip-poor-will	No	No	Possible
Chaetura pelagica	Chimney Swift	No	No	No
Chelydra serpentina	Snapping Turtle	Possible	No	Probable
Chordeiles minor	Common Nighthawk	Probable	No	Probable
Contopus cooperi	Olive-sided Flycatcher	No	No	Probable
Dolichonyx Oryzivorus	Bobolink	No	No	No
Falco peregrinus	Peregrine Falcon	No	No	No
Emydoidea Blandingii	Blanding's Turtle	No	No	Possible
Hirundo rustica	Barn Swallow	No	No	No
Asio flammeus	Short-eared Owl	No	No	No
Lampropeltis triangulum	Milksnake	No	No	No
Chelydra serpentina	Snapping Turtle	No	No	Possible
Sturnella magna	Eastern Meadowlark	No	No	No
Podiceps auritus	Horned Grebe	No	No	Probable
Ixobrychus exilis	Least Bittern	No	No	Possible
Aquila chrysaetos	Golden Eagle	No	No	No
Charadrius melodusE	Piping Plover	No	No	No
Melanerpes carolinus	Red-Headed Woodpecker	Possible	No	Possible
Lanius ludovicianus	Loggerhead Shrike	No	No	No
Dendroica cerulea	Cerulean Warbler	No	No	No
Icteria virens	Yellow-breast chat	No	No	No

[1] Ministry of Natural Resources – Fish and Wildlife Branch. 2000. Significant Wildlife Habitat Technical Guide.

APPENDICES

Appendix A: Ontario Breeding Bird Atlas – Frood Road to Lasalle Boulevard and Azilda Lateral Pipeline Sections
Appendix B: Ontario Breeding Bird Atlas - Victoria Mine
Appendix C: MNR Species at Risk Information Request

APPENDIX A

Ontario Breeding Bird Atlas - Frood Road to Lasalle Boulevard and Azilda Lateral Pipeline Sections

Square Summary (17MM95)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
31	22	35	88	48	24	14	86	35	29	26	4

Region summary (#32: Sudbury West)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
60	60	60	175	177	876	375

Target number of point counts in this square: 22 road side, 3 off road (3 in deciduous forest). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%	
	1st	2nd	1st	2nd
Snow Goose ‡§			0	0
Brant ‡			0	0
Canada Goose		H	5	66
Mute Swan ‡			0	0
Trumpeter Swan †			0	6
Tundra Swan †			0	0
Wood Duck		H	53	81
Gadwall			3	8
American Wigeon			3	10
American Black Duck	FY		76	45
Mallard	FY	H	88	80
Blue-winged Teal	H	P	41	38
Northern Shoveler			5	6
Northern Pintail	FY		5	5
Green-winged Teal		H	0	36
Canvasback †			0	0
Redhead †			0	1
Ring-necked Duck	FY	P	41	50
Greater Scaup †			0	0
Lesser Scaup			6	5
King Eider †			0	0
Common Eider †			0	0
Surf Scoter †			0	0

SPECIES	Code		%	
	1st	2nd	1st	2nd
Common Merganser			81	71
Red-breast Merganser			11	6
Ruddy Duck †			1	0
Ruffed Grouse	A	S	85	85
Spruce Grouse			5	15
Sharp-tailed Grouse †			0	0
Pacific Loon †			0	0
Common Loon	FY	H	91	95
Pied-billed Grebe			18	38
Horned Grebe †			0	0
Red-necked Grebe †			1	1
Eared Grebe †			0	0
Am Swallow-tail Kite ‡			0	0
American White Pelican †			0	0
Double-crest Cormorant §	H		8	20
American Bittern	S	T	51	56
Least Bittern †			1	1
Great Blue Heron §	H		81	63
Great Egret †			0	0
Snowy Egret †			0	0
Cattle Egret †			0	0
Green Heron ‡§			1	1
Black-crown N.-Heron † §			0	0

SPECIES	Code		%	
	1st	2nd	1st	2nd
Northern Goshawk			20	10
Red-should Hawk †			1	8
Broad-winged Hawk	P	D	95	86
Red-tailed Hawk	NY	H	38	70
Rough-legged Hawk †			0	0
Golden Eagle †			0	0
American Kestrel	T	AE	51	53
Merlin			15	68
Peregrine Falcon †		T	0	5
Virginia Rail			20	35
Sora		S	16	28
Common Moorhen ‡			0	0
American Coot			1	5
Coot/Moorhen ‡			0	0
Sandhill Crane		P	8	73
Black-bellied Plover ‡			0	0
Am Golden-Plover †			0	0
Semipalmated Plover ‡			0	0
Piping Plover †			0	0
Killdeer	H		68	38
Rock Dove	NE	D	18	21
Spotted Sandpiper	NE	H	95	63
Solitary Sandpiper			25	18

White-winged Scoter †			0	0
Black Scoter †			0	0
Long-tailed Duck †			0	0
Bufflehead †			0	0
Common Goldeneye			20	30
Hooded Merganser	S		71	70

Turkey Vulture			36	66
Osprey			40	43
Bald Eagle †			1	11
Northern Harrier	P	H	46	56
Sharp-shinned Hawk		CF	43	45
Cooper's Hawk			6	6

Greater Yellowlegs ‡			0	0
Willet ‡			0	0
Lesser Yellowlegs ‡			0	0
Upland Sandpiper	H		13	3
Whimbrel †			0	0
Hudsonian Godwit †			0	0

SPECIES	Code		%	
	1st	2nd	1st	2nd
Ruddy Turnstone ‡			0	0
Red Knot ‡			0	0
Sanderling ‡			0	0
Semipalmated Sandpiper ‡			0	0
Least Sandpiper ‡			0	0
White-rumped Sandpiper ‡			0	0
Baird's Sandpiper †			0	0
Pectoral Sandpiper †			0	0
Purple Sandpiper ‡			0	0
Dunlin †			0	0
Stilt Sandpiper †			0	0
Short-billed Dowitcher †			0	0
Common Snipe	T	T	56	35
American Woodcock	NY	T	61	53
Wilson's Phalarope †			3	0
Red-necked Phalarope †			0	0
Bonaparte's Gull ‡			0	0
Franklin's Gull ‡			0	0
Ring-billed Gull §			5	16
California Gull †			0	0
Herring Gull §	FY	H	58	53

SPECIES	Code		%	
	1st	2nd	1st	2nd
White-winged Dove †			0	0
Mourning Dove		P	25	40
Yellow-billed Cuckoo	S		5	6
Black/Yell-billed Cuckoo			0	23
Black-billed Cuckoo	H	S	56	56
Eastern Screech-Owl ‡			0	0
Great Horned Owl			21	20
Snowy Owl ‡			0	0
Northern Hawk Owl ‡			0	0
Barred Owl		T	43	40
Great Gray Owl †			1	1
Long-eared Owl	P		5	8
Short-eared Owl †		H	3	5
Boreal Owl ‡			1	0
North Saw-whet Owl		S	15	21
Common Nighthawk	NE		83	43
Whip-poor-will	S		71	46
Chimney Swift			45	18
Ruby-thr Hummingbird	H		83	75
Rufous Hummingbird ‡			0	0
Belted Kingfisher	H	V	86	76

SPECIES	Code		%	
	1st	2nd	1st	2nd
Pileated Woodpecker			65	86
Olive-sided Flycatcher			66	48
Eastern Wood-Pewee			70	35
Yellow-bellied Flycatcher			20	41
Alder Flycatcher	T	S	81	91
Willow Flycatcher ‡	S		3	5
Least Flycatcher	H	S	95	86
Eastern Phoebe	S	S	46	63
Gr Crested Flycatcher	H		73	55
Western Kingbird †			0	0
Eastern Kingbird	P	P	98	80
Loggerhead Shrike †			0	0
Northern Shrike †			0	0
Yellow-throated Vireo ‡			0	0
Blue-headed Vireo			40	78
Warbling Vireo		S	18	25
Philadelphia Vireo	S	S	41	65
Red-eyed Vireo	T	D	100	98
Gray Jay			40	60
Blue Jay	H	H	91	96
Black-billed Magpie †			0	0

Iceland Gull ‡			0	0
Lesser Black-backed Gull †			0	0
Glaucous Gull ‡			0	0
Great Black-backed Gull †			0	1
Caspian Tern †			3	0
Black Tern † §			0	0
Common Tern §			15	11
Arctic Tern †			0	0

Red-headed Woodpecker †			3	1
Red-bell Woodpecker ‡			0	0
Yellow-bellied Sapsucker		S	90	91
Downy Woodpecker	H		90	81
Hairy Woodpecker		H	88	93
Three-toed Woodpecker ‡			0	5
Black-backed Woodpecker			20	25
Northern Flicker	NY	AE	98	96

American Crow	AE	AE	95	91
Common Raven	NY	AE	93	96
Horned Lark ‡			0	0
Purple Martin			16	0
Tree Swallow	AE	AE	98	83
North Rgh-wing Swallow			18	1
Bank Swallow §			25	11
Cliff Swallow §	AE	V	50	13

