ENBRIDGE

Asha Patel
Technical Manager
Regulatory Applications

tel 416-495-5642
EGIRegulatoryProceedings@enbridge.com

Enbridge Gas Inc.
500 Consumers Road
North York, Ontario M2J 1P8
Canada

February 17, 2021

VIA EMAIL and RESS

Ms. Christine E. Long
Registrar
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto, ON M4P 1E4

Dear Ms. Long:

Re: Enbridge Gas Inc. (Enbridge Gas)
Ontario Energy Board (OEB) File No.: EB-2020-0256
2021/2022 Storage Enhancement Project
Interrogatory Responses - REDACTED

In accordance with the OEB's Procedural Order No. 1 dated January 20, 2021, enclosed please find the interrogatory responses of Enbridge Gas.

In accordance with the OEB's revised Practice Direction on Confidential Filings effective October 28, 2016, personal information has been redacted from Attachment 2 of Exhibit I.STAFF.8.

The confidential unredacted exhibit will be provided to the OEB under separate cover.

Should you have any questions concerning this submission please contact the undersigned.

Yours truly,

Asha Patel
Digitally signed by Asha Patel
Date: 2021.02.17 13:59:07 -05'00'

Asha Patel
Technical Manager, Regulatory Applications

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh B/Tab 1/Sch1/p.2,5

Preamble:

The Project involves increasing the maximum operating pressure (MOP) in the Ladysmith Storage Pool to a maximum pressure gradient of 16.5 kPa/m (0.73 psi/ft) and increasing the MOP in the Corunna Storage Pool and the Seckerton Storage Pool (collectively, the Pools) to a maximum pressure gradient of 17.2 kPa/m (0.76 psi/ft) during the 2021 injection season. The additional 8,100 10m3 per day of deliverability and storage capacity will be sold as part of Enbridge Gas's unregulated storage portfolio.

The Project includes the installation of the installation of emergency shut-down valves, master valves, and wellheads at the Corunna and Seckerton pools, and the installation of a control valve at the Ladysmith Station.

Questions:

a) Please comment on any expressions of interest received to date for incremental unregulated storage deliverability and capacity that would be derived from this Project.
b) Please provide a summary of the forecast long-term demand in Ontario for regulated and unregulated storage space and deliverability annually, starting in 2020. Please provide any studies or other sources of information (or links, if publicly available) used for the forecast.
c) Please provide the split of the current capacity of the Pools between regulated and unregulated storage customers.
d) Please confirm that the proposed facilities (i.e., upgraded wellheads and new emergency shutdown valves and control valve) will not benefit regulated customers. If this cannot be confirmed, please explain.
e) If regulated customers will benefit from the proposed facilities, please provide a complete breakdown of all capital costs associated with the Project and the proportion of those capital costs that would be allocated to the regulated storage operations.

Response:

a) For the current storage year, Enbridge Gas is currently fully contracted and has historically been fully contracted with respect to storage space and deliverability. Historically during open seasons the demand for unregulated storage far exceeds contracts awarded. In the most recent storage open season conducted, demand exceeded contracts awarded by a factor of 9.

b) Enbridge Gas's regulated customer storage space forecast for the 2019/20 Gas Year to the 2023/24 Gas Year can be found in the Company's 2020 Annual Update to 5 Year Gas Supply Plan, EB-2020-0135, page 36, Table 4, filed on May 1, 2020.

	Storage Space Forecast (PJ)				
	2019/20	2020/21	2021/22	2022/23	2023/24
Regulated – EGD Rate Zone	126.1	126.1	126.1	126.1	126.1
Regulated – UG Rate Zone	97.1	96.9	98.0	99.1	99.1
Regulated – Total	223.2	223.0	224.1	225.2	225.2

	Deliverability (PJ/D)				
	2019/20	2020/21	2021/22	2022/23	2023/24
Regulated – EDG Rate Zone (1)	1.9	1.9	1.9	1.9	1.9
Regulated – UG Rate Zone	2.1	2.1	2.2	2.3	2.3
Total Regulated	3.9	4.0	4.1	4.2	4.2

1) Regulated deliverability capacity, EB-2017-0086, Exhibit D1, Tab 2, Schedule 9, Page 2

Enbridge Gas does not forecast unregulated storage deliverability demands. For the current storage year, Enbridge Gas is currently fully contracted and has historically been fully contracted with respect to storage space and deliverability. Historical open seasons for unregulated storage have often produced demand for storage space that far exceed the capacity awarded.

c) The current capacity of each Storage Pool is outlined below:

Storage Pool	Regulated Capacity Percentage	Unregulated Capacity Percentage
Corunna	61%	39%
Ladysmith	100%	
Seckerton	71%	29%

d) Confirmed. The space and deliverability created from the proposed facility will be for the benefit of the unregulated business. Upgrading wellheads and ESV's are a benefit to both regulated and unregulated customers but are the result of increasing the maximum operating pressure of the pools for the benefit of the unregulated business.

e) Please see response to part d). All costs are proposed to be allocated to unregulated storage operations, as the benefits (space and deliverability) from the proposed facilities will be allocated entirely to unregulated storage operations.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh B/Tab 1/Sch1/p.3

Preamble:

The OEB Act permits the OEB, when making an order, to "impose such conditions as it considers proper."[1] In its application, Enbridge Gas states that the following condition was attached to the OEB's approval in the EB-2020-0074 proceeding:

> Enbridge Gas Inc. shall not operate the Black Creek, Coveny and Wilkesport natural gas storage pools above operating pressures representing a pressure gradient of 17.2 kPa/m (0.76 psi/ft) of depth without leave of the OEB.

Enbridge Gas states that it will accept a similar condition for the Ladysmith, Corunna and Seckerton Pools, recognizing that Enbridge Gas is proposing to increase the operating pressure at Ladysmith to 16.5 kPa/m (0.73 psi/ft) and at Corunna and Seckerton Pools to 17.2 kPa/m (0.76 psi/ft).

If the OEB approves Enbridge Gas's requested increases to MOP of the Pools, OEB staff proposes the following condition:

> Enbridge Gas Inc. shall not operate the Ladysmith natural gas pool above the pressure gradient of 16.5 kPa/m (0.73 psi/ft) depth and the Corunna and Seckerton natural gas pools above the pressure gradient of 17.2 kPa/m (0.76 psi/ft) depth without leave of the OEB.

Questions:

a) Does Enbridge Gas have any objection to the OEB imposing the above noted condition of approval? If so, please explain Enbridge Gas' opposition to such a condition and provide any proposed alternative wording for the condition.

[1] OEB Act, s. 23

Response:

a) Enbridge Gas has no objection to this condition.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh B/Tab 1/Sch1/p.1

Preamble:

The Project is the second phase of a larger project to increase deliverability and storage capacity at Enbridge Gas's storage facilities.

Questions:

a) Please provide the studies or models (or links, if publicly available) that form the basis for Enbridge Gas's assessment and selection of the Pools as the preferred options for meeting the identified needs. Please summarize and define the criteria used to select the Pools for the Project.
b) Please advise as to whether there will be any additional phases of the project. Please provide an updated project summary similar to the one provided in OEB Staff Interrogatory 3(a) in EB-2020-0074 outlining the types of work (e.g., delta pressuring, well drilling, pipeline construction), pool names and locations, increased capacity per pool, possible timing, estimated costs, proposed treatment of costs (i.e., allocation between regulated and unregulated operations), expected land use requirements, unusual environmental concerns, and any potential Indigenous consultation concerns for any future additional storage enhancement projects.
c) If Enbridge Gas intends to undertake this project in phases, please provide Enbridge Gas's rationale for enhancing deliverability in more than one phase. Please address, without limitation, business, economic, environmental, and cost aspects, as well as technical and operational aspects of the multi-phase plan. Would there be any efficiencies gained by addressing the full demand at once (e.g., from the perspectives of regulatory approvals, permits, consultations, construction, etc.)?
d) As this is the second phase of a larger project to increase deliverability and storage capacity at Enbridge Gas's storage facilities, has Enbridge Gas conducted any analysis regarding the impact of increasing the MOP in Enbridge Gas pools on lost and unaccounted-for gas? If so, please describe the analysis undertaken and any findings. To the extent that increased pressure gradient may result in higher lost and unaccounted for gas, is Enbridge proposing that the resulting costs also be allocated to the unregulated storage operations? Please explain.

e) Enbridge Gas states that all costs associated with the Project will be captured in the unregulated accounts and that no costs of the Project will be charged to the regulated utility accounts. Does that include all direct and indirect costs (e.g. indirect overhead costs) associated with the Project? Please explain how and when indirect costs would be allocated to the unregulated storage operations.

Response:

a) The pools for the Project were chosen based on their geological similarity to other Enbridge Gas pools that have undergone a pressure increase and have been operated successfully at an elevated pressure gradient of 16.5 kPa/m (0.73 psi/ft) or 17.2 kPa/m (0.76 psi/ft) for many years.

   Enbridge Gas selected the order based on technical information that it had available for each pool, the impact on operations, the availability of contractors and the additional planning required to develop pipeline and station improvements required for each phase.

b) There is potential for additional storage enhancement projects beyond 2022 depending on demand and project suitability.

Table 1 – Proposed Storage Enhancement Project Summary

Phase	Year(s)	Pool(s)	Location	Pressure Gradient Increase (kPa/m)	Capacity Increase (10^3m^3)
1	2021	Ladysmith	Moore Township, Lambton County	15.9kPa/m to 16.5kPa/m	16,500 (0.65 PJ)
2	2021	Corunna	Moore Township, Lambton County	15.9kPa/m to 17.2kPa/m	23,800 (0.94 PJ)
		Seckerton	Moore Township, Lambton County	15.9kPa/m to 17.2kPa/m	58,700 (2.31 PJ)
	2022	Payne	Moore Township, Lambton County	15.9kPa/m to 17.2kPa/m	41,500 (1.63 PJ)
		Dow Moore	Moore Township, Lambton County	15.9kPa/m to 16.5kPa/m	46,800 (1.84 PJ)

Table 2 – Phase 1 - Proposed Storage Enhancement Project – Activity and Timing

Pool	Year	Activity Summary
Ladysmith	2020	• OEB application (EB-2020-0256)
	2021	• Convert stratigraphic test well to I/W well and connect to gathering system • Upgrade Ladysmith gathering system • Upgrades within the Ladysmith Station • Future OEB application, to be submitted in early 2021, for recommendation to drill A-1 observation well • Drill A-1 observation well

Table 3 - Phase 2 - Proposed Storage Enhancement Project – Activity and Timing

Pool	Year	Activity Summary
Corunna Seckerton	2020	• OEB application (EB-2020-0256) •
	2021	• Wellhead upgrades • Corunna well abandonment • Future OEB application, to be submitted in early 2021, for recommendation to drill A-1 observation well • Drill A-1 observation well
Dow Moore Payne	2021	• Engineering, Geological, Risk and Environmental Assessments. • Future OEB application, to be submitted in Q2/Q3 of 2021, for recommendation to drill an I/W well in Kimball-Colinville to increase deliverability, and Leave to Vary to increase MOP in Dow Moore & Payne
	2022	• Wellhead upgrades • Drill I/W well • Dow Moore station upgrades

NPS 24 Pipeline from Corunna Compressor Station to Payne Storage Pool Compressor Station	2020	• OEB application (EB-2020-0256)
	2021	• Tie-in at Corunna Compressor Station • Permanent easement and temporary land use agreement for NPS 24 pipeline
	2022	• Construct 2.2 km NPS 24 pipeline between Payne and Corunna compressor stations
Ladysmith and Payne Connection – station construction and modifications and re-routing of Ladysmith pipeline	2020	• OEB application (EB-2020-0256) • Engineering design • Land purchase of station lands
	2021	• Engineering design • Permanent easements and temporary land use agreements required for Payne/Ladysmith connection station
	2022	• Construction – pipeline and station modifications
Dawn Station Modifications	2022	• Modifications to station piping and valves

c) Each phase of the project, as outlined above, includes the facilities required to create the deliverability associated with the storage capacity developed (i.e. a standard storage contract often includes 1.2% deliverability). Phase 2 also includes additional deliverability that will be marketed to third parties as part of Enbridge Gas' unregulated business.

The phased approach will allow time to complete technical studies, such as Environmental Screening Reports, including Species at Risk studies and Archaeological Assessments; Engineering Assessments, Geological Assessments; Neighbouring Activities Assessments and Risk Assessments. Due to pipeline and station construction, more time is required to complete Phase 2 technical studies.

Completing the work in phases minimizes the impact on operations. Enbridge Gas is only able to complete the necessary upgrades on a limited number of storage pools in a single year and maintain injectability. Only a limited number of pools can be taken out of service at any one time without causing an interruption to gas supply operations and this will allow Enbridge Gas to meet any contracted requirements. Enbridge Gas has contemplated shortening the length of the proposed developments and has concluded that it would not be feasible.

d) Enbridge Gas has increased the maximum operating pressure in 22 of its storage pools since 2001 and has been steadily monitoring each pool for any fluctuation in storage capacities. Material balance analyses are conducted for each storage pool upon completion of injection and withdrawal operations. Inventory in each storage pool is constantly monitored to ensure that there are no deviations from normal operations.

   There has been no indication to date that the increase in the maximum operating pressure and the increase in deliverability capability have caused any impact to lost and unaccounted for gas. Please refer to Exhibit B, Tab 1, Schedule 1, Attachment 1 in the pre-filed evidence for a list of storage pools and the year they were delta pressured.

   If it is determined that storage activities have resulted in an increase in lost and unaccounted for gas, those costs will be allocated between regulated and unregulated storage operations as per the OEB's Decision in EB-2015-0114.

e) All direct costs associated with the proposed project are captured in the project account. Indirect costs are expensed to the unregulated business as they are incurred; they are not charged to the unregulated capital projects.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh B/Tab1/Sch 1/p.4 and Exh H/ Tab 1/Sch 1/p.1,2

Preamble:

Section 10 of the *Oil, Gas and Salt Resources of Ontario, Provincial Operating Standards* requires that facilities for storage of hydrocarbons in underground formations shall be designed, constructed, operated, maintained and abandoned in accordance with CSA Standard Z341 – *Storage of Hydrocarbons in Underground Formations* (CSA Z341).

As a condition of approval in past proceedings, the OEB has required that the applicant conform with the relevant requirements of the CSA Z341 to the satisfaction of the Ministry of Natural Resources and Forestry (MNRF). In its application, Enbridge Gas has acknowledged this requirement.

Enbridge Gas states that the following technical information was provided to the MNRF on November 10, 2020 for the proposed drilling operation and for the proposed elevation of the MOP:

i. Engineering studies completed by Geofirma confirming that the maximum safe operating pressure exceeds 16.5 kPa/m for the Ladysmith Storage Pool and 17.2 kPa/m for the Corunna and Seckerton Storage Pools.
ii. An Assessment of Neighbouring Activities for the Corunna Storage Pool, the Ladysmith Storage Pool, and the Seckerton Storage Pool
iii. “What If” Analysis of hazards and operability for each of the Pools.

Questions:

a) What is the anticipated timeline for MNRF’s review and provision of its comments and conclusion on compliance with CSA Z341?
b) Has Enbridge Gas had any discussions with the MNRF in this regard? If so, please provide a summary of those discussions.
c) Does Enbridge Gas have any objection to the OEB imposing a condition of approval that requires Enbridge Gas to conform to the relevant requirements of CSA Z341 to

the satisfaction of the MNRF? If so, please explain Enbridge Gas's opposition to such a condition.

d) The facilities addressed by CSA Z341 include wells, well heads, subsurface equipment, and safety equipment (including monitoring, control, and emergency shutdown systems). Does Enbridge Gas accept that as operator of these facilities it has a responsibility to ensure that all safety and environmental issues are addressed and that it will comply with the Oil, Gas and Salt Resources of Ontario Act, O. Reg. 245/97 and CSA Z341?

Response:

a) MNRF has not disclosed to Enbridge Gas a timeline for their review and their conclusions on compliance with CSA Z341. However, MNRF is an Intervenor to this application and has asked interrogatories to which Enbridge Gas has provided responses. Enbridge Gas would be pleased to provide any information needed by the MNRF upon their request.

b) As presented in Exhibit H, Tab 1, Schedule 1, Attachment 2 of the application, Enbridge Gas has offered to meet with the MNRF twice to review the studies and to answer any questions. MNRF has not contacted Enbridge Gas to review or discuss any of the studies or the application, since the original emails sent in October of 2020. Enbridge Gas is available to meet with MNRF to discuss this application if so required.

c) Enbridge Gas does not have any objection to the OEB imposing a condition of approval that requires Enbridge Gas to conform to the relevant requirements of CSA Z341.1 to the satisfaction of the MNRF.

d) Enbridge Gas will ensure that all safety and environmental issues are addressed, concerning the above-noted facilities and Enbridge Gas will comply with the Ontario *Oil, Gas and Salt Resources Act*, O. Reg. 245/97 and CSA Z341.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh C/Tab 1/Sch 1/p.3

Preamble:

The application states that the Environmental Report (ER) was provided to the Ontario Pipeline Coordinating Committee (OPCC) and other applicable agencies on October 5, 2020. As part of its application, Enbridge Gas submitted comments it had received from the Ministry of the Environment, Conservation and Parks (MECP), Infrastructure Ontario (IO), and Hydro One Networks Inc. (HONI).
Enbridge Gas states that after the ER was completed, there were two changes to the scope of the project. First, the two new A-1 observation wells (TL 8 and TC 8) are no longer included as part of the project. Second, the existing Payne Storage Pool pipeline and Ladysmith Storage Pool pipeline were proposed to be connected at a new Crossover Station adjacent to the existing Payne/Kimball Station. Now, the two pipelines are proposed to be connected by re-routing the Ladysmith Storage Pool Pipeline into the Payne/Kimball Station. Enbridge Gas states that these changes do not affect the mitigation measures proposed in the ER as the two observation wells will be removed from the project and the proposed pipeline connection will be in the same general location as the formerly proposed Crossover Station.

Questions:

a) Please file an update of the comments (in tabular format) that Enbridge Gas received as part of the OPCC review and in any public consultation since the application was filed. Please include the dates of communication, the issues and concerns identified by the parties, as well as Enbridge Gas's responses and actions to address these issues and concerns.

b) Please confirm that Enbridge Gas has made the OPCC and other applicable agencies aware of the scope changes and provide any comments received from the OPCC regarding these changes.

Response:

a) Please refer to Attachment 1 for updated comments received as part of the OPCC review since the application was filed.

b) Enbridge Gas did not make the OPCC and other applicable agencies aware of the scope changes because not proceeding with wells TL 8 and TC 8 only reduces the project scope and would not require further OPCC review. Additionally, the location of the proposed connection of the Payne Storage Pool and Ladysmith Storage Pool pipelines was covered in the Environmental Report's Project Study Area and is located on land owned by Enbridge; therefore, the change will not impact any new landowners.

Summary of OPCC Comments Received Since Filing Date

Contact Name	Method and Date of Communication	Summary of Comments/Questions	Response
Government Agencies			
Shamus Snell A/ Management Biologist Species at Risk Branch Ministry of the Environment, Conservation and Parks (MECP)	Email of February 2, 2021	MECP confirmed that they had responded to the AECOM information request. They noted that prior to discussing site specific mitigation measures AECOM should evaluate the need to complete species specific surveys and submit a Preliminary Screening to MECP.	AECOM noted the response and will complete the Preliminary Screening once site specific surveys are completed.
Shamus Snell A/ Management Biologist Species at Risk Branch Ministry of the Environment, Conservation and Parks (MECP)	Email of January 21, 2021	MECP provided a response to the AECOM information request noting several SAR occurrences within the vicinity of the Project. MECP recommended that species specific surveys be completed where potential suitable habitat exists.	AECOM noted the response and reviewed the survey protocols provided. Site specific surveys are planned when weather permits.
Barb Slattery EA/Planning Coordinator Ministry of the Environment, Conservation and Parks (MECP)	Email of January 20, 2021	MECP confirmed that the AECOM letter was forwarded to MECP SAR staff for a response.	AECOM noted the response and provided MECP with a second copy of the Information Request submitted in December 2020.
Matey N. Matev Senior Network Management Officer Asset Optimization – Secondary Land Use Hydro One Networks Inc. (HONI)	Meeting November 23, 2020	EGI provided HONI with an overview of the project and provided an overview of the work occurring in 2021 and 2022. HONI confirmed that agreements would be required for work on their easements and that permits would be needed for work within the vicinity of their infrastructure (including crossings under transmission lines for access roads).	EGI noted that temporary/permanent land requirements to support construction would be confirmed in the coming months. Once confirmed, EGI would provide detailed designs of areas near HONI infrastructure so any additional authorizations/permits could be confirmed.
Barb Slattery EA/Planning Coordinator Ministry of the Environment, Conservation and Parks (MECP)	Email/Letter of November 16, 2020	MECP provided comments related to potential impacts to Species at Risk (SAR) as part of the Project. Specifically, MECP provided information sources that AECOM should use to determine the potential presence of species that could be impacted by the project. MECP also recommended that AECOM contact the SARB office to confirm the potential presence of Threatened and Endangered SAR, mitigation measures that may apply and the need for species specific surveys to be conducted. MECP noted in their response that they had challenges reviewing the maps provided in Appendix A and that correspondence with SARB wasn't noted in Appendix B of the ER.	AECOM noted on January 19, 2021 that an information request was sent to the MECP SARB office in December, 2020 and no response had been received. AECOM confirmed that further screening and surveys for SAR species would be completed. AECOM also provided additional copies of the maps found in Appendix A.

Attachments – Copies of Agency Comments

Ministry of the Environment, Conservation and Parks

Van der Woerd, Mark

From:	Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Sent:	January-21-21 10:57 AM
To:	De Carlo, Nathaniel
Cc:	Washburn, Kristan
Subject:	MECP SARB Review: Information Request Enbridge Gas Inc. Storage Enhancement Project
Attachments:	Draft_Survey_Protocol_for_Bobolink.pdf; GHD_Bobolink.pdf; GHD_Chimney_Swift.pdf; Survey_Protocol_Snakes.pdf; Treed Habitats - Maternity Roost Surveys.docx

Hi Nathan,

The Ministry of the Environment, Conservation and Parks (MECP) Species at Risk Branch (SARB) has conducted review of study area for the Enbridge Gas Inc. 2021/2022 Storage Enhancement Project, and the areas adjacent to it for Species at Risk (SAR) occurrences and detected the following SAR occurrences in addition to those identified in the information request.

- Bank Swallow (Riparia riparia);
- Chimney Swift (Chaetura pelagica);
- Eastern small-footed myotis (Myotis leibii);
- Little brown myotis (Myotis lucifugus);
- Northern myotis (Myotis septentrionalis).

While this review represents MECP's best currently available information, it is important to note that a lack of information for a site does not mean that SAR or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in areas not previously surveyed. On-site assessments and surveys are recommended to better verify site conditions, identify and confirm presence of SAR and/or their habitats.

The location of the study area overlaps numinous observations of Bobolink and Eastern Meadowlark and the habitat within the study area suggests there is a very high potential they could be nesting there. Species specific surveys are recommended to determine the extent of the habitat use in these areas. A copy of a survey protocol and General Habitat Descriptions for these species have been attached to assist with this.