SPECIES	Code		%	
	1st	2nd	1st	2nd
Barn Swallow	NY	FY	85	46
Black-capped Chickadee	CF	S	98	98
Boreal Chickadee			21	6
Red-breast Nuthatch		H	91	86
White-breast Nuthatch			21	38
Brown Creeper			38	50
Carolina Wren ‡			0	0
Bewick's Wren †			0	0
House Wren		S	15	15
Winter Wren		S	78	90
Sedge Wren	H		25	15
Marsh Wren ‡			0	1
Golden-crown Kinglet			60	58
Ruby-crown Kinglet			76	66
Eastern Bluebird		P	10	28
Veery	A	T	98	95
Gray-cheeked Thrush †			0	0
Swainson's Thrush	H	S	78	71
Hermit Thrush	H	T	96	96
Wood Thrush			16	13
American Robin	CF	CF	98	95

SPECIES	Code		%	
	1st	2nd	1st	2nd
Golden-winged Warbler			23	21
Blue/Gold-wing Warbler ‡			0	1
Tennessee Warbler			46	31
Orange-crowned Warbler ‡			0	0
Nashville Warbler	FY	FY	96	95
Northern Parula ‡			1	13
Yellow Warbler	FY	S	75	75
Chestn-sided Warbler	P	S	98	98
Magnolia Warbler			86	86
Cape May Warbler			46	25
Black-thr Blue Warbler			78	78
Yellow-rumped Warbler	S	S	100	98
Black-thr Green Warbler		S	78	88
Blackburnian Warbler	CF		80	73
Pine Warbler			48	63
Palm Warbler ‡			0	0
Bay-breasted Warbler			28	16
Blackpoll Warbler ‡			0	0
Cerulean Warbler †			0	0
Black-white Warbler	S	S	95	91
American Redstart	CF	S	96	96

SPECIES	Code		%	
	1st	2nd	1st	2nd
Eastern Towhee ‡			3	0
American Tree Sparrow ‡			0	0
Chipping Sparrow	T	CF	98	96
Clay-colored Sparrow		S	5	5
Field Sparrow ‡			0	1
Vesper Sparrow	H	CF	30	26
Lark Sparrow †			0	0
Savannah Sparrow	CF	S	41	35
Grasshopper Sparrow ‡			3	0
Le Conte's Sparrow ‡			1	3
Fox Sparrow ‡			0	0
Song Sparrow	CF	T	100	93
Lincoln's Sparrow			5	28
Swamp Sparrow	CF	S	93	93
White-throat Sparrow	T	S	100	98
Harris's Sparrow †			0	0
White-crown Sparrow			0	3
Dark-eyed Junco	AE	S	70	66
Lapland Longspur ‡			0	0
Snow Bunting †			0	0
Summer Tanager ‡			0	0

Gray Catbird	P	S	65	48	Ovenbird	T	S	98	98	Scarlet Tanager			63	56
Northern Mockingbird	T		5	1	North Waterthrush			38	33	Northern Cardinal ‡			0	6
Brown Thrasher	A	S	36	40	Connecticut Warbler ‡			0	3	Rose-breast Grosbeak	H		88	65
European Starling	CF	CF	51	43	Mourning Warbler	CF	T	86	76	Indigo Bunting	T	S	45	53
American Pipit ‡			0	0	Common Yellowthroat	CF	P	98	96	Dickcissel †			0	0
Bohemian Waxwing †			0	0	Wilson's Warbler	H	S	35	33	Bobolink	T	S	43	25
Cedar Waxwing	H	P	100	95	Canada Warbler		S	88	80	Red-wing Blackbird	FY	P	93	86
Blue-winged Warbler ‡			0	1	Yellow-breast Chat †			0	0	Eastern Meadowlark	T		25	15

SPECIES	Code		%	
	1st	2nd	1st	2nd
Western Meadowlark ‡			1	1
Yellow-h Blackbird †			0	0
Rusty Blackbird			10	10
Brewer's Blackbird	CF		18	1
Common Grackle	CF	CF	100	91
Brown-head Cowbird	P	H	61	30
Baltimore Oriole	H	NU	45	36
Pine Grosbeak			1	0
Purple Finch	P	S	90	90
House Finch			0	3
Red Crossbill			20	6
White-winged Crossbill			16	23
Common Redpoll ‡			0	0
Hoary Redpoll †			0	0
Pine Siskin		H	68	41
American Goldfinch	H	P	75	80
Evening Grosbeak	H		88	55
House Sparrow	AE		21	1

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #32 (Sudbury West). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 17MM95 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the

2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #32). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 12/02/2015. An up-to-date version of this sheet is available from http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17MM95

Legend

Loggerhead Shrike

Threatened

Special Concern

APPENDIX B

Ontario Breeding Bird Atlas - Victoria Mine

Square Summary (17MM74)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
37	18	30	85	10	40	43	93	27	62	0	0

Region summary (#32: Sudbury West)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
60	60	60	175	177	876	375

Target number of point counts in this square: 18 road side, 7 off road (1 in coniferous forest, 6 in mixed forest). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%	
	1st	2nd	1st	2nd
Snow Goose ‡§			0	0
Brant ‡			0	0
Canada Goose		P	5	66
Mute Swan ‡			0	0
Trumpeter Swan †			0	6
Tundra Swan †			0	0
Wood Duck	FY	FY	53	81
Gadwall			3	8
American Wigeon			3	10
American Black Duck	S		76	45
Mallard		FY	88	80
Blue-winged Teal	P		41	38
Northern Shoveler			5	6
Northern Pintail			5	5
Green-winged Teal		H	0	36
Canvasback †			0	0
Redhead †			0	1
Ring-necked Duck		P	41	50
Greater Scaup †			0	0
Lesser Scaup			6	5
King Eider †			0	0
Common Eider †			0	0
Surf Scoter †			0	0

SPECIES	Code		%	
	1st	2nd	1st	2nd
Common Merganser	H	H	81	71
Red-breast Merganser			11	6
Ruddy Duck †			1	0
Ruffed Grouse	S	DD	85	85
Spruce Grouse			5	15
Sharp-tailed Grouse †			0	0
Pacific Loon †			0	0
Common Loon	FY	D	91	95
Pied-billed Grebe	H	NE	18	38
Horned Grebe †			0	0
Red-necked Grebe †			1	1
Eared Grebe †			0	0
Am Swallow-tail Kite ‡			0	0
American White Pelican †			0	0
Double-crest Cormorant §			8	20
American Bittern	H		51	56
Least Bittern †			1	1
Great Blue Heron §	NY	NY	81	63
Great Egret †			0	0
Snowy Egret †			0	0
Cattle Egret †			0	0
Green Heron ‡§			1	1
Black-crown N.-Heron † §			0	0

SPECIES	Code		%	
	1st	2nd	1st	2nd
Northern Goshawk			20	10
Red-should Hawk †			1	8
Broad-winged Hawk	P	T	95	86
Red-tailed Hawk		T	38	70
Rough-legged Hawk †			0	0
Golden Eagle †			0	0
American Kestrel	NY	CF	51	53
Merlin		H	15	68
Peregrine Falcon †		NY	0	5
Virginia Rail	H	S	20	35
Sora			16	28
Common Moorhen ‡			0	0
American Coot			1	5
Coot/Moorhen ‡			0	0
Sandhill Crane		FY	8	73
Black-bellied Plover ‡			0	0
Am Golden-Plover †			0	0
Semipalmated Plover ‡			0	0
Piping Plover †			0	0
Killdeer	H	DD	68	38
Rock Dove			18	21
Spotted Sandpiper	P	FY	95	63
Solitary Sandpiper			25	18

White-winged Scoter †			0	0
Black Scoter †			0	0
Long-tailed Duck †			0	0
Bufflehead †			0	0
Common Goldeneye			20	30
Hooded Merganser		H	71	70

Turkey Vulture		P	36	66
Osprey		T	40	43
Bald Eagle †			1	11
Northern Harrier	H	T	46	56
Sharp-shinned Hawk	H		43	45
Cooper's Hawk	CF		6	6

Greater Yellowlegs ‡			0	0
Willet ‡			0	0
Lesser Yellowlegs ‡			0	0
Upland Sandpiper			13	3
Whimbrel †			0	0
Hudsonian Godwit †			0	0

SPECIES	Code		%	
	1st	2nd	1st	2nd
Ruddy Turnstone ‡			0	0
Red Knot ‡			0	0
Sanderling ‡			0	0
Semipalmated Sandpiper ‡			0	0
Least Sandpiper ‡			0	0
White-rumped Sandpiper ‡			0	0
Baird's Sandpiper †			0	0
Pectoral Sandpiper †			0	0
Purple Sandpiper ‡			0	0
Dunlin †			0	0
Stilt Sandpiper †			0	0
Short-billed Dowitcher †			0	0
Common Snipe	S		56	35
American Woodcock		D	61	53
Wilson's Phalarope †			3	0
Red-necked Phalarope †			0	0
Bonaparte's Gull ‡			0	0
Franklin's Gull ‡			0	0
Ring-billed Gull §		H	5	16
California Gull †			0	0
Herring Gull §	H	NU	58	53
Iceland Gull ‡			0	0
Lesser Black-backed Gull †			0	0