Numinous observations Barn Swallow and Chimney Swift have been detected overlapping the study area. If the there are any structures or buildings within the study area which have the potential to be impacted by the proposed project it is recommended that they be surveyed for the presence of Barn Swallow and Chimney Swift nests.

Butler's Gartersnake have been known to occur along the tree edges within the study area. It is recommended that snake surveys be performed to better under the potential habitat use within the study area. The "Survey Protocol for Ontario's Species at Risk Snakes" has been attached for your reference.

If the treed habitats within the study area are likely to be impacted then it is recommended that bat maternity surveys be undertaken. Information on maternity roost surveys has been attached to this email for you reference.

It is the responsibility of the proponent to ensure that SAR are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the site. If the proposed activities can not avoid impacting protected species and their habitats then the proponent will need to apply for a authorization under the Endangered Species Act.

Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch
Ministry of the Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: De Carlo, Nathaniel <Nathaniel.DeCarlo@aecom.com>
Sent: January 12, 2021 3:02 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Cc: Washburn, Kristan <Kristan.Washburn@aecom.com>
Subject: FW: Information Request - Enbridge Gas Inc. 2021/2022 Storage Enhancement Project - 12/16/2020

Hello,

I am just reaching out to follow up on the below Information Request (also - see attached) for the Enbridge Gas Inc. 2021/2022 Storage Enhancement Project located in St. Clair Township, within the County of Lambton (Sarnia District MECP), submitted on December 16, 2020. If you could provide on update on the process or timeline, that would be great!

Thanks,

Nathan DeCarlo, M.E.S.
Ecologist - Impact Assessment and Permitting, Canada
M +1-705-938-0562
nathaniel.decarlo@aecom.com

AECOM
50 Sportsworld Crossing Road
Suite 290, West Entrance
Kitchener, Ontario, N2P 0A4
T +1-519-690-5313
aecom.com

From: De Carlo, Nathaniel
Sent: Wednesday, December 16, 2020 2:49 PM
To: SAROntario@ontario.ca
Cc: Washburn, Kristan <Kristan.Washburn@aecom.com>
Subject: Information Request - Enbridge Gas Inc. 2021/2022 Storage Enhancement Project - 12/16/2020

Hello,

AECOM Canada Ltd. Has been retained by Enbridge Gas Inc. for their 2021/2022 Storage Enhancement Project located in St. Clair Township, within the County of Lambton (Sarnia District MECP). Please find an Information Request Letter attached including a preliminary Species at Risk and Species of Conservation Concern Screening for the Project Study Area using the MECP preliminary screening guide.

Please let me know if you have any questions or require anything further,

Thanks!

Nathan DeCarlo, M.E.S.
Ecologist - Impact Assessment and Permitting, Canada
M +1-705-938-0562
nathaniel.decarlo@aecom.com

AECOM
50 Sportsworld Crossing Road
Suite 290, West Entrance
Kitchener, Ontario, N2P 0A4
T +1-519-690-5313
aecom.com

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Survey Methodology under the Endangered Species Act, 2007:

Dolichonyx oryzivorus (Bobolink)

Updated as of 04/07/2011

Ministry of Natural Resources
Policy Division
Species at Risk Branch

Draft for discussion purposes only

Ontario

Bobolink Survey Methodology

Conditions: Surveys need to be done under field conditions with no precipitation, no or low wind speed and good visibility. In the course of the surveys if a nest or probable nest is encountered, the surveyor is advised not to disturb it or search an area for nests. Surveys rely on observations of birds while walking along transects through the fields.

Qualifications: Observers should be familiar with Bobolink identification by sight and sound. This includes being able to separate males from females and knowledge of Bobolink and their behaviours during breeding to allow it to be categorized (e.g. singing male, pair in suitable habitat, carrying food or nesting material, foraging, territorial displays, recently fledged young). See the Ontario Breeding Bird Atlas for additional behaviour categories.

Pre-Survey: Set up parallel transects crossing the fields lengthwise at approximately 250 m intervals and locate point counts along the transects at 250 m intervals. The locations of point count along the transects may be staggered by up to 125 m to give the best surveying opportunities. Point counts should be located to give a good view of the surrounding fields. Create GPS locations for each point count. Materials needed for the survey include binoculars, notebook, GPS, compass, watch and camera.

Survey: Surveys should start at dawn and continue until no later than 9 am. The observer will walk the transect stopping at each point count. Undertake ten minutes of observations and listening at each point count. Record information on all Bobolink observed or heard, their sex, general location, direction, distance, behaviour and interactions with other Bobolink or other species. On transit between point counts, record any Bobolink observed or heard if not also seen on the point counts. Nest searches should be avoided.

Repeat visits: Complete at least three sets of point count surveys. These should take place between the last week of May and the first week of July with each survey separated by a week or more from previous surveys.

Habitat: Make notes on the general conditions of the fields at the locations where Bobolink are noted. These would include broad habitat descriptors (e.g. field, hedgerow, fence line), estimated height of the vegetation, general vegetation type (including predominate species if known), estimated percentage of grass versus broad-leaved plants, and presence of litter (i.e. thatch). It is best if the surveyor evaluates the locations from the transect or close to the transect rather than walking directly into the area where the Bobolink were found. Photos should be taken.

Natural. Valued. Protected.

General Habitat Description for the Bobolink (*Dolichonyx oryzivorus*)

A general habitat description is a technical document that provides greater clarity on the area of habitat protected for a species based on the general habitat definition found in the Endangered Species Act, 2007. General habitat protection does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry out their life processes. A general habitat description also indicates how the species' habitat has been categorized, as per the policy "Categorizing and Protecting Habitat Under the Endangered Species Act", and is based on the best scientific information available.

HABITAT CATEGORIZATION

1	Nest and the area within 10 m of the nest
2	The area between 10 m and 60 m of the nest or centre of approximated defended territory
3	The area of continuous suitable habitat between 60 m and 300 m of the nest or approximated centre of defended territory

Category 1

Bobolink nests and the area immediately around the nest (i.e., 10 m) are highly sensitive features supporting the species' reproduction life cycle and have the lowest tolerance to alteration. These are areas the species depends on for life processes including egg laying, incubation, feeding, resting and rearing of young. Nests are built on the ground beneath a cover of tall grasses and forbs and are used daily during the breeding season. Both males and females exhibit high breeding site fidelity (Gavin and Bollinger 1985, Wootton *et al.* 1986). The area immediately surrounding the nest (i.e., 10 m) is important to maintain the microclimate around the nest and provide cover from predators.

It is important to note that Bobolink nests are rarely identified due to their cryptic nature. It is inadvisable to search for Bobolink nests as this may inadvertently jeopardize the nesting site and/or offspring. However, if a nest is identified, it and the area within 10 m shall be categorized as Category 1.

Category 2

The area between 10 m and 60 m of the nest or centre of approximated defended territory is included in Category 2 and is considered to have a moderate level of tolerance to alteration. This area includes the species' defended territory and is depended upon for courtship, mating, rearing young, feeding, resting and bathing. Throughout the species' breeding range, defended territories have been reported to range in size from 0.33 – 2 ha (Gavin and Bollinger 1985, Wootton *et al*. 1986, Martin and Gavin 1995, Fletcher and Koford 2003, Bollinger and Gavin 2004, Moskwik and O'Connell 2006, COSEWIC 2010, Weidman and Litvaitis 2011) and are used daily throughout the breeding season. Both males and females show site fidelity to previously used breeding sites. Territory size is generally smaller in high quality habitat and larger in lower quality habitat (Wittenberger 1980, Martin and Gavin 1995, Nocera 2009). On average, territories are 1.2 ha (or approximately the area within 60 m of a nest) in size although they may vary depending on the local habitat conditions.

Category 3

The area of continuous suitable habitat between 60 m and 300 m of a nest or centre of approximated defended territory is included in Category 3 and will be considered to have a high level of tolerance to alteration. These are areas the species depends on for feeding, rearing of young, resting, dispersal and concealment from predators. It also helps maintain the function of both Category 1 and 2 habitat. Bobolinks depend on suitable grassland habitat which includes, but is not limited to, hayfields, pastures, old or abandoned fields, and remnant prairies, savannahs and alvar grasslands (McCracken *et al*. 2013).

Many studies have demonstrated that Bobolink is area sensitive, requiring grassy patches much larger than their territory size (Herkert 1991, 1994, O'Leary and Nyberg 2000, Johnson 2001, Johnson and Igl 2001, Renfrew and Ribic 2008). Minimum area requirements to support breeding habitat for the species have been reported to range from 5 ha (Nocera, pers. comm. 2012), to 10 and 30 ha (Bollinger and Gavin 1992, Herkert 1991) to 50 ha (Herkert 1994, Helzer and Jelinski 1999). These larger habitat sizes are required to reduce edge effects such as predation and brood parasitism (Johnson and Temple 1990, Renfrew and Ribic 2003, Bollinger and Gavin 2004) and maintain good quality interior grassland habitat for breeding. Encroachment or loss of habitat edges reduces the amount of suitable interior and causes loss of habitat suitability for Bobolink. Patches of 10 ha or smaller contain little, if any, interior habitat (defined as more than 100 m from an edge – Helzer and Jelinksi 1999), especially if patches are irregularly shaped. In order to maintain breeding habitat function, the entire continuous grassy patch up to 300 m from the nest or approximated centre of the defended territory is important habitat for Bobolink.

Activities in Bobolink habitat

Activities in general habitat can continue as long as the *function of these areas for the species is maintained and individuals of the species are not killed, harmed, or harassed*.

Generally compatible:

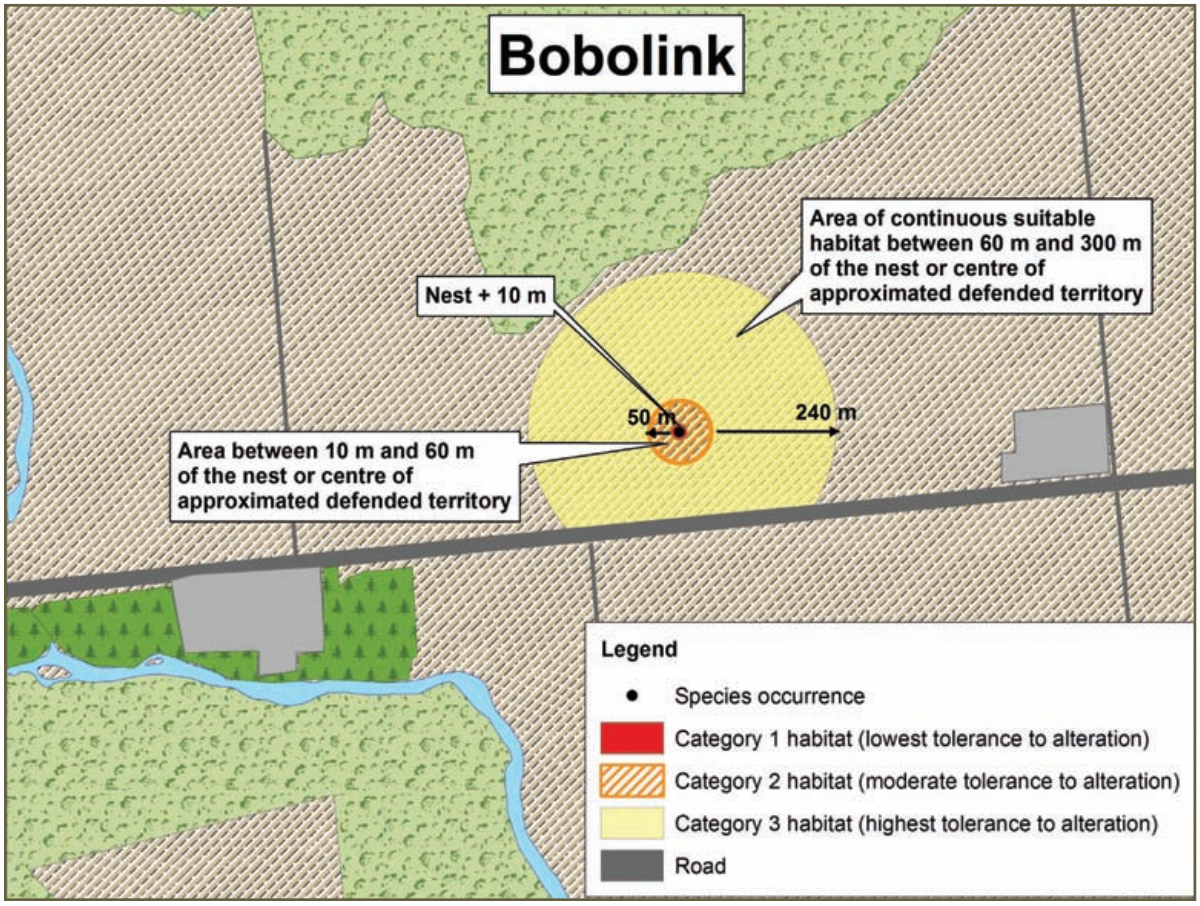
- Continuation of existing agricultural practices and planned management activities such as annual harvest, mowing, and rotational cattle grazing.
- Hiking and non-motorized vehicle use on existing recreational trails.
- General yard work such as lawn care and gardening.