SPECIES	Code		%	
	1st	2nd	1st	2nd
White-winged Dove †			0	0
Mourning Dove			25	40
Yellow-billed Cuckoo			5	6
Black/Yell-billed Cuckoo			0	23
Black-billed Cuckoo	S	A	56	56
Eastern Screech-Owl ‡			0	0
Great Horned Owl			21	20
Snowy Owl ‡			0	0
Northern Hawk Owl ‡			0	0
Barred Owl	S		43	40
Great Gray Owl †			1	1
Long-eared Owl			5	8
Short-eared Owl †			3	5
Boreal Owl ‡	S		1	0
North Saw-whet Owl			15	21
Common Nighthawk	H		83	43
Whip-poor-will		T	71	46
Chimney Swift	H		45	18
Ruby-thr Hummingbird	S		83	75
Rufous Hummingbird ‡			0	0
Belted Kingfisher	CF	NU	86	76
Red-headed Woodpecker †			3	1
Red-bell Woodpecker ‡			0	0

SPECIES	Code		%	
	1st	2nd	1st	2nd
Pileated Woodpecker		NU	65	86
Olive-sided Flycatcher	H		66	48
Eastern Wood-Pewee	S		70	35
Yellow-bellied Flycatcher			20	41
Alder Flycatcher	A	CF	81	91
Willow Flycatcher ‡			3	5
Least Flycatcher	S	A	95	86
Eastern Phoebe	NY	NY	46	63
Gr Crested Flycatcher		T	73	55
Western Kingbird †			0	0
Eastern Kingbird	FY	NY	98	80
Loggerhead Shrike †			0	0
Northern Shrike †			0	0
Yellow-throated Vireo ‡			0	0
Blue-headed Vireo		T	40	78
Warbling Vireo			18	25
Philadelphia Vireo	P	T	41	65
Red-eyed Vireo	T	A	100	98
Gray Jay		FY	40	60
Blue Jay		FY	91	96
Black-billed Magpie †			0	0
American Crow	FY	CF	95	91
Common Raven	NY	NY	93	96

Glaucous Gull ‡			0	0
Great Black-backed Gull †			0	1
Caspian Tern †			3	0
Black Tern † §			0	0
Common Tern §			15	11
Arctic Tern †			0	0

Yellow-bellied Sapsucker	H	T	90	91
Downy Woodpecker	H	T	90	81
Hairy Woodpecker	CF	D	88	93
Three-toed Woodpecker ‡			0	5
Black-backed Woodpecker			20	25
Northern Flicker	H	AE	98	96

Horned Lark ‡			0	0
Purple Martin			16	0
Tree Swallow	AE	AE	98	83
North Rgh-wing Swallow	AE		18	1
Bank Swallow §			25	11
Cliff Swallow §	NU		50	13

SPECIES	Code		%	
	1st	2nd	1st	2nd
Barn Swallow	NU	AE	85	46
Black-capped Chickadee	NE	FY	98	98
Boreal Chickadee			21	6
Red-breast Nuthatch	S	T	91	86
White-breast Nuthatch			21	38
Brown Creeper	P		38	50
Carolina Wren ‡			0	0
Bewick's Wren †			0	0
House Wren			15	15
Winter Wren	S	T	78	90
Sedge Wren	S		25	15
Marsh Wren ‡			0	1
Golden-crown Kinglet			60	58
Ruby-crown Kinglet	S	T	76	66
Eastern Bluebird			10	28
Veery	P	A	98	95
Gray-cheeked Thrush †			0	0
Swainson's Thrush	S	S	78	71
Hermit Thrush	S	A	96	96
Wood Thrush			16	13
American Robin	NU	NY	98	95
Gray Catbird	H	A	65	48
Northern Mockingbird			5	1
Brown Thrasher		H	36	40

SPECIES	Code		%	
	1st	2nd	1st	2nd
Golden-winged Warbler	T	T	23	21
Blue/Gold-wing Warbler ‡			0	1
Tennessee Warbler			46	31
Orange-crowned Warbler ‡			0	0
Nashville Warbler	FY	CF	96	95
Northern Parula ‡		S	1	13
Yellow Warbler	CF	S	75	75
Chestn-sided Warbler	FY	CF	98	98
Magnolia Warbler	A	A	86	86
Cape May Warbler	H		46	25
Black-thr Blue Warbler	S	A	78	78
Yellow-rumped Warbler	S	T	100	98
Black-thr Green Warbler		T	78	88
Blackburnian Warbler	S	T	80	73
Pine Warbler		T	48	63
Palm Warbler ‡			0	0
Bay-breasted Warbler			28	16
Blackpoll Warbler ‡			0	0
Cerulean Warbler †			0	0
Black-white Warbler	A	T	95	91
American Redstart	CF	CF	96	96
Ovenbird	A	A	98	98
North Waterthrush			38	33
Connecticut Warbler ‡			0	3

SPECIES	Code		%	
	1st	2nd	1st	2nd
Eastern Towhee ‡			3	0
American Tree Sparrow ‡			0	0
Chipping Sparrow	CF	CF	98	96
Clay-colored Sparrow			5	5
Field Sparrow ‡			0	1
Vesper Sparrow		CF	30	26
Lark Sparrow †			0	0
Savannah Sparrow			41	35
Grasshopper Sparrow ‡			3	0
Le Conte's Sparrow ‡			1	3
Fox Sparrow ‡			0	0
Song Sparrow	NE	CF	100	93
Lincoln's Sparrow			5	28
Swamp Sparrow	CF	CF	93	93
White-throat Sparrow	A	CF	100	98
Harris's Sparrow †			0	0
White-crown Sparrow			0	3
Dark-eyed Junco	S		70	66
Lapland Longspur ‡			0	0
Snow Bunting †			0	0
Summer Tanager ‡			0	0
Scarlet Tanager		CF	63	56
Northern Cardinal ‡			0	6
Rose-breast Grosbeak	P	FY	88	65

European Starling	H	CF	51	43
American Pipit ‡			0	0
Bohemian Waxwing †			0	0
Cedar Waxwing	FY	T	100	95
Blue-winged Warbler ‡			0	1

Mourning Warbler	CF	CF	86	76
Common Yellowthroat	CF	DD	98	96
Wilson's Warbler		A	35	33
Canada Warbler	A	CF	88	80
Yellow-breast Chat †			0	0

Indigo Bunting	S	CF	45	53
Dickcissel †			0	0
Bobolink		T	43	25
Red-wing Blackbird	CF	NY	93	86
Eastern Meadowlark			25	15

SPECIES	Code		%	
	1st	2nd	1st	2nd
Western Meadowlark ‡			1	1
Yellow-h Blackbird †			0	0
Rusty Blackbird			10	10
Brewer's Blackbird			18	1
Common Grackle	CF	CF	100	91
Brown-head Cowbird	NE		61	30
Baltimore Oriole		P	45	36
Pine Grosbeak			1	0
Purple Finch	P	T	90	90
House Finch			0	3
Red Crossbill			20	6
White-winged Crossbill			16	23
Common Redpoll ‡			0	0
Hoary Redpoll †			0	0
Pine Siskin		CF	68	41
American Goldfinch	P	T	75	80
Evening Grosbeak			88	55
House Sparrow			21	1

Legend

Endangered

Threatened

Special Concern

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #32 (Sudbury West). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 17MM74 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #32). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 12/02/2015. An up-to-date version of this sheet is available from http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17MM74

APPENDIX C

MNR Species at Risk Information Request

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Assessments & Approvals

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Assessments & Approvals

February 18th, 2015 AEC 15-502

Ministry of Natural Resources
Sudbury District
3767 Hwy 69 S Suite 5
Sudbury, ON
P3G 1E7

Attention: Eric Cobb, District Planner

RE: **Preliminary Species at Risk Information Request**
Sudbury Pipeline Work - Union Gas Limited
Victoria Mine Natural Gas Pipeline Installation, Replacement of Three Natural Gas Pipeline Sections, and Two Integrity Replacements, City of Greater Sudbury

Dear Mr. Cobb:

Azimuth Environmental Consulting (Azimuth) has been retained to prepare an Environmental Report for the above mentioned pipeline works (mapping attached). The purpose of this letter is to request additional information regarding Species at Risk and sensitive areas associated with the study area.

The pipeline replacement works include the replacement of three existing natural gas transmission pipeline sections with 12 inch or 10 inch pipeline (Figure 1) and two integrity digs to replace two sections of 10 inch pipeline with 12 inch pipeline (Figure 3). The proposed construction works are part of an ongoing maintenance program that will ensure the continued safe operation of the Union Gas natural gas pipeline system. All pipeline replacement works are located in the Greater Sudbury area and will take place in road allowances and/or where existing pipelines already exist.