Generally not compatible:*

- Development activities that result in significant fragmentation or removal of large tracts of suitable grasslands.
- Indiscriminate application of pesticides within habitat.

* If you are considering an activity that may not be compatible with general habitat, please contact your local MNR office for more information.

Sample application of the general habitat protection for Bobolink



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General Habitat Description for the Chimney Swift (*Chaetura pelagica*)

A general habitat description is a technical document that provides greater clarity on the area of habitat protected for a species based on the general habitat definition found in the Endangered Species Act, 2007. General habitat protection does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry out their life processes. A general habitat description also indicates how the species' habitat has been categorized, as per the policy "Categorizing and Protecting Habitat Under the Endangered Species Act", and is based on the best scientific information available.

HABITAT CATEGORIZATION

1	Human-made nest/roost, or a natural nest/roost cavity and the area within 90 m of the natural cavity
2	Not applicable to this species
3	Not applicable to this species

Category 1
A human-made nesting/roosting feature, or a natural nesting/roosting tree cavity and the area within 90 m of the tree, are considered the least tolerant to alteration.

Nesting features are highly sensitive to alteration, especially during the breeding season. Chimney Swifts depend on these features for reproduction, providing areas for resting, shelter, refuge from the elements, and are habitually used. Features used for roosting are equally important and sensitive to alteration. Roosting features are especially important as high concentrations of individuals may depend on them for survival, especially during seasonal migrations and during periods of inclement weather. In most cases, nesting features typically house a single pair although these areas may become roosts for the family or for high concentrations of individuals post-fledging or during migration (Dexter 1992, Cink and Collins 2002, COSEWIC 2007). Therefore nesting features may also simultaneously act as a roosting feature, rendering nesting and roosting features superficially indistinguishable from one another. Chimney Swifts exhibit high nest and roost site fidelity. Nest and roost sites are used from year to year as long as the feature remains stable.

In a natural setting, the area immediately surrounding a nesting or roosting tree cavity (i.e., 90 m) is important for maintaining the function and physical stability of the feature. The critical root zone of a tree is generally found up to 36 times the diameter at breast height (DBH) of a tree (Johnson 1997). The area within 90 m of a natural nesting/roosting tree will protect the critical root zone of largest tree species known to support Chimney Swift nesting/roosting. In Ontario, the most commonly known tree species to host Chimney Swift nesting or roosting sites are white pine, sycamore, yellow birch and cypress (Bird Studies Canada 2013). According to Hosie (1969), the maximum DBH for these trees is 244 cm (sycamore), therefore the critical root zone is calculated to be approximately 90 m (2.44 m X 36 = 87.84 m).

Chimney Swifts spend the majority of the daylight hours in flight foraging for aerial insects, returning to roost and nest sites at dusk (Cink and Collins 2002). This species typically forages at high altitudes and at a distance from the nest (Williams 1956, Fisher 1958). Swifts may also forage at night around street lights or illuminated buildings (Cink and Collins 2002). Savard and Falls (2001) found Chimney Swifts in Toronto to be more dependent on the presence of buildings than with remnant natural features, especially vegetation structure and volume. Chimney Swifts are more concentrated in urban areas where there are larger concentrations of suitable chimneys for nesting and/or roosting. The 2001-2005 Atlas of Breeding Birds (Cadman *et al.* 2007) in Ontario illustrates a concentration of breeding Chimney Swifts in the Golden Horseshoe, which has the highest population of people and buildings in Ontario. In 2012, of the 244 nests and/or roosts reported in the province, over 60% were reported in the Greater Toronto Area (Bird Studies Canada).

Category 2
Not applicable to this species.

Category 3
Not applicable to this species.

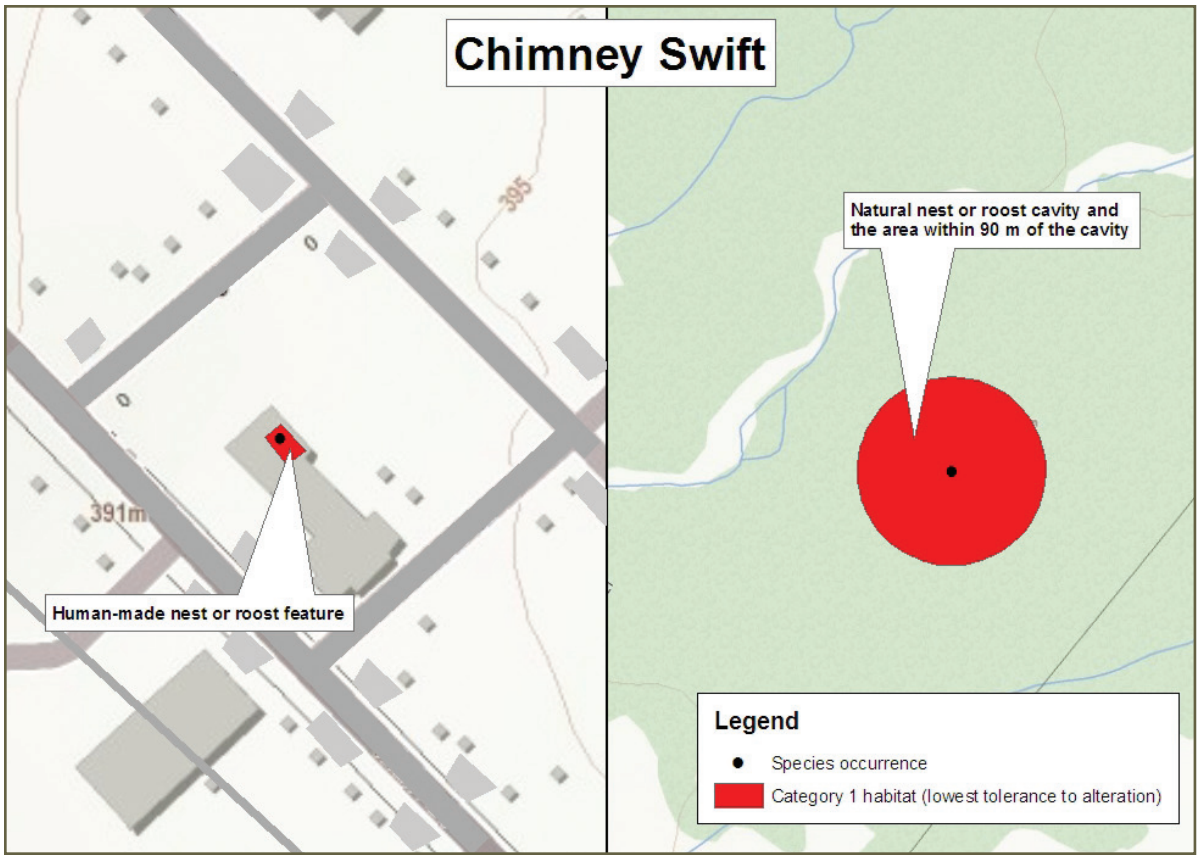
Activities in Chimney Swift habitat
Activities in general habitat can continue as long as the *function of these areas for the species is maintained and individuals of the species are not killed, harmed, or harassed.*

Generally compatible:
- Chimney maintenance including masonry repair and chimney sweeping that is conducted outside of the breeding season and does not impair the function of the habitat.
- Regular building use and building improvements that do not impair the function of the habitat.

Generally not compatible:*
- Capping or demolishing chimneys that Chimney Swift depend upon for nesting or roosting.
- Cutting down cavity tree that Chimney Swift depend upon for nesting or roosting.

* If you are considering an activity that may not be compatible with general habitat, please contact your local MNR office for more information.

Sample application of the general habitat protection for Chimney Swift



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Survey Protocol for Ontario's Species at Risk Snakes

December 2016

Ontario Ministry of Natural Resources and Forestry

Ontario

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Cover illustrations: Eastern Hog-nosed Snake (top), snake habitat on Beausoleil Island (bottom left) and Butler's Gartersnake (bottom right). Photographs by Joe Crowley.

Cette publication hautement spécialisée, protocole de suivi pour les espèces de serpents en péril en Ontario, en Ontario n'est disponible qu'en anglais en vertu du Règlement 671/92 qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le ministère des Richesses naturelles au 705-755-1788.

Le présent document vise à établir un protocole normalisé et efficace pour la réalisation d'études sur le terrain sur les serpents en péril en Ontario. Ce protocole décrit les aspects de la biologie des espèces qui sont associés à la détectabilité et à l'identification, leurs aires de répartition, les méthodes d'étude qui conviennent, les qualifications de l'expert et les normes de communication des données en Ontario. Il décrit aussi les conditions qui sont nécessaires pour déduire avec suffisamment d'assurance qu'une espèce est absente dans une région donnée. Le protocole vise à éclairer le travail réalisé sur les serpents en péril conformément aux exigences ou aux conditions de la Loi ontarienne sur les espèces en voie de disparition, mais il peut aussi être appliqué dans d'autres situations où des études sur les serpents en péril doivent être entreprises en Ontario.

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1. INTRODUCTION

Effective protection and recovery of species at risk (SAR) and their habitat requires comprehensive and up-to-date knowledge of species' occurrence and distribution. However, there have been few large-scale surveys and inventories for most of Ontario's species at risk, and recent, detailed occurrence data are not available for many of these species throughout the province. In the absence of existing occurrence data, field surveys are necessary to determine if a species is present at a particular site. However, many species at risk are inherently rare, occur at low densities and are cryptic, making detection of these species difficult. Furthermore, the detection probability of some species varies considerably with time of year, habitat, weather conditions and search method. This survey protocol was developed in response to the need for reliable, science-based survey methods for species at risk in Ontario. This protocol is based on the best available scientific and technical information at the time of publication, including information from several expert Ontario herpetologists, but it may be subject to change should new information become available.

In addition to providing guidance on survey methodology, the protocol also identifies the level of search effort that is necessary to determine, with reasonable confidence, that a snake species is absent from a site. This level of search effort is recommended when survey data are used to inform assessments of species' absence. This protocol does not provide methodology to determine population abundance or monitor changes over time. For information about determining species abundance, population monitoring and other field methodology for reptiles see McDiarmid et al. (2012).