The Victoria Mine project involves the installation of a new 6 inch natural gas pipeline to Victoria Mine, which will commence with a tie-in point at the corner of Fairbank Lake Rd. and Crean Hill Rd. and proceed north on the west side of the road within the road allowance for approximately 2.1 kilometres (Figure 2).

To date, a search of the Ontario Breeding Bird Atlas has been completed. Squares 17MM95, 17NM05, and 17MM74 were queried and it was determined that species such as Loggerhead Shrike, Bobolink, Eastern Meadowlark, Barn Swallow, Whip-poor-will, and Chimney Swift have been observed within the 100km^2 data square.

Thank you very much for your assistance in this matter. If you have any questions regarding this project please do not hesitate to contact us.
Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Roger Holmes, MSc.
Aquatic Ecologist

Attach: Figure1, Figure 2, Figure 3

APPENDIX 3

GENERIC SEDIMENT CONTROL PLANS

Generic Sediment Control Plan – Dam & Pump Crossing

This plan sets out the measures that will be taken by Union Gas Limited (company) and its contractors to control downstream sediment to the lowest level practically achievable during the construction of dam and pump type crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

General Measures

The company must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. The following requirements apply to any permanent or intermittent waterbody (stream, river, pond) and areas adjacent to it.

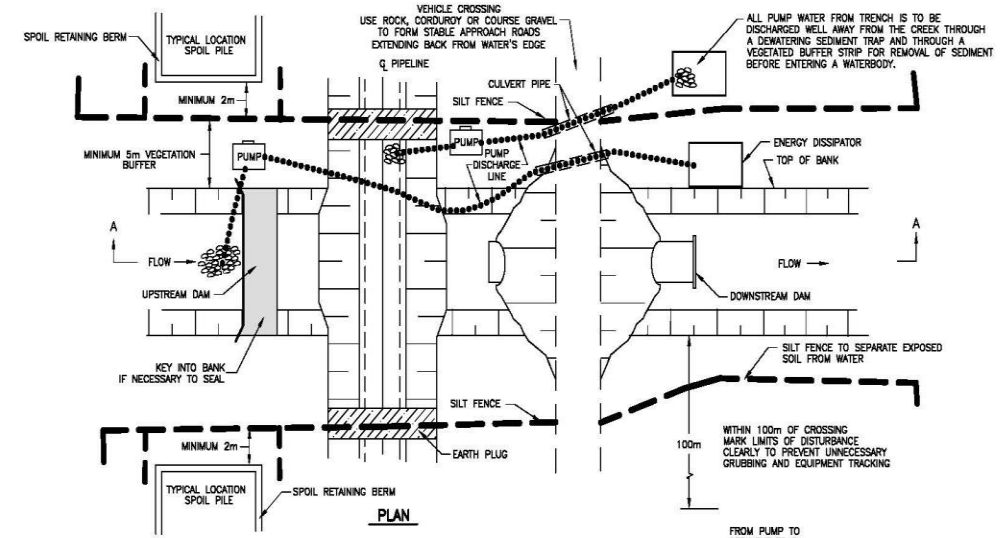
* The company will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
* The company will notify the appropriate federal or provincial agencies prior to commencement of a watercourse crossing in accordance with regulatory permit conditions.
* In-stream work will occur during the appropriate time windows for the geographic region and for the fish species present unless otherwise permitted by the appropriate agencies.
* Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
* All watercourses will require a minimal disturbance zone (MDZ) to be clearly marked with flagging prior to the commencement of clearing activities or any construction activity near the waterbody. This flagging will be set back a minimum of 5m from the waterbody and will be based on site specific conditions. Extra work area required at watercourse crossing will be situated away from the waterbody outside of the minimal disturbance zone (MDZ).
* Materials removed or stockpiled during construction (e.g., excavated soil, backfill material) must be deposited in a manner to ensure sediment does not enter a waterbody. Appropriate erosion and sediment controls (e.g. revegetation, vegetated buffer strips, drainage control, sediment settling devices, and sediment fence or other appropriate mitigation measures) will be installed around spoil or stockpiles, to prevent sediment from stockpile runoff from entering a watercourse.
* All vehicles, machinery and other construction equipment shall not enter the water. There must be no fording of any stream.
* Except during construction of the crossing, the company will not obstruct any watercourse so as to impede the free movement of fish.
* Flow shall be maintained at all times downstream of the watercrossing.
* All exposed soil must be stablized (e.g. graded to a stable slope and erosion control measures implemented) as quickly as possible to prevent erosion.
* The company is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings.
* All required materials (e.g., silt fencing, filter cloth, polyethylene liners, granular material, rip rap, dam materials) and installation equipment (e.g., pipe, flumes, pumps, pump hoses, generators, spares, energy dissipaters) will be on-site and in good working order prior to construction.
* Prior to commencing watercourse crossings, local weather stations will be monitored to determine whether any precipitation is forcasted. In-stream activity will be delayed if flows are in flood stage and until weather conditions are favourable.
* If there is any flow in the creek, the company is to install pumps to maintain streamflow around the blocked off section of channel. An energy dissipator is to be built to accept pump discharge and prevent streambed or streambank erosion.
* Adequate pump capacity will be on site to handle anticipated water flows and any potential increases in flow during the construction period. Backup pumps with adequate capacity to handle 100% of the downstream flow must be on site and ready for immediate replacement, should the primary operating pump(s) fail.
* Water intakes used in fish bearing waters will be screened in accordance with the DFO Freshwater Intake Fish Screening Guidelines (1995).
* Fish recovery and transfer will be conducted prior to and during the isolation of flow and in accordance with permit regulations. See detailed construction sequence for timing of fish recovery operations.
* In-stream activities in all watercourses (e.g., trenching, pipe installation, backfilling) will be completed in as short a time as possible to minimize disturbance to water quality, fish and fish habitat.
* In situations where the crossing can be completed in one day, in-stream excavation will begin in the early morning to allow for same day installation.
* Refueling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any waterbody. Appropriate spill prevention kits shall be readily available on site.
* The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly.
* Revegetation must be completed as quickly as possible. Revegetate any disturbed areas by planting and seeding preferably native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
* The company will be held responsible for implementation of this plan.
* All use of silt fence, rock check dams and dewatering traps shall be constructed/installed in accordance to the most up to date company specifications and drawings. Where these mitigation measures are not sufficient to prevent sediment from entering the waterbody, additional mitigation measures will be implemented to prevent sediment from entering the waterbody.

Contingency Plan

If unforseen events (e.g., bedrock in trench, dam washout) cause the strategies set out in this plan to be insufficient or inappropriate to meet the objective, the company is expected to respond in a timely manner with all reasonable measures consistent with safety, to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO is to be notified as soon as practical.

Spill reporting procedures established by MOE shall be used to report any unexpected discharge of silt or sediment or other deleterious substance at the water crossing. The spill shall also be reported to the DFO as soon as possible in these circumstances.

If DFO determines that long term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by the company, in consultation with and approval from DFO for implementation by the company.



Detailed Construction Sequence – Dam and Pump Crossings

In general terms, the following sequence of construction and mitigation measures will be followed at all "dam and pump" type water crossings.