This survey protocol provides a recommended approach to assess presence / absence at a site. However, determining if section 10 (general or regulated habitat) of the Endangered Species Act (ESA) applies to a site is a complex process that is not limited to presence / absence surveys. For example, even at sites where survey results are negative, general or regulated habitat of a species at risk may still be present at the site based on nearby occurrences of the species (e.g. on an adjacent property) or the manner in which the habitat is defined within a regulation, habitat description or policy.

Blue Racer (photograph by Joe Crowley)

2. SPECIES INFORMATION

This protocol is intended to inform surveys for all Ontario species at risk snakes, with the exception of the Queensnake (Blue Racer, Butler's Gartersnake, Eastern Foxsnake, Eastern Hog-nosed Snake, Eastern Ribbonsnake, Gray Ratsnake, Lake Erie Watersnake, Massasauga, and Milksnake). A separate survey protocol exists for Queensnake (OMNRF 2015). Individuals carrying out surveys for Ontario's snakes should be familiar with the identification, ecology, habitat use and distribution of the target species. The following resources provide this species-specific information and should be used as core reference material to accompany this survey protocol:

- The snakes of Ontario: Natural History, Distribution, and Status (Rowell 2012)
- Ontario Ministry of Natural Resources and Forestry (OMNRF) habitat regulations and habitat descriptions (available at www.ontario.ca)
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status reports (www.cosewic.gc.ca)
- Species accounts in the Ontario Reptile and Amphibian Atlas (www.ontarionature.org/atlas)
- Species accounts on the Canadian Herpetological Society website (www.canadianherpetology.ca)

Primary scientific literature and consultation with species experts (including OMNRF staff) can also be a valuable resource. Specifically, consultation with local experts and naturalists can be critical in understanding the local species ecology and habitat use, which often varies among regions.

3. SURVEY CONSIDERATIONS

3.1. Surveyor Qualifications

Surveyor experience can significantly influence the probability of species detection when surveying for snakes (Black and Parent 1999; BCMELP 1998; Casper et al. 2001), and surveys carried out by inexperienced surveyors are more likely to result in false negatives (Casper et al. 2001). Consequently, reptile surveys should be carried out by individuals who have a general understanding of snake biology and ecology, as well as prior experience with the target species (BCMELP 1998; Casper et al. 2001; DSEWPC 2011; S. Gillingwater pers. comm. 2012; J. Litzgus pers. comm. 2012). If individuals who are experienced with the target species are not available, it is highly recommended that the lead surveyor have the following qualifications:

- Prior experience conducting wildlife surveys
- Knowledge of the biology, ecology and habitat use of the target species
- Experience and demonstrated competence with other snake species
- Training from someone with expertise in the target species or through a formal training course that includes field techniques for the target species; A person is considered to have expertise with a species if they have carried out research on that species through a university or other academic institution or is generally recognized within the scientific community as having expertise with the target species.

- The ability to distinguish the target species from similar species in Ontario

Surveyors should also have the ability to navigate, record the survey track, and geo-reference observations using a Global Positioning System (GPS) unit.

An authorization under the ESA, 2007 and a Wildlife Scientific Collectors Authorization under the Fish and Wildlife Conservation Act (FWCA), 1997 may be required to carry out surveys for snakes in Ontario, depending on the species and survey methods. Additional permits may be required from Ontario Parks or Parks Canada Agency if surveys are carried out in provincial parks and conservation reserves or national parks, respectively.

3.2. Records Review

A records review should be carried out prior to a field survey. Existing occurrence records may help to better scope the field survey or, if extensive data is already available for a site, existing records may eliminate the need for a field survey. The absence of occurrence records from an area does not indicate that the species is absent; suitable habitat must be adequately surveyed before concluding that the species is unlikely to be present. The following sources can be consulted for information on snake distribution and occurrence records within Ontario:

- OMNRF Natural Heritage Information Centre (NHIC)
  www.ontario.ca/nhic; e-mail: nhicrequests@ontario.ca
- Ontario Reptile and Amphibian Atlas (ORAA)
  www.ontarionature.org/atlas
- Local Conservation Authorities
  www.conservationontario.ca
- Status reports from the Committee on the Status of Endangered Wildlife in Canada (COSEWIC); available through the Species at Risk Act (SARA) Public Registry
  www.sararegistry.gc.ca/default.asp
- Other information sources such as, but not limited to species experts, OMNRF offices, site-related environmental impact or screening reports, published scientific literature and natural history inventories

3.3. Seasonal Timing of Surveys for Snakes

In Ontario, snakes hibernate underground during the late fall, winter and early spring. Consequently, it is necessary to carry out surveys when snakes are active above ground, known as the active season. In Ontario, the active season typically begins in April or May and ends in September or October, depending on the species, latitude and seasonal weather variation. Thus, these dates should be refined for each situation using detailed species information (see section 2 for relevant sources of information) and regional weather data. Spring and early summer surveys are typically most productive because snakes tend to bask more frequently and are more conspicuous at that time of year (see section 3.4).

The likelihood of a given habitat being occupied at a certain time of year is also an important consideration when planning snake surveys. Depending on the species, snake habitat use may also change throughout the active season (e.g. Carfagno and Weatherhead 2006; Harvey and Weatherhead 2006). For example, Massasaugas on the Bruce Peninsula use forested areas in the spring and they move into larger open-canopy habitats (e.g. rock outcrops or alvars) in June (Harvey and Weatherhead 2006).

3.4. Environmental Conditions

Snakes are ectotherms and regulate their body temperature through behavioural thermoregulation (e.g. basking in the sun or seeking shelter from the heat). Ontario's snakes have preferred body temperatures within the range of 25-34 °C, and they select microhabitats that allow them to maintain body temperatures as close as possible to this preferred range (Brown and Weatherhead 2000; Blouin-Demers and Weatherhead 2001b; Row and Blouin-Demers 2006b; Harvey and Weatherhead 2010; Harvey and Weatherhead 2011). Snakes are most likely to bask on sunny days when ambient temperature is lower than preferred body temperature (Row and Blouin-Demers 2006b; Harvey 2008), especially when these conditions follow several days of inclement weather. Harvey (2008) reported that Massasaugas in Ontario are most likely to bask at temperatures between 16 and 26 °C. Other Ontario species prefer lower temperatures (Harvey and Weatherhead 2011) and likely bask under cooler conditions. Basking tends to be highest in the spring due to low environmental temperatures and the need to increase metabolic activity after hibernation, and basking activity is often lowest in the fall (Row and Blouin-Demers 2006b; Harvey and Weatherhead 2011). Being ectothermic also means that metabolic rates and activity levels are dependent on the ambient temperature and the snakes' ability to thermoregulate (Blouin-Demers et al. 2003; Harvey and Weatherhead 2010). In Ontario, snakes are most active when air temperature is between 15 and 30 °C.

By influencing microhabitat use and activity levels, environmental conditions have a significant effect on detectability. For example, consider how the following environmental conditions affect detectability:

- Cool overcast (or stormy) conditions: snakes cannot warm up and are likely to be inactive and remain hidden (low detectability).
- Warm conditions: snakes can be encountered moving throughout habitat (moderate to high detectability).
- Cool sunny conditions: snakes will select microhabitats that facilitate basking (high detectability).
- Hot sunny conditions: ground temperature can be higher than air temperature and may exceed a species' upper thermal limit when air temperature is above 25-30 °C. Snakes will seek out cool microhabitats and shelter (low-moderate detectability).

It is essential that environmental conditions at the time of the survey are documented so that survey results can be accurately interpreted. Suitable environmental conditions for snake surveys are described for each survey method below.

3.5. Identification of Survey Sites

For all snake species with the exception of Gray Ratsnake and the semi-aquatic species (Lake Erie Watersnake and Eastern Ribbonsnake), surveys should generally be concentrated in open-canopy and semi-open habitats such as rock outcrops, forest clearings and edges, fields, meadows, savannah, prairie, the edges of wetlands and shorelines of lakes and rivers (Figures 1). Many snake species demonstrate selection for open, semi-open and forest edge habitat (Blouin-Demers and Weatherhead 2001a; Row and Blouin-Demers 2006a; Row and Blouin-Demers 2006b; Carfagno and Weatherhead 2006; Harvey 2006; Lagory et al. 2009). These habitats provide warmer conditions where snakes can effectively thermoregulate and maintain body temperature closer to their thermal optimal temperature (Blouin-Demers and Weatherhead 2001a; Row and Blouin-Demers 2006b; Harvey and Weatherhead 2010). Within forested landscapes, snakes may select small clearings and areas with low canopy cover rather than moving into larger open habitats (e.g. Harvey and Weatherhead 2010). Thus, in forested areas, it is important to survey small clearings and areas of low canopy cover throughout the forest; large expanses of forest should not be excluded from surveys because it is not open-canopy at a coarse landscape scale. Small forest clearings (< 10 m) are often only detectable through site surveys or the use of high resolution aerial photographs. In addition to a tendency to be more abundant in open habitats, detectability is often higher in these habitats because snakes are more conspicuous when basking.

Gray Ratsnakes utilize forest habitats extensively throughout the active season (Weatherhead and Charland 1985; Blouin-Demers and Weatherhead 2001a; Carfagno and Weatherhead 2006). In addition to open-canopy and edge habitats, surveys for this species should also include closed-canopy forest, particularly forested areas that are in close proximity to open habitats.

Surveys for watersnakes and Eastern Ribbonsnakes should be carried out in wetlands and along the shorelines of lakes, rivers and other aquatic habitats. However, these species regularly bask in adjacent open terrestrial habitats, and surveys should include open-canopy terrestrial habitat within 10 m of the shoreline.

When it is possible to identify potential hibernacula, these habitats should be searched several times during the early spring. Snakes tend to be more conspicuous at these sites because they are often occupied by multiple individuals and because snakes bask regularly after emerging from hibernation. Hibernation habitat varies with species and region, and a thorough review of the species biology and habitat use is required to inform spring emergence surveys. For example, Massasaugas in eastern Georgian Bay tend to overwinter in conifer swamps and other lowland habitats while Gray Ratsnakes in eastern Ontario often make use of south-facing rocky slopes.

Prior to site visits, identify potential habitat (e.g. open-canopy and semi-open habitats, edge habitat) using aerial photographs, orthophotos Ecological Land Classification maps or other high-resolution land cover information. A site visit should be carried out to assess the potential habitat and to confirm the presence of suitable habitat. If detailed maps or other habitat information is not available for a site, the entire site should be thoroughly searched to identify suitable habitat. All suitable habitat should be described or mapped and this information should inform the survey design.

Figure 1a. Rock outcrop with snake microhabitat concentrated along the forest edge and in areas where loose rocks and shrubs

Figure 1b. Shoreline with an open-canopy and a high density of snake microhabitats (e.g. shrubs, rocks, grasses)

Figure 1c. Small forest clearings provide important thermoregulation opportunities in otherwise forested landscapes

Figure 1d. Dry meadow marsh with dense ground vegetation that provides a continuous layer of suitable snake microhabitat

Figure 1e. Savannah with a dense grass layer provides high quality thermoregulation and foraging habitat for snakes

Figure 1f. Open sand dune-shrub ecosystem with high quality snake microhabitats concentrated along the forest edge and the shrubs

Figure 1. Examples of open-canopy habitats that are used by Ontario's snakes

3.6. Other Survey Considerations

Animal health: Snake Fungal Disease

Snake Fungal Disease (SFD), which is caused by the fungus *Ophidiomyces ophiodiicola*, is an emerging threat to North American snakes. This pathogen has resulted in mortality and population decline in several snake species (Clark et al. 2011; Lorch et al. 2016; CWHC 2016). SFD has been documented in a wide range of snake species throughout the eastern United States since 2006 (Lorch et al. 2016; NEPARC 2015), and it has been confirmed at three locations in southwestern Ontario (L. Shirose, pers. comm. 2016). The fungus *O. ophiodiicola* has been confirmed in snakes from several other locations in southern and central Ontario, although it is not known if the fungus has caused clinical symptoms of the disease in those specimens (L. Shirose, pers. comm. 2016). A proactive approach to prevent further spread of SFD is needed to combat this new threat to Ontario's snakes. Individuals working with snakes in southwestern Ontario should follow appropriate decontamination protocols when travelling between sites. Any field equipment or clothing that has been in contact with snakes should be thoroughly washed and then soaked in a 3% bleach solution for two minutes (CWHC 2016). The fungus can be free-living in the soil (Allender et al. 2015), and boots should also be washed and disinfected between sites.

Massasauga safety

The Massasauga is Ontario's only venomous snake. This species occurs throughout large areas on the Bruce Peninsula, along the eastern shore of Georgian Bay, in Wainfleet Bog on the Niagara Peninsula, and at one site in the town of Lasalle, near Windsor. The Massasauga is a timid snake that prefers to avoid conflict whenever possible. When a Massasauga feels threatened, it will often rattle to announce its presence or escape into a nearby retreat site (e.g. under shrubs, a crevice in the rock). Massasaugas will typically only strike in defence as a last resort, and their striking distance is about one third to one half of their body length (typically striking distance is less than 40 cm). Further information about this species, including distribution, ecology, conservation and safety considerations, is available at www.massasauga.ca.

Massasauga (photograph by Joe Crowley)

When working in Massasauga habitat, surveyors should:

- wear appropriate field gear, including hiking boots and long pants,
- pay careful attention to where they are stepping,
- be aware of their surroundings and listen for the sound of the rattle,
- make sure that an area has been thoroughly scanned for Massasaugas and other potential threats before flipping cover objects,
- never place hands or fingers near areas that cannot be seen, and
- never pick up a Massasauga or unidentified snakes.

If a Massasauga is encountered, surveyors should maintain a distance of at least 2-3 m from the snake to avoid causing undue stress to the snake. If someone is bitten by a Massasauga, call 911. The injured person should remain calm and avoid strenuous activity. It is dangerous, unnecessary and illegal to attempt to catch or kill the snake in question; there is only one venomous species in Ontario and medical personal will be able to determine if envenomation occurred.

Avoiding harm to snakes and sensitive habitats during surveys

There is the potential for surveyors to cause accidental harm to snakes by stepping on them or crushing them under cover objects. Surveyors should pay careful attention to where they are walking, avoid stepping on potential cover objects (rocks, vegetation mats, brush piles, etc.) that have not been searched, and take care not to crush snakes or other wildlife when searching under cover (see discussion on “searching under cover” in section 4.1). Surveyors should also minimize stress to the animals by refraining from capturing and handling snakes unless it is necessary for species identification or research purposes (note that authorizations under the ESA, 2007 and/or FWCA are required to capture most snake species in Ontario).

Since snake surveys often require thorough searches of the habitat, including actively searching under cover, there is a risk of damaging these habitats in the process. Particularly sensitive habitats include overwintering sites, gestation sites, nesting sites and communal basking and/or shedding sites. Invasive techniques that result in the destruction of microhabitat features (e.g. ripping apart a rotting log or stump) should be avoided, and microhabitat features should always be left exactly how they were found (e.g. return rocks and logs to their original position). If surveys occur in sensitive habitats (e.g. shallow sphagnum bogs or alvars), minimize the amount of time spent in these habitats and select a path that will have the lowest risk of damaging sensitive vegetation communities or altering habitat structure.

4. SURVEY PROTOCOLS

Several survey methods are discussed in this section. However, visual encounter surveys (VES) are the only survey method that is recommended for assessing presence / absence for all species except the Butler’s Gartersnake; both VES and Artificial Cover Object (ACO) surveys are recommended for assessing presence / absence of the Butler’s Gartersnake. The other survey methodologies are useful for supplementing VES surveys and increasing confidence in the results, or for quickly assessing presence across large areas. However, they are generally not sufficient to assess presence / absence and this is discussed in more detail for each method.

4.1. Visual Encounter Surveys

A visual encounter survey is a standard, effective method for carrying out presence / absence surveys for snakes (Guyer and Donnelly 2012). This technique is effective for assessing presence / absence of all Ontario SAR snakes; however, the Eastern Hog-nosed Snake is very difficult to detect with any survey method. Combining VES with other techniques, such as road surveys or artificial cover object (ACO) surveys, helps to improve the overall chances of species detection.

Survey Technique

Visual encounter surveys are carried out by slowly walking through suitable habitat while watching for basking and foraging snakes, as well as searching under cover objects such as logs, rocks, artificial cover, etc. Surveyors should also listen for the sound of snakes moving through vegetation or leaves, which can often draw attention to an otherwise inconspicuous snake in dense cover. Shed skins may also be encountered during surveys and can provide valuable data on species presence (see Gray 2012 for guidance on identification of shed snake skins in Canada). Although this section provides a general description of how and where to search for snakes, the specific habitat preferences of the target species should be researched in detail prior to carrying out surveys. The reference material in section 2 provides detailed information on species-specific ecology and habitat preferences of Ontario's snake species.

Snakes favour microhabitats that provide optimal thermal conditions and adequate cover or retreat sites (Row and Blouin-Demers 2006a; Harvey and Weatherhead 2006; Harvey 2008), such as rock piles, dead stumps, low-lying shrubs and other ground vegetation, old building foundations, scrap piles, boards and other human-created structures, and forest edges. Surveyors should target and thoroughly search these key microhabitat features. When surveys are carried out under cool, sunny conditions, surveyors should focus on areas that are receiving sunlight, such as the sunny edges of shrubs, rock piles, etc. or forest edges. As ambient temperature increases throughout the day, surveyors should increasingly look into vegetated or structurally complex areas associated with these features but that are partially or fully shaded. For example, during a sunny afternoon, snakes are more likely to be found under a table rock or a shrub rather than at the edge of these features.

- In open-canopy habitats with lots of ground cover, such as grassy fields, meadows with dense mats of dead grasses or vegetated shorelines, high quality microhabitat is continuously distributed throughout the entire site (e.g. Figure 1d and 1e). Since snakes may be foraging or basking anywhere within the habitat, the entire area should be thoroughly searched by walking evenly-spaced transects. Transects should be close enough that all cover objects and other microhabitat features will be encountered and searched, and any snakes hiding or moving within the habitat would be observed. In most habitats, transect spacing of about 5 m is appropriate. Transects should be used as a general guide, but surveyors should move back and forth between high quality microhabitats or microhabitat features and should not follow a straight line.

- Alternatively, high quality microhabitats may be clustered, such as in the case of a rock barren or alvar with large expanses of flat, open rock interspersed with rock piles, shrubs or forest patches (e.g. Figure 1a). In this case, surveys should be focused on forest edge, around the edges of shrubs, within vegetation patches and

near rock piles, dead stumps, junk piles or other notable microhabitat features. Within a forested area, surveys should be focussed on clearings, edges and other areas with low canopy cover.

When surveying shallow aquatic habitats, such as coastal fens, surveys should be carried out in evenly spaced transects to cover the entire habitat. When searching for semi-aquatic species around deeper wetlands or along the shorelines of rivers and lakes, surveyors should search the terrestrial area within 10 m of the shoreline, as well as any vegetated shallow (1 m or less) aquatic areas that are accessible. Binoculars should be used to scan ahead to detect basking or swimming snakes before they notice surveyors and retreat under cover or into the water.

Snakes spend much of their time under cover objects, and targeting these microhabitat features during VES surveys improves the chances of detection. This is especially true of species that are primarily nocturnal during the hot summer months (e.g. Milksnake) and spend most of the day under cover. Even on warm sunny days, snakes may bask under thin cover objects that provide a warm microenvironment while protecting the snake from potential predators. Snakes can be found under a variety of cover objects, including rocks, logs, old stumps, boards and scrap metal. Scrap piles or other discarded items (e.g. old fridge, car hood) may also provide suitable microhabitat and should be searched if it is safe to do so. It is important to investigate small cover objects since snakes can be under cobble-sized rocks as small as 8 cm in diameter. Rocks that are buried in the ground and cannot be easily lifted are less likely to have snakes under them. Cover objects should be searched regardless of weather conditions, since snakes may be using them as retreat sites during inclement weather or for thermoregulation under sunny conditions.

When searching under cover:

- Do not step on rocks or other cover materials before you have checked beneath them. Snakes are regularly crushed or killed under cover objects when people step on or drive over these objects.
- Lift rocks slowly and carefully so that they do not suddenly shift, potentially crushing herpetofauna or other creatures hiding beneath them.
- Use two hands and proper lifting techniques when moving heavy cover objects, and do not lift rocks that are at risk of slipping due to weight.
- All cover materials should be returned exactly how they were found to ensure that previously existing gaps are maintained.
- If an animal is located beneath a cover object, ensure that it moves out of the way before replacing the cover; even seemingly light objects can crush small animals.
- Avoid placing hands or fingers under cover objects; wasp nests and neonate (newborn) Massasaugas can sometimes be encountered under rocks.

Although open-canopy habitat types are utilized for their thermal properties, snakes are often partially concealed within these habitats and are rarely conspicuous even when they are not hiding under cover. For example, in an open-canopy rock outcrop, a snake would likely be located at the base of a shrub, in a dense patch of vegetation or under a rock (Figure 2 and 3); in all cases, the snake would benefit from the warm, open-canopy environment but it would be well-hidden from predators and surveyors alike. Snake surveys require considerable attention to detail and patience since surveyors must move very slowly and carefully search all suitable habitats.

As a general guideline, the search time should be approximately one to two person hours per hectare, depending on the complexity of the habitat. Complex sites with a high density of rocks, ground vegetation or other cover will take more time than sites with very little structure (e.g. closed-canopy forest with few edges or gaps).

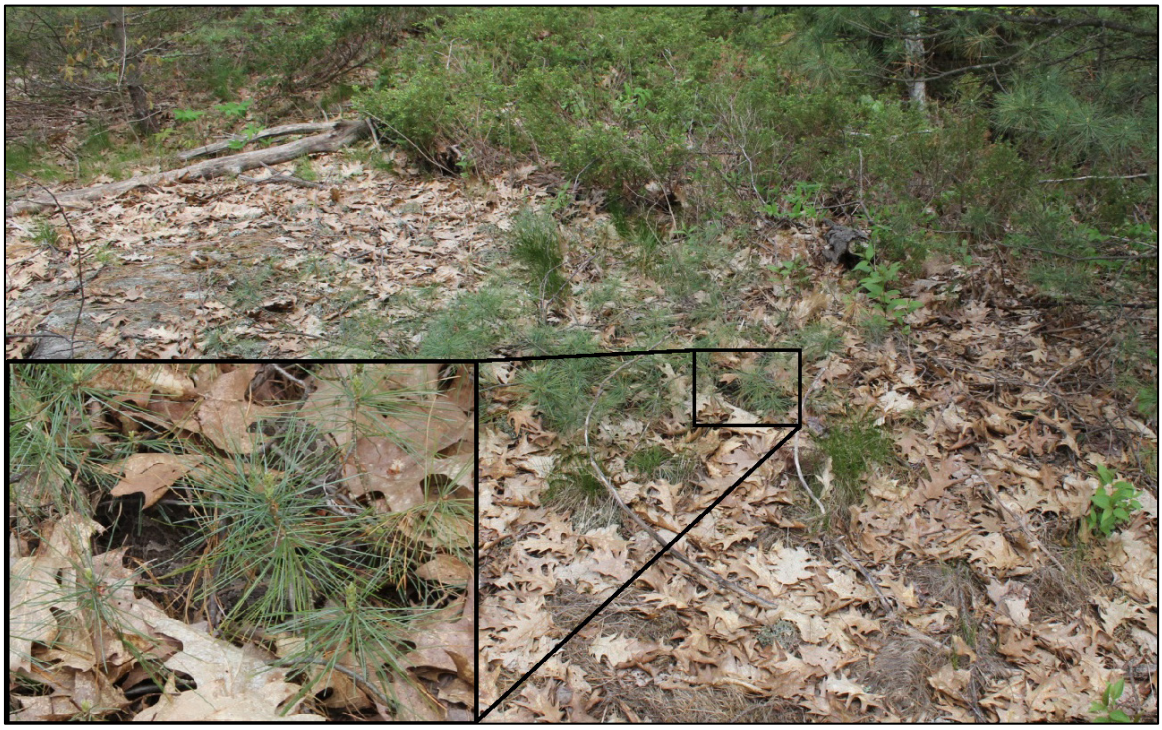

Figure 2. Concealed Massasauga basking in a forest clearing (photograph by Joe Crowley)