1. Mark out and maintain limits of authorized work areas with fencing or flagging tape to avoid unnecessary disturbance of vegetation. Ensure equipment operators working on the crossing have been briefed about this plan and the measures needed to protect water quality. Install pre-work sediment control measures, including silt fences and measures to contain excavated spoil and backfill. All necessary equipment and materials to build the dams and to pump water must be on site or readily available prior to commencing in-water construction. Pipe shall be strung, welded and coated ready for installation prior to watercourse trenching.
2. Install pumps in natural pool upstream of the excavation. Excavate temporary sump within right-of-way if no natural pool exists. Check pump operation to equalize flow and ensure water intakes used in fish bearing waters are screened in accordance with DFO guidelines. Rip rap, stilling wells, filter cloth, gravel filters or other mitigation measures will be used at the upstream inlet of the pump to prevent suspension of sediment from pumping when necessary. Rip rap and rock check dams will be used when necessary to prevent scouring and erosion at the pump outlet. Pump discharge lines shall be installed to keep pumped water from coming into contact with soil on the construction site.
3. Dams are to be made of steel plate, inflatable rubber dam (aquadam), peastone bags, cobbles, well graded coarse gravel fill or rock fill and constructed so that sediment is not introduced to the waterbody. An impervious membrane is to be incorporated into the dam if necessary to control seepage flow. Dams may need keying into the banks and streambed. Install downstream dam only if needed to keep the trench area dry. Dewater the area between dams and for fish bearing streams, conduct fish salvage operations. All pump water is to be discharged well away from the creek and through a dewatering sediment trap for removal of sediment before entering the waterbody.
4. Excavate trench through plugs and streambed as quickly as possible, re-positioning discharge hose as necessary. Lower the pipe in the trench and backfill immediately. During this operation, try to maintain pumping as much as possible. The top 300 mm of trench backfill is to be clean rock, cobble material or native streambed material. The company is to use granular backfill if the native material is not suitable. Any excess material is to be disposed of above the high water mark in an approved location and stabilized to prevent reentry into the waterbody. Work is to be completed as quickly as possible.
5. Restore, stabilize and reclaim bed and banks of waterbody to preconstruction profiles and protected with erosion resistant material compatible with flow velocity (e.g., "do not use erosion control matting in the bankfull channel" coarse gravel or rip rap) to the maximum extent possible between dams. If rip rap material contains fines, the completed face is to be washed off and the turbid water pumped to the dewatering sediment trap. All construction material (e.g. dams, rip rap, spilled pea gravel from pea stone bags) not required to return the waterbody to preconstruction condition shall be removed from the site and stablized above the high water mark in an approved location. Removal of all materials will be done in a manner that will not introduce sediment to the waterbody. The downstream dam shall be removed first. Keep pump running until normal flow is resumed. Complete bank trimming and erosion protection. If pea stone bags are used for the dams, place and remove by hand to avoid equipment breaking bags.
6. Site stabilization, which includes control of stormwater drainage using combinations of silt fences, erosion blankets, diversion berms and check dams etc., is to be completed within 10 days of trench backfilling. If stabilization is delayed, short term erosion control measures shall be used to prevent sediment entering the water. Material accumulated at silt fences is to be removed or stabilized in place. Silt fences are to be removed when the site is permanently stabilized.
7. Vegetate any disturbed areas by planting and seeding preferably native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
8. If post-construction monitoring reveals erosion problems, remedial work is to be undertaken as quickly as possible.

NOTES

Union Gas is responsible for implementation of appropriate sediment and erosion control to mitigate impacts to fish and fish habitat. Fisheries and Oceans Canada, Ontario-Great Lakes Area has reviewed Union Gas drawing, "GENERIC SEDIMENT CONTROL PLAN DAM AND PUMP WATER CROSSINGS" dated January 2008, and endorses its use as a guideline for implementation of erosion and sediment measures.

For more information on this plan, please contact:
Doug Schmidt,
Principal Environmental Planner,
Union Gas Limited,
1-800-571-8446, ext. 2895

DATE	REV NO	REVISION	BY	APPD

uniongas
A Spectra Energy Company

PROJECT
UNION GAS LIMITED
CONSTRUCTION PROGRAM

LOCATION
ALL DAM AND PUMP WATER CROSSINGS IN ONTARIO

DRAWING TITLE
GENERIC SEDIMENT CONTROL PLAN
DAM AND PUMP WATER CROSSINGS

SCALE	NTS	DATE	JAN. 1/08
FILE No.		PROJECT NO	
DRAWN	CHECKED	DRAWING	REV
GTH		2 of 3	0

APPROVED

Generic Sediment Control Plan – Horizontal Directional Drill

Fisheries and Oceans Canada (DFO) is responsible for protecting fish and fish habitat across Canada. Under the Fisheries Act no one may carry out a work or undertaking that will cause the harmful alteration, disruption or destruction (HADD) of fish habitat unless it has been authorized by the DFO. By following the conditions and measures set out in the Stream Crossing Review and this Drawing, you will be in compliance with subsection 35(1) of the Fisheries Act.

This plan sets out the measures that will be taken by Union Gas Limited (company) and its contractors in order to avoid negative impacts to fish habitat during horizontal directional drill crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the DFO.

Measures to Protect Fish and Fish Habitat when Horizontal Directional Drilling

The company must use materials, construction practices, mitigation techniques and monitoring of operations of every water crossing in order to prevent an unauthorized HADD or the impairment of water quality. The following requirements apply to any permanent or intermittent waterbody (stream, river, pond) and areas adjacent to it.

* Design the drill path to an appropriate depth below the watercourse to minimize the risk of frac-out and to a depth to prevent the line from becoming exposed due to natural scouring of the stream bed. Ensure the drill entry and exit points are far enough from the banks of the water course to have minimal impact on these areas.
* The company will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
* The company will notify the appropriate federal or provincial agencies related to watercourse crossings.
* Use existing trails, roads or cut lines wherever possible, as accesss routes to avoid disturbance to the riparian vegetation.
* Sediment fence must be installed between the work site and the watercourse. Ensure all fencing is properly keyed into the ground.
* Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum and within the road or utility right-of-way. Delay grubbing to immediately prior to the crossing operation.
* Materials removed or stockpiled during construction must be deposited in a manner to ensure sediment does not enter into a waterbody. This material must be protected with appropriate erosion and sediment controls devices (sediment fencing, strawbales).
* All vehicles, machinery and other construction equipment shall not enter the water. There must be no fording of any waterbody. The company is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings. This plan is endorsed by the DFO.
* Refuelling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any waterbody. Appropriate spill prevention kits shall be readily available on site.
* Monitor the watercourse to observe signs of surface migration (frac-out) of drilling mud during all phases of construction.
* There are no in-stream timing restrictions on this work.
* The company will be held responsible for implementation of this plan.

Crossing Procedures

* Sediment fences are to be established between the entry and exit points and the watercourse (potential for sediment to enter watercourse)
* At a minimum the entry and exit points must be located as identified on this plan.
* Mud sump pits are to be excavated at the entry and exit points of the drill to contain drilling fluids to prevent sediment and other deleterious substances from entering the watercourse. If this cannot be achieved, use silt fences or other effective sediment and erosion control measures to prevent drilling mud from entering the watercourse. These pits must be excavated prior to back reaming.
* All drilling fluids are to be contained during the entire drilling process and promptly removed as sump pits are filled and/or when the drill is completed.
* All excess material is to be removed from the construction site to an approved location.
* Monitoring of the watercourse must be completed during all phases of the crossing attempt.

Emergency Frac-out Response and Contingency Planning

* Keep all material and equipment needed to contain and clean up drilling mud releases on site and readily accessible in the event of a frac-out.
* The drilling procedure will be closely monitored throughout the crossing attempt to limit the extent of a "fracture" (frac out).
* If the pilot drill results in a "fracture" (drill fluids enter the stream bed or stream banks), drilling should be stopped immediately and the procedures outlined in the Environmental Compliance section should be followed.
* Measures must be taken to contain the drilling mud and prevent its further migration into the watercourse. Measures to control fracturing will include, stopping the drill, the use of vacuum trucks, excavation of relief pits (dry land) and any other measure deemed appropriate by the company.
* Prioritize cleanup activities relative to the risk of potential harm and dispose of the drilling mud in a manner that prevents re-entry into the watercourse.
* Ensure clean up measures do not result in greater damage to the banks and watercourse than from leaving the drilling mud in place.
* Once the site has been deemed secure and the risk of drilling mud entering the watercourse has been addressed, the drill shall be pulled back and can be restarted with a new deeper attempt and/or a change to the existing running line, to attempt to avoid the fracturing problem.
* If subsequent drill attempts result in additional fracturing, then the crossing shall be halted and the Environmental Planning group should be contacted. Additional permits or authorizations to continue the drill using in-stream mitigation or to change the crossing technique, may be required.
* In the event that the horizontal directional drill cannot be completed a dam and pump or flumed crossing technique will be implemented following the specific Generic Sediment Control Plan endorsed by DFO under the DFO-OGLA AGREEMENT 2008.

Environmental Compliance

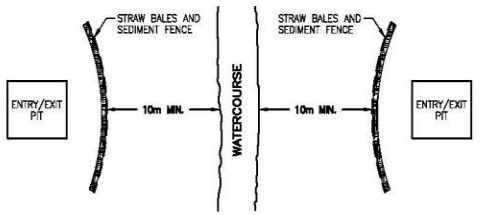
Contractor

* In the event that drilling fluids enter the watercourse or turbidity is generated by air migration, the Ministry of the Environment (MOE) shall be contacted by the contractor in compliance with their spills policy
* Such an incident is to be phoned into the MOE Spills Action Centre at 1-800-268-6060 by the contractor. The Spills Action Centre will require the following information:
  * The nature of the incident (what happened and what materials were involved).
  * Approximate volume of material involved.
  * The incident location (lot, concession, township, county and/or city).
  * Actions that have or will be taken.
  * The name and telephone number of the person calling.
* The incident should be monitored:
  * The date, time and duration of the event should be recorded, as well as the content of the call to the MOE Spills Action Centre.

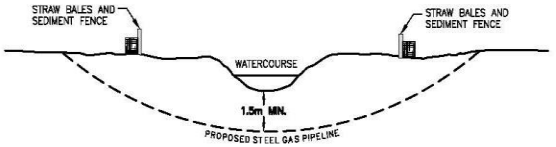
Company

* In the event that drilling fluids enter the watercourse or turbidity is generated by air migration, the Department of Fisheries and Oceans or local Conservation Authority (CA) shall be contacted by the Company Inspector. DFO contact information is provided on the Stream Crossing Review and CA contact information can be found on the permit.
* When this has been completed, Union's Environmental Planning Department or Lands Department staff shall also be notified.
* All calls identified above are mandatory and are to be completed immediately after the incident has occurred.

Minimum Horizontal Directional Drill Setback and Depth.



PLAN



PROFILE

NOTES:
- STRAW BALES AND SEDIMENT FENCE TO BE SET UP A MINIMUM OF 10m FROM WATERCOURSE.
- HORIZONTAL DIRECTIONAL DRILL TO BE SET UP BEHIND STRAW BALES AND SEDIMENT FENCE.
- MINIMUM OF 1.5m COVER FROM TOP OF PIPE TO BED OF WATERCOURSE.
- ALL DISTURBED AREAS TO BE RESTORED TO PRE-CONSTRUCTION CONDITIONS OR AS CLOSE AS POSSIBLE.

Restoration

The following conditions should be adhered to for the restoration of the construction site and adjacent lands:

* Ensure the entry and exit pits are cleaned of drilling fluids and the fluids are disposed of in an approved location.
* Any disturbed areas adjacent to the watercourse will be seeded, covered with erosion control matting or equivalent and restored as close as possible to preconstruction conditions.
* Vegetation on watercourse banks will either remain in place or will be replaced following construction.
* All seeding and vegetation replacement will be with native species to Ontario.
* If post construction monitoring reveals erosion problems, remedial work will be undertaken as quickly as possible.
* All debris/garbage shall be removed from construction site to an approved location.
* If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
* Maintain effective sediment and erosion control measures until revegetation of disturbed areas is achieved.

Contingency Plan

If, for any reason, the attempt to cross this watercourse by means outlined above is not successful, the Environmental Planner will be contacted to discuss an alternative crossing method. It should be noted that under no circumstances shall an alternative crossing method be attempted for any crossing without prior notification. Any changes to this Stream Crossing Review may require permit amendments or governmental agency approval.

If unforeseen events cause the strategies set out in this plan to be insufficient or inappropriate to meet the objective, the company is expected to respond in a safe and timely manner with all reasonable measures to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO or CA is to be notified as soon as practical.

Spill reporting procedures established by MOE shall be used to report any unexpected discharge of silt or sediment or other deleterious substance at the water crossing. The spill/incident shall also be reported to the DFO or CA as soon as possible in these circumstances.

If DFO determines that long term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by the company, in consultation with and approval from DFO for implementation by the company.

NOTES

Union Gas is responsible for implementation of appropriate sediment and erosion control to mitigate impacts to fish and fish habitat.

DATE	REV NO	REVISION	BY	APP'D

union gas
A Spectra Energy Company

PROJECT
UNION GAS LIMITED
CONSTRUCTION PROGRAM

LOCATION
ALL HORIZONTAL DIRECTIONAL DRILL CROSSINGS IN ONTARIO

DRAWING TITLE
GENERIC SEDIMENT CONTROL PLAN HORIZONTAL DIRECTIONAL DRILL

SCALE	NTS	DATE	MAY 16/12
FILE No.		PROJECT NO	
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APPROVED

Summary of Comments

TO BE FILED WHEN RECEIVED

TOTAL ESTIMATED ENVIRONMENTAL COSTS

SUDBURY EXPANSION PROJECT

Pre-Construction			
Environmental Report	$	10,000	
Archaeology		10,000	
Hearing Costs (Environmental Consultant)		5,000	
Surveys (fish, wildlife, plants)		3,000	
Permits		2,000	
Total Pre-Construction			**$ 30,000**
Construction			
Environmental Inspection	$	5,000	
Water Well Monitoring		10,000	
Total Construction			**$ 15,000**
Post Construction			
Cleanup	$	10,000	
Total Post Construction			**$ 10,000**
Total Estimated Environmental Costs			**$ 55,000**

FILE NO.	NAME & ADDRESS	PROPERTY DESCRIPTION	PERMANENT EASEMENT Dimensions (Metres) Area			TEMPORARY EASEMENT Dimensions (Metres) Area		
			Length	Width	(Hectares)	Length	Width	(Hectares)
1								
	Vale Canada Limited	PIN 02179-0002	15.24 x	33	0.05	15 x	20	0.03
T380-068	18 Rink Street	Pcls 19, 22, 16280A Sec Ses, Pt Lts 6-8 Con 5 Mckim, Pt	15.24 x	15.24	0.02	10 x	1290	1.29
	Copper Cliff, ON	Lts 8 & 9 Con 4 Mckim, Lying N Of Cpr Cartier Line, E				10 x	20	0.02
	P0M 1N0	Of Lasalle Blvd, W Of Frood Road, Except Sro Pts 1 & 2				10 x	20	0.02
		Sr3582 "Description In 15311 May Not Be Acceptable In				15 x	20	0.03
		Future Re: A Reference Plan May Be Required In Future."				15 x	20	0.03
		Subject To 147574, 154547, 165019, 284256, 342022				10 x	150	0.15
		City Of Sudbury				10 x	33	0.03
						10 x	25	0.03

PIPELINE EASEMENT

(the “Easement”)

Between

Click here to enter text.
(hereinafter called the “Transferor”)

and

UNION GAS LIMITED
(hereinafter called the “Transferee”)

This easement is an Easement in Gross

WHEREAS the Transferor is the owner in fee simple of those lands and premises more particularly described as: **PIN**: **Legal Description**: , (hereinafter called the "Transferor's Lands").

The Transferor does hereby GRANT, CONVEY, TRANSFER AND CONFIRM unto the Transferee, its successors and assigns, to be used and enjoyed as appurtenant to all or any part of the lands of the Transferee’s lands, the right, liberty, privilege and easement on, over, in, under to a depth of 10 meters and/or through a strip of the Transferor's Lands more particularly described as: **Being Part of the PIN**: , **Legal Description:** (hereinafter called the "Lands") to survey, lay, construct, maintain, brush, clear trees and vegetation, inspect, patrol, alter, remove, replace, reconstruct, repair, move, keep, use and/or operate one pipeline for the transmission of Pipeline quality natural gas as defined in The Ontario Energy Board Act S.O. 1998 (hereinafter called the "Pipeline") including therewith all such buried attachments, equipment and appliances for cathodic protection which the Transferee may deem necessary or convenient thereto, together with the right of ingress and egress at any and all times over and upon the Lands for its servants, agents, employees, those engaged in its business, contractors and subcontractors on foot and/or with vehicles, supplies, machinery and equipment for all purposes necessary or incidental to the exercise and enjoyment of the rights, liberty, privileges and easement hereby granted. The Parties hereto mutually covenant and agree each with the other as follows:

1. In Consideration of the sum of **TWO Dollars** ($2.00) of lawful money of Canada (hereinafter called the "Consideration"), which sum is payment in full for the rights and interest hereby granted and for the rights and interest, if any, acquired by the Transferee by expropriation, including in either or both cases payment in full for all such matters as injurious affection to remaining lands and the effect, if any, of registration on title of this document and where applicable, of the expropriation documents, subject to Clause 12 hereof to be paid by the Transferee to the Transferor within 90 days from the date of these presents or prior to the exercise by the Transferee of any of its rights hereunder other than the right to survey (whichever may be the earlier date), the rights, privileges and easement hereby granted shall continue in perpetuity or until the Transferee, with the express written consent of the Transferor, shall execute and deliver a surrender thereof . Prior to such surrender, the Transferee shall remove all debris as may have resulted from the Transferee's use of the Lands from the Lands and in all respects restore the Lands to its previous productivity and fertility so far as is reasonably possible , save and except for items in respect of which compensation is due under Clause 2, hereof. Transferor and Transferee hereby agree that nothing herein shall oblige Transferee to remove the Pipeline from the Lands as part of Transferee's obligation to restore the Lands. Further, the Transferee also hereby specifically acknowledges that a functioning water pipelines owned by the Transferor currently exists on the Lands, which shall remain on the Lands and shall at all times be maintained such that it continues to function. It is the intention that his water pipelines shall remain as is through the term of this Easement, and the Transferee acknowledges and consents to the Transferor having unfettered access to such water pipelines at all times, in order to ensure its functionality, provided that the Transferor will provide notice to the Transferee of its intention to work on the water pipelines.

2. The Transferee shall make to the Transferor (or the person or persons entitled thereto) due compensation for any damages to the Lands (including the said water pipelines) resulting from the exercise of any of the rights herein granted, and if the compensation is not agreed upon by the Transferee and the Transferor, it shall be determined by arbitration in the manner prescribed by the

Expropriations Act, R.S.O. 1990, Chapter E-26 or any Act passed in amendment thereof or substitution therefore. Any gates, fences and tile drains curbs, gutters, asphalt paving, lockstone, patio tiles interfered with by the Transferee shall be restored by the Transferee at its expense as closely as reasonably possible to the condition and function in which they existed immediately prior to such interference by the Transferee and in the case of tile drains, such restoration shall be performed in accordance with good drainage practice and applicable government regulations.