Figure 3. Massasauga basking in open-canopy shoreline habitat (photograph by Joe Crowley)

Species-specific Survey Notes

- Massasauga: unlike most other Ontario snakes, Massasaugas are rarely located under cover objects, such as small flat rocks or boards. A four-year study on the northern Bruce Peninsula only documented five Massasaugas under cover boards, despite checking a large network of boards 4262 times. Further, Massasaugas spend considerably more time basking than other Ontario snake species (about 70% of the time; Harvey and Weatherhead 2010), and surveys should focus on detecting basking snakes rather than searching under cover. However, Massasauga basking surveys should still include visual searches for partially or fully-concealed snakes, such as individuals tucked under vegetation or in crevices under large rocks.

- Gray Ratsnake: this species is commonly encountered in trees (Blouin-Demers and Weatherhead 2001a), and it is important to regularly scan the sub-canopy (approx. 1 to 4 m height) when surveying for this species in forested habitats.

Survey Timing and Environmental Conditions

VES for snakes should be carried out under sunny conditions and when air temperature is between 10 and 25 °C or under overcast conditions and when air temperature is between 15 and 30 °C (Casper 2001; EMRT 2005; Harvey 2008). In the spring, surveys can be carried out between 9 am and 5 pm. However, in July and August when daytime temperatures are typically above 25 °C, surveys should be carried out between 8 am and 12 pm or 5 pm and 8 pm. Surveys for basking snakes (e.g. Massasaugas) should not be carried out on days with wind speeds higher than 24 kph (Casper 2001; EMRT 2005); high winds have a cooling effect on microhabitats that would otherwise hold pockets of warm air and encourage basking.

Search Effort to Determine Probable Absence

Snakes are cryptic, often occur at low density, demonstrate complex patterns of habitat use (spatial and temporal), and spend much of their time hiding out of sight, making them very difficult to detect during surveys (BCMELP 1998; Casper et al 2001; Harvey 2005; Durso et al. 2011). Harvey (2005) determined that the likelihood of detecting a Massasauga at a known location during surveys was only 1 in 7, despite the snake being visible to surveyors. Given this low detectability and a typical density of two Massasaugas / ha in high quality summer habitat (Harvey 2008), the average detection probability (DP) of this species would be 0.27 for a one hectare site. Based on data from two sites on the northern Bruce Peninsula, the average DP for Massasauga was 0.21 (Crowley unpublished data). Recent data from a Queensnake study on the Maitland River in Ontario indicate that DP ranged from 0.2 to 0.8 and averaged 0.3 (Aarts and Choquette 2015). Durso et al. 2011 reported DP ranging from 0.03 to 0.46 for several North American aquatic snake species. Determining with reasonable confidence that species with such low DP are absent from a site requires considerable search effort (Casper et al 2001; Durso et al. 2011). Durso et al. 2011 found that between 5 and 61 surveys would be required to determine absence with 95% confidence for a range of North American watersnake species. Assuming a DP of 0.25 to 0.3 for most of Ontario's snakes (excluding Eastern Hog-nosed Snake), 10 surveys would be required to determine absence with 95% confidence based on the relationship between search effort and detection probability outlined in Casper (2010).

The ten surveys should be spread over the active season, with at least five surveys prior to July 1st. When surveying for Massasaugas, the ten surveys should be split over two

years because Massasaugas generally reproduce on a biennial basis and a specific gestation site may not be used every year. When surveys are carried out over multiple years (e.g. for Massasauga), a minimum of five surveys each year are required, with at least three occurring before July 1st in each year.

Eastern Hog-nosed Snakes have much lower DPs than other species at risk snakes in Ontario because populations tend to occur at low density throughout most of Ontario and individuals spend much of their time out of site in inaccessible areas (e.g. underground burrows). Consequently, the search effort necessary to assess presence / absence of this species is considerably higher than the ten surveys recommended for other snake species, and VES are often not a feasible method for assessing presence / absence of this species. Alternatively, assessments of presence / absence can be based on the regional distribution of the species and local habitat suitability. For example, if the species is known to occur within a general area and there is suitable habitat at the site, it can be assumed that the area in question is likely to be inhabited by the species.

Important considerations when assessing absence:

- One survey is the amount of effort required to thoroughly search all suitable habitat (with the recommended effort of approximately 1-2 hours per ha). If the site is large, several site visits or trips may be required to adequately cover the entire area and complete one survey.
- If surveys are not carried out according to the methods outlined in this protocol (e.g. time of year, weather conditions), negative survey results may be inconclusive and lead to a requirement for additional surveys.
- The recommended search effort is based on the assumption that surveys are carried out by experienced surveyors. If surveys are carried out by inexperienced surveyors, additional effort may be required to determine with reasonable confidence that the species is absent.
- In cases where a population may occur at low density and be more difficult to detect than normal, a higher search effort would be necessary to determine with reasonable confidence that the species is absent.

The search effort recommended in this protocol is intended for assessments of presence / absence at sites where the species presence has not been previously documented. The number of surveys recommended in this protocol is not sufficient to conclude that a species has been extirpated from a previously occupied site. It is reasonable to expect that the species may still exist at the site but in low density and, as a result, considerably more effort would be necessary for detection. This is especially true of cryptic species, which can be very difficult to detect when at low density. For example, Casper et al. (2001) recommends 10-15 years of survey effort before concluding that Massasauga populations have been extirpated. Furthermore, when populations occur at low density, not all available habitat will be occupied in a given year, and habitat that is unoccupied in one year may be re-occupied in the following year. Consequently, a significant search effort spanning multiple years is typically necessary to conclude that a snake species no longer occurs at a previously occupied site (see O. Reg. 242/08 (2016) for species-specific survey requirements for removing regulated habitat protection for several of Ontario's SAR snakes).

4.2. Surveys with Artificial Cover Objects

Artificial cover objects (ACOs) can be used to create suitable microhabitat for snakes that can be easily and systematically searched (Joppa et al 2009; Godley 2012; Halliday and Blouin-Demers 2015). ACO surveys can be a very effective method of detecting cryptic, difficult-to-survey-for snake species, especially in environments where natural cover is limited or cannot be easily searched. For example, ACOs have been shown to yield high capture rates of Butler's Gartersnakes in Ontario (Marks pers.comm. 2016). Shed skins may also be encountered under ACOs and can provide valuable data on species presence (see Gray 2012 for guidance on identification of shed snake skins in Canada). However, detectability under cover boards varies considerably between species and between sites, and cover objects are not effective for detecting some of Ontario's snake species. For example, very few Massasaugas were documented using ACOs of varying designs and materials during an extensive monitoring program on the Bruce Peninsula (Harvey 2008). Given low detection rates in that study, as well as the propensity for Massasaugas to bask in the open, ACOs are not a recommended technique for that species within the Bruce Peninsula and eastern Georgian Bay Massasauga populations. Even when a species typically utilizes ACOs, there can be a considerable lag time of up to several years before a species is detected using the ACOs at a particular site (e.g. Milksnake, Crowley unpublished data). Thus, ACO surveys are best suited for long-term monitoring or augmenting VES surveys at sites where natural cover is limited and, with the exception of Butler's Gartersnake, should not be used in isolation to assess presence / absence.

Figure 4. Typical cover board used for snakes in Ontario, placed in open-canopy habitat that receives full fun exposure in the early morning and throughout most of the day

Survey Technique

ACOs can include a wide range of materials, but flat pieces of metal or wood (typically plywood) are most commonly used for snakes (Harvey 2008; Joppa et al. 2009; Godley 2012; Halliday and Blouin-Demers 2015). Thin (¼ to ¾ inch) plywood boards have been shown to be effective for a wide range of snakes in northeastern North America (Harvey 2008; Joppa et al. 2009; Crowley pers. obs.; Yagi pers. comm. 2015; Halliday and Blouin-Demers 2015), and this material is recommended for ACO surveys in Ontario. Thin metal sheets are also effective as ACOs (Harvey 2008; Halliday and Blouin-Demers 2015), but they can reach lethal temperatures more often than wood boards during hot weather (Harvey 2008), and extreme temperatures under metal ACOs can result in egg mortality when snakes oviposit under them (Porchuk 1996, Yagi pers. comm 2015). Particle board and very thin plywood should be avoided because these materials warp and disintegrate quickly (Godley 2012; Crowley pers. obs.). Typical sizes of ACOs for snakes are 60-100 cm x 60-150 cm (Harvey 2008; Joppa et al 2009; Godley 2012; Halliday and Blouin-Demers 2015). When targeting small species, such as gartersnakes and ring-necked snakes, smaller sizes may also be appropriate.

ACOs should be deployed in open and semi-open habitats that receive ample sun exposure (Joppa et al. 2009; Casper and Hecnar 2011; Halliday and Blouin-Demers 2015). ACOs should be in place for a minimum of two weeks prior to beginning surveys (Joppa et al. 2009; Casper and Hecnar 2011), but having them in place the previous fall is ideal. The ACOs should be relatively flush with the ground and placed in areas with little slope or with slopes that have a southerly aspect (Casper and Hecnar 2011; Godley 2012). At least ten ACOs should be deployed for each hectare of habitat being surveyed. ACOs should be numbered and labeled with an organization name and contact information; in some cases it is helpful to include a brief note, such as “research project – please do not remove”. It is usually not necessary to use ACOs to survey for Lake Erie Watersnakes and Eastern Ribbonsnakes because these species typically have high detectability during VES. If using ACOs for these semi-aquatic species, ACOs should be as close to the water as possible, and no more than 10 m from the water’s edge.

Conspicuous ACOs should not be used in areas with public access as they can facilitate illegal collection by poachers or the public. When cover objects are used in areas where the public will encounter them, there is a high risk of cover objects being repeatedly moved or damaged. High public use areas also tend to have elevated populations of subsidized predators, such as skunks and raccoons, and these animals may regularly flip cover objects while they are foraging.

Survey Period

Searches under ACOs should be carried out during the spring and early summer (April – early July; Joppa et al. 2009; Casper and Hecnar 2011). ACOs should be checked once a day to once a week. Searches under ACOs may also yield results during the summer months, but surveys should not occur exclusively during this time because detection rates can be much lower (see Survey Timing and Environmental Conditions).