3. The Pipeline (including attachments, equipment and appliances for cathodic protection but excluding valves, take-offs and fencing installed under Clause 9 hereof) shall be laid to such a depth that upon completion of installation it will not obstruct the natural surface run-off from the Lands nor ordinary cultivation of the Lands nor any tile drainage system existing in the Lands at the time of installation of the Pipeline nor any planned tile drainage system to be laid in the Lands in accordance with standard drainage practice, if the Transferee is given at least thirty (30) days notice of such planned system prior to the installation of the Pipeline; provided that the Transferee may leave the Pipeline exposed in crossing a ditch, stream, gorge or similar object where approval has been obtained from the authority having jurisdiction in the premises. The Transferee agrees to make reasonable efforts to accommodate the planning and installation of future tile drainage systems following installation of the Pipeline so as not to obstruct or interfere with such tile installation, notwithstanding anything contained herein to the contrary, the transferee's subsurface rights do not extend beyond a depth of 10 meters.

4. As soon as reasonably possible after the construction of the Pipeline, the Transferee shall level the Lands and unless otherwise agreed to by the Transferor, shall remove all debris as may have resulted from the Transferee's use of the Lands therefrom and in all respects restore the Lands to its previous productivity and fertility so far as is reasonably possible, save and except for items in respect of which compensation is due under Clause 2 hereof.

5. It is further agreed that the Transferee shall assume all liability and obligations for any and all loss, damage or injury, (including death) to persons or property that would not have happened but for this Easement or anything done or maintained by the Transferee hereunder or intended so to be and the Transferee shall at all times indemnify and save harmless the Transferor from and against all such loss, damage or injury and all actions, suits, proceedings, costs, charges, damages, expenses, claims or demands arising therefrom or connected therewith provided that the Transferee shall not be liable under the clause to the extent to which such loss, damage or injury is caused or contributed to by the gross negligence or wilful misconduct of the Transferor.

6. In the event that the Transferee fails to comply with any of the requirements set out in Clauses 2, 3, or 4 hereof within a reasonable time of the receipt of notice in writing from the Transferor setting forth the failure complained of, the Transferee shall compensate the Transferor (or the person or persons entitled thereto) for any damage, if any, necessarily resulting from such failure and the reasonable costs if any, incurred in the recovery of those damages.

7. Except in case of emergency, the Transferee shall not enter upon any of the Transferor's Lands, other than the Lands, without the consent of the Transferor. In case of emergency the right of entry upon the Transferor's Lands for ingress and egress to and from the Lands is hereby granted. The determination of what circumstances constitute an emergency, for purposes of this paragraph is within the absolute discretion of the Transferee, but is a situation in which the Transferee has a need to access the Pipeline in the public interest without notice to the Transferor, subject to the provisions of Clause 2 herein. The Transferee will, within 72 hours of entry upon such lands, advise the Transferor of the said emergency circumstances and thereafter provide a written report to Transferor with respect to the resolution of the emergency situation The Transferee shall restore the lands of the Transferor at its expense as closely as reasonably practicable to the condition in which they existed immediately prior to such interference by the Transferee and in the case of tile drains, such restoration shall be performed in accordance with good drainage practice.

8. The Transferor shall have the right to fully use and enjoy the Lands except for planting trees over the lesser of the Lands or a six (6) metre strip centered over the Pipeline, and except as may be necessary for any of the purposes hereby granted to the Transferee, provided that without the prior written consent of the Transferee, the Transferor shall not excavate, drill, install, erect or permit to be excavated, drilled, installed or erected in, on, over or through the Lands any pit, well, foundation, pavement, building, mobile homes or other structure or installation. Notwithstanding the foregoing the Transferee upon request shall consent to the Transferor erecting or repairing fences, hedges, pavement, lockstone constructing or repairing tile drains and domestic sewer pipes, water pipes, and utility pipes and constructing or repairing lanes, roads, driveways, pathways, and walks across, on and in the Lands or any portion or portions thereof, provided that before commencing any of the work referred to in this sentence the Transferor shall (a) give the Transferee at least (30) clear days notice in writing describing the work desired so as to enable the Transferee to evaluate and

comment on the work proposed and to have a representative inspect the site and/or be present at any time or times during the performance of the work, (b) shall follow the instructions of such representative as to the performance of such work without damage to the Pipeline, (c) shall exercise a high degree of care in carrying out any such work and, (d) shall perform any such work in such a manner as not to endanger or damage the Pipeline as may be required by the Transferee.

9. The rights, privileges and easement herein granted shall include the right to install, keep, use, operate, service, maintain, repair, remove and/or replace in, on and above the Lands any valves and/or take-offs subject to additional agreements and to fence in such valves and/or take-offs and to keep same fenced in, but for this right the Transferee shall pay to the Transferor (or the person or persons entitled thereto) such additional compensation as may be agreed upon and in default of agreement as may be settled by arbitration under the provisions of The Ontario Energy Board Act, S.O. 1998, or any Act passed in amendment thereof or substitution therefore. The Transferee shall keep down weeds on any lands removed from cultivation by reason of locating any valves and/or take-offs in the Lands.

10. Notwithstanding any rule of law or equity and even though the Pipeline and its appurtenances may become annexed or affixed to the realty, title thereto shall nevertheless remain in the Transferee.

11. Neither this Agreement nor anything herein contained nor anything done hereunder shall affect or prejudice the Transferee's rights to acquire the Lands or any other portion or portions of the Transferor's lands under the provisions of The Ontario Energy Board Act, S.O. 1998, or any other laws, which rights the Transferee may exercise at its discretion in the event of the Transferor being unable or unwilling for any reason to perform this Agreement or give to the Transferee a clear and unencumbered title to the easement herein granted.

12. The Transferor covenants that he has the right to convey this Easement notwithstanding any act on his part, that he will execute such further assurances of this Easement as may be requisite and which the Transferee may at its expense prepare and that the Transferee, performing and observing the covenants and conditions on its part to be performed, shall have quiet possession and enjoyment of the rights, privileges and easement hereby granted. If it shall appear that at the date hereof the Transferor is not the sole owner of the Lands, this Easement shall nevertheless bind the Transferor to the full extent of his interest therein and shall also extend to any after-acquired interest, but all moneys payable hereunder shall be paid to the Transferor only in the proportion that his interest in the Lands bears to the entire interest therein.

13. In the event that the Transferee fails to pay the Consideration as hereinbefore provided, the Transferor shall have the right to declare this Easement cancelled after the expiration of 15 days from personal service upon the Manager, Land Services of the Transferee at its Executive Head Office in Chatham, Ontario, (or at such other point in Ontario as the Transferee may from time to time specify by notice in writing to the Transferor) of notice in writing of such default, unless during such 15 day period the Transferee shall pay the Consideration; upon failing to pay as aforesaid, the Transferee shall forthwith after the expiration of 15 days from the service of such notice execute and deliver to the Transferor at the expense of the Transferee, a valid and registrable release and discharge of this Easement.

14. All payments under these presents may be made either in cash or by cheque of the Transferee and may be made to the Transferor (or person or persons entitled thereto) either personally or by mail. All notices and mail sent pursuant to these presents shall be addressed to:

the Transferor at: Click here to enter text.
Click here to enter text.
Click here to enter text.

and to the Transferee at: Union Gas Limited
P.O. Box 2001
50 Keil Drive North
Chatham, Ontario N7M 5M1
Attention: Manager, Land Services

or to such other address in either case as the Transferor or the Transferee respectively may from time to time appoint in writing.

15. The rights, privileges and easement hereby granted are and shall be of the same force and effect as a covenant running with the Transferor’s Land and this Easement, including all the covenants and conditions herein contained, shall extend to, be binding upon and inure to the benefit of the heirs, executors, administrators, successors and assigns of the Parties hereto respectively; and,

wherever the singular or masculine is used it shall, where necessary, be construed as if the plural, or feminine or neuter had been used, as the case may be.

16. (a) The Transferee represents that it is registered for the purposes of the Harmonized Goods and Services Tax (hereinafter called "HST") in accordance with the applicable provisions in that regard and pursuant to the Excise Tax Act, (R.S.C., 1985, c. E-15), (hereinafter called "Excise Tax Act"), as amended.

    (b) The Transferee covenants to deliver a Statutory Declaration, Undertaking and Indemnity confirming its HST registration number, which shall be conclusive evidence of such HST registration, and shall preclude the Transferor from collection of HST from the Transferee.

    (c) The Transferee shall undertake to self-assess the HST payable in respect of this transaction pursuant to subparagraphs 221(2) and 228(4) of the Excise Tax Act, and to remit and file a return in respect of HST owing as required under the said Act for the reporting period in which the HST in this transaction became payable.

    (d) The Transferee shall indemnify and save harmless the Transferor from and against any and all claims, liabilities, penalties, interest, costs and other legal expenses incurred, directly or indirectly, in connection with the assessment of HST payable in respect of the transaction contemplated by this Easement. The Transferee's obligations under this Clause shall survive this Easement.

17. The Transferor hereby acknowledges that this Easement will be registered electronically.

DATED this day of Choose an item. , 20

Signature (Transferor)	**Signature (Transferor)**
Print Name(s) (and position held if applicable) I have authority to bind the Corporation.	**Print Name(s) (and position held if applicable)** I have authority to bind the Corporation.
Click here to enter text. **Address (Transferor)**	Click here to enter text. **Address (Transferor)**

UNION GAS LIMITED

Signature (Transferee)

Click here to enter text., Choose an item.
Name & Title (Union Gas Limited)

I have authority to bind the Corporation.

Click here to enter text.
Telephone Number (Union Gas Limited)

Additional Information: (if applicable):

Property Address: Click here to enter text.

HST Registration Number:

Municipality of Chatham-Kent

Province of Ontario

DECLARATION REQUIRED UNDER
SECTION 50 (3) OF THE PLANNING
ACT, R.S.O. 1990, as amended

I, Merv R. Weishar , of the Municipality of Chatham-Kent, in the Province of Ontario.

DO SOLEMNLY DECLARE THAT

1. I am a Senior Land Specialist, Lands Department of Union Gas Limited, the Transferee in the attached Grant of Easement and as such have knowledge of the matters herein deposed to.

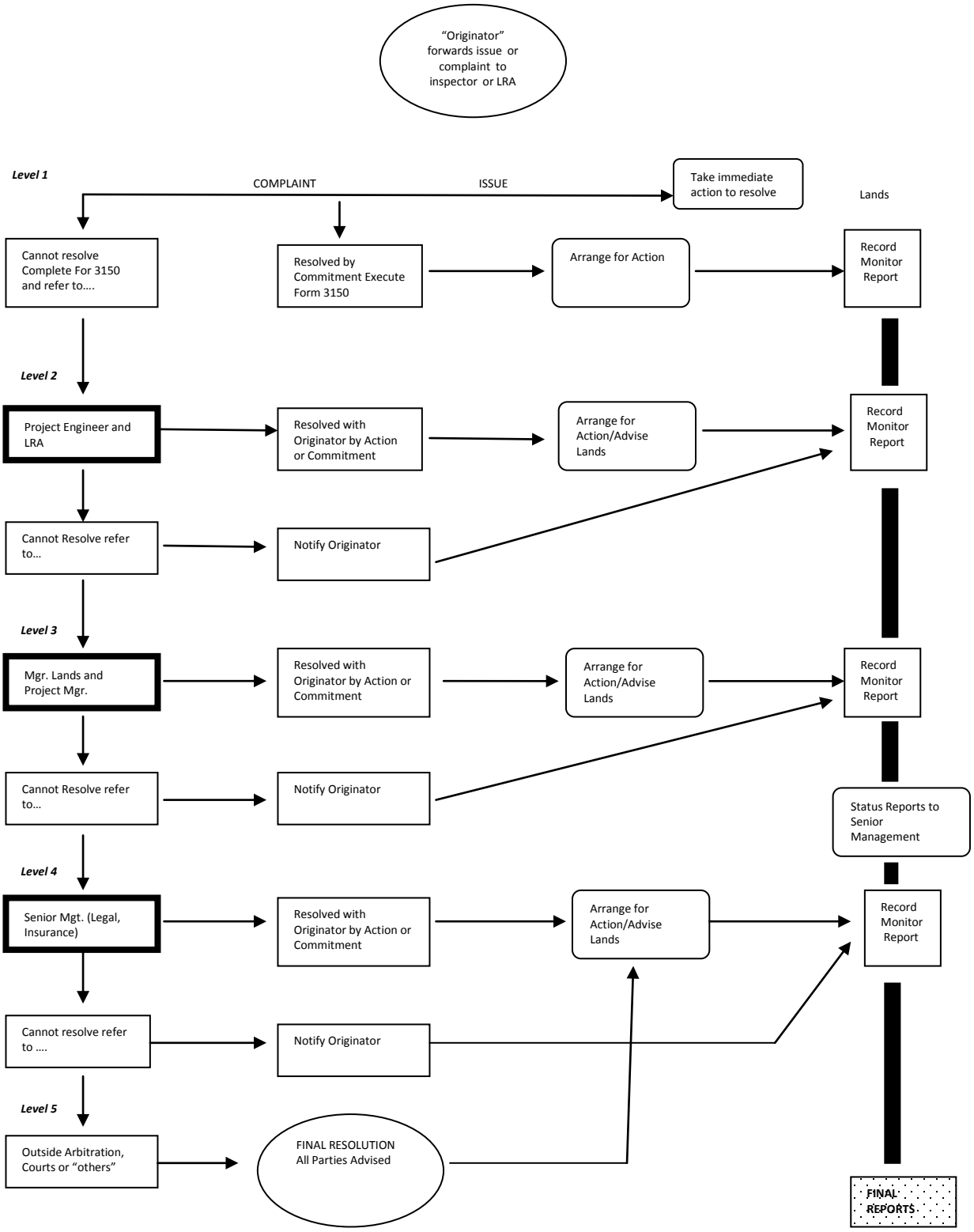
2. The use of or right in the land described in the said Grant of Easement is being acquired by Union Gas Limited for the purpose of a hydrocarbon line within the meaning of Part VI of the Ontario Energy Board Act, 1998.

AND I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath, and by virtue of The Canada Evidence Act.

DECLARED before me at the
Municipality of Chatham-Kent ,
in the Province of Ontario

This day of December 2015

_____ _____
A Commissioner, etc.



1. "originator" of complaint or issue may be landowner or company representative
2. Parties indicated in heavy outlined boxes shall assume responsibility for actions subsequently required in the resolution process. Parties identified in brackets may only be required for resolution or specific technical concerns
3. "L.R.A." refers to Landowner Relations Agent

LANDOWNER COMPLAINT RESOLUTION SYSTEM
EXPLANATION OF PROCESS CHART

Key Definitions

Originator – The originator of a complaint or issue is the landowner or Union Gas personnel who initiates a complaint or issue by making it known to the Landowner Relations Agent or a company inspector.

Landowner Relations Agent (LRA) – A person assigned on a full time or part time basis to record, monitor, and ensure follow-up on any complaint or issue received by Union related to construction, to address questions and concerns of the landowners, and to act as a liaison between landowners and the contractor and engineering personnel.

Issue – A concern of a landowner which can be resolved within three (3) working days. Immediate action is taken to resolve such matters.

Complaint – A concern of a landowner which cannot be resolved within three (3) working days.

Commitment – If an issue or complaint is resolved at any level of the Complaint Resolution system through the efforts and liaison activities of the Landowner Relations Agent or other personnel, the resolution is recorded to ensure proper future follow-up.

Outside Arbitration – includes the Board of Negotiation, O.M.B., and O.E.B.

Others – refers to other regulatory bodies and tribunals

Levels of the Complaint Resolution System

Level 1: The LRA or company inspector receives issues or complaints, and the following can happen:

a) Immediate action could be arranged by the LRA or inspector to resolve the issue or complaint; or
b) A complaint can be resolved by a commitment in which case the LRA is responsible for arranging for the committed action and having the commitment recorded in the Complaint Resolution system; or
c) If a complaint cannot be resolved through the efforts of the LRA or inspector, the applicable form (Form 3150) is completed and then recorded, and the complaint is referred to **Level 2**.

Level 2: The LRA and the Construction Supervisor work together to develop a resolution for the complaint, and the following can happen:

a) the complaint may be resolved with the originator by action or commitment and the action or commitment is recorded in the Complaint Resolution System; or
b) if the complaint cannot be resolved, the originator is notified, the non-resolution is recorded, and the complaint is referred to **Level 3**.

Level 3: The Manager, Lands and the Project Manager work together to develop a resolution for the complaint, and the following can happen:

a) complaint may be resolved with the originator by action or commitment and the action or commitment is recorded in the Complaint Resolution System; or
b) if the complaint cannot be resolved, the originator is notified, the non-resolution is recorded, and the complaint is referred to **Level 4**;

When complaints reach this level, status reports are generated through the Complaint Resolution System and are forwarded to Senior Management.

Level 4: Senior Management (with possible input from the Legal and Risk and Claims Departments) attempts to develop a resolution to the complaint, and the following can happen:

a) the complaint may be resolved with the originator by action or commitment and the action or commitment is recorded in the Complaint Resolution System; or
b) if the complaint cannot be resolved, the originator is notified, the non-resolution is recorded, and the complaint is referred to **Level 5**;

Level 5: Involves the resolution of a complaint by outside arbitration or others, and the following will happen:

A final resolution will occur, all parties will be advised, and any action required will be arranged by the LRA or other Lands Department personnel.

Note: the Complaint Resolution System is used to generate final reports to the Ontario Energy Board