Survey Timing and Environmental Conditions

Cover objects provide an ideal thermoregulatory environment for snakes; they warm up with the surrounding environment, often retain heat longer than their surroundings and offer protection from predation. Detection rate with cover boards is strongly linked to temperature (Joppa et al. 2009; Godley 2012) and is highest when the temperature under cover boards is warmer than the surrounding environment and is between 20-30

°C (Harvey 2008; Joppa et al 2009). Detection rates are very low in hot (> 30 °C) sunny weather because temperatures under the boards would exceed the preferred temperature range and snakes would overheat (Harvey 2008). Generally, cover boards should be checked in the morning or early evening when air temperature is above 10 °C (Joppa et al. 2009; Casper and Hecnar 2011). However, recent work with the Butler's Gartersnake in southwestern Ontario indicates that ACO surveys for this species are most productive in the evening between 6-9 pm (S. Marks pers. comm.). For safety reasons, ACO surveys should generally occur before dark. ACOs should not be checked during rainy weather.

Search Effort Required to Determine Probable Absence

For most of Ontario's species at risk snakes, ACO surveys should not be used in isolation to assess presence / absence. However, Butler's Gartersnakes show a strong affinity for artificial cover and can often be detected within a very short time after boards are deployed (Joppa et al. 2009). In the case of Butler's Gartersnake, ten ACO surveys spread over the active season, with at least five surveys prior to July 1st, should be adequate to assess presence / absence at a site with reasonable confidence. One ACO survey is the amount of effort required to check all of the ACOs at the site.

4.3. Road Surveys

Road surveying is a well-established survey technique for snakes that takes advantage of the road network to cover large areas and this technique is especially effective for documenting the diversity of species in a particular area (Sullivan 2012). This technique is also a good supplement to VES since road surveys can be carried out in the evening after VES are finished. However, this technique has some limitations. All species are not equally likely to be detected during road surveys, and some species may not be encountered. Species are less likely to be encountered if they are small and difficult to see on the road; are secretive; have small home ranges and are relatively sedentary; or display road avoidance behaviour (Sullivan 2012). Another limitation of this technique is that areas without roads cannot be included in the surveys. For these reasons, road surveys should not be used in isolation to assess presence / absence.

Survey Technique

Road surveys use roads as transects and involve walking, biking or driving slowly along roads and documenting the species that are encountered. Surveying on foot or on bike results in higher detection rates (Langen et al. 2007) and is recommended when surveys are limited to a specific site or small geographic area. However, a motor vehicle should be used when the goal of the survey is to sample large geographic areas.

The road surface and the full extent of the shoulders should be searched. Detection rate of road-killed snakes declines rapidly as carcasses are scavenged or obliterated by traffic, and the number of road-killed snakes that are identified beyond 24 hours is low (Antworth et al. 2005; Santos et al. 2011). In order to achieve reasonably high detectability, road surveys should be carried out a minimum of once per day.

When surveys are being carried out in a motor vehicle, surveyors should drive as slowly as possible and should not exceed 45 kph (Langen et al. 2007; Sullivan 2012). Surveys with motor vehicles should be carried out by two people: a driver and a spotter. When an animal is located and if it is safe to do so, the driver should pull onto the shoulder of the

road and stop the vehicle so the spotter can identify the species, move it off the road (if it is alive) and record the data. When surveys are being carried out on foot or on a bicycle, the surveyor should walk or cycle along one side of the road and then retrace the route on the other side of the road.

Safety protocols for working on roads should be established prior to conducting road surveys. Surveyors should also be aware of and obey local laws. The following safety precautions, among others, should be taken when carrying out road surveys:

- When stopping, always pull the motor vehicle onto the shoulder and turn on the four-way flashers; never stop in a lane of traffic.
- Wear bright colours (e.g. orange safety vests) or reflectors and carry flashlights at all times during nighttime surveys.
- Be aware of approaching vehicles.

Survey Period

In Ontario, road surveys for snakes can be carried out throughout the active season. Some of Ontario's snakes are more active at certain times of the year, and surveys should be concentrated during the peak activity periods of the target species when those periods are known. For example, Tonge (2006) encountered most Massasaugas on roads during August, which coincides with the breeding season for that species.

Survey Timing and Environmental Conditions

Road surveys for snakes are typically carried out in the evenings (Sullivan 2012; S. Marks pers. comm). However, daytime surveys have also been reported to be effective in Ontario (Tonge 2006; Stinnisson pers. comm), and evening surveys may not be possible in the spring and fall due to low nighttime temperatures. In Ontario, road surveys should be carried out between 9 am and 11 pm when air temperature is between 20 and 30 °C to maximize the chances of detecting live individuals or dead individuals before they are scavenged. Morning surveys following a warm evening are sufficient to detect the majority of snakes that were killed the previous day. Road surveys should not be carried out during or immediately following periods of heavy rain.

A large adult Eastern Foxsnake encountered (alive) during road surveys

5. DOCUMENTATION AND REPORTING

5.1. Documentation

The following information should be documented for each survey (regardless of whether or not target species were observed):

- Names of the surveyors
- Date, time and duration of the survey (beginning and end)
- Number of surveyors and relevant experience with the target species
- A map that delineates survey locations, routes or transects
- Photographs of the habitat
- Weather conditions (cloud cover, wind, air temperature, water temperature; record at the beginning and end of survey)
- Result (positive, negative, number of individuals of each species, etc.)

When a snake is observed, the following information should be collected:

- Name of observer and contact information
- Time and date of observation
- Number of individuals observed
- Photographs of key identification features (e.g. close up of head, belly pattern) to document the observation (including road kills)
- GPS coordinates, including accuracy
  - If multiple individuals are observed and are more than ten metres apart, separate GPS coordinates should be submitted for each individual.
  - If the GPS location is taken from a point other than where the snake was located, include additional information to allow the point to be mapped accurately (e.g. snake was 20 m NW of GPS location).
- Location description and directions to the site
- A description of the habitat

For ease of documentation, a Survey Form has been provided (Appendix 1).

Note: surveys related to a project or application with the Ministry of Natural Resources and Forestry should not be carried out prior to discussing the specifics of the project with an OMNRF biologist or Ontario Parks zone ecologist.

5.2. Reporting

Species at risk occurrence data should be reported to the Ontario Ministry of Natural Resources and Forestry Natural Heritage Information Centre (www.ontario.ca/environment-and-energy/natural-heritage-information-centre). The NHIC is Ontario's conservation data centre and maintains the provincial record of Ontario's species at risk occurrences. Negative survey results should also be submitted to the NHIC. Data should be submitted in digital format (spreadsheet or shape files with associated tabular data) as per instructions on the NHIC website. For questions regarding submission of data to NHIC or access to NHIC data, contact nhicrequests@ontario.ca. The district OMNRF office or the Ontario Parks zone ecologist

responsible for the area in question should also be provided with a copy of the data (but please indicate to them if it has already been submitted to NHIC).

Opportunistic observations of other species at risk should also be reported to the OMNRF. Observations of reptiles and amphibians can be submitted to the Ontario Reptile and Amphibian Atlas (www.ontarionature.org/atlas).

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7. ACKNOWLEDGEMENTS

This survey protocol was prepared by Joe Crowley, Herpetology Species at Risk Specialist with the Ontario Ministry of Natural Resources and Forestry. Many OMNRF and Ontario Parks staff, as well as several Ontario snake experts, also kindly took the time to review and comment on previous drafts of this document.

APPENDIX 1: SNAKE SURVEY FORM

Project Details _____ Date _____

Number of Surveyors _____ Surveyor Names _____

Location Description _____

Location UTM _____ UTM Zone _____ Site Photo #s _____ Map Attached ☐

Start Time _____ Air Temp Start _____ Basking Temp* Start _____ Cloud Cover _____ Wind (Beaufort) _____

End Time _____ Air Temp End _____ Basking Temp* End _____ Precipitation _____ Search Duration _____

Habitats surveyed (include ELC where possible) and approximate size of each _____

Observations

Species	Easting	Northing	Accuracy (m)	Time	Behaviour	Age / Sex	Photo #s	Notes

General Comments (habitat notes, invasive species, potential threats)

_____

_____

_____

_____

Beaufort Wind Scale:
0 = calm, smoke rises vertically (0-2km/hr)
1 = Light air movement, smoke drifts (3-5)
2 = Slight breeze, wind felt on face; leaves rustle (6-11)
3= Gentle breeze, leaves & twigs in constant motion (12-19)
4= Moderate breeze, small branches moving, raises dust & loose paper (20-30);
5= Fresh breeze, small trees begin to sway (31-39)
6= Strong breeze, large branches in motion (40-50)

***Basking temp** should be measured in the sun just above the ground

Maternity Roost Surveys (Forests/Woodlands)

Until comprehensive approved habitat guidance is developed for little brown myotis and northern myotis the following section outlines a recommended approach for surveying maternity roosts. Much of the information presented in this section comes from MNRF's *Bat and Bat Habitat: Guidelines for Wind Power Projects* (2011). Underlined text represents new information obtained from experts and recent scientific literature. This methodology may be considered for any development type to verify occupancy of bat maternity roosts within woodlands. Mist netting and radio telemetry work should be considered as a last resort and is only permitted if the additional work is deemed necessary by the MNRF.

STEP 1: Identify Potential Maternity Roost Habitat

 Ecological Land Classification (ELC) is an effective tool for identifying potential maternity roost habitats. As little brown myotis and northern myotis are known to form roosts in forests and swamps (Foster and Kurta, 1999), maternity roost habitat may include the following ELC communities:

- Deciduous Forests (FOD)
- Mixedwood Forests (FOM)
- Coniferous Forests (FOC)
- Deciduous Swamp (SWD)
- Mixedwood Swamps(SWM)
- Coniferous Swamps (SWC)

In central and northern Ontario (boreal forest) the following codes apply:

- G/B015-019 Very Shallow: Dry to Fresh: Mixedwood/hardwood
- G/B023-028 Very Shallow: Humid: Conifer/Mixedwood
- G/B039-043 Dry, Sandy: Hardwood/Mixedwood
- G/B054-059 Dry to Fresh: Coarse: Mixedwood/Hardwood
- G/B069-076 Moist, Coarse:Mixedwood/Hardwood
- G/B087-092 Fresh, Clayey: Mixedwood/hardwood
- B103-108 Fresh, Silty to Fine Loamy: Mixedwood/Hardwood
- B118-125 Moist. Fine: Mixedwood/Hardwood
- B130-133: Swamps

STEP 2: Snag Density Calculations

 Snag density is an indicator of high quality potential maternity roost habitat. When using an ELC-based method, snag density is calculated using the following procedure:

- Select random plots across the represented area of the ELC plot.
- Survey fixed area 12.6m radius plots (equates to 0.05ha)
- Measure the number of snags/cavity trees ≥25cm dbh in each plot
- Use the formula πr^2 to determine number of snags per hectare
- Survey a minimum of 10 plots for sites ≤10 hectares and add another plot for each extra hectare up to a maximum of 35 plots.
- Surveys are best conducted during the leaf-off period (i.e., fall to early spring) so viewing of tree cavities and crevices is not obscured by foliage.

- Map locations where each snag density plot is calculated.
- Record the snag density for each ELC plot.

STEP 3: Selection of Acoustic Monitoring Locations

- If maternity roost habitat is identified using ELC, acoustic monitoring is recommended to determine if little brown myotis and/or northern myotis are recorded in the area.
- If the snag density is calculated to be ≥10 snags/hectare then this ELC polygon should be considered high quality potential maternity roost habitat.
- All high quality maternity roost habitat should be monitored to ensure full coverage of the ELC polygon.
- Recommend positioning acoustic monitoring stations within 10m of a candidate roost tree. Multiple stations may be required to cover the area adequately. Most broadband acoustic detectors have a microphone range of 20-30m therefore full coverage would require 4 stations/hectare.
- The best candidate roost trees are selected according to the following criteria (in order of importance):

- Tallest snag/cavity tree
- Exhibits cavities or crevices most often originating as cracks, scars, knot holes or woodpecker cavities
- Has the largest diameter breast height (>25cm diameter at breast height)
- Is within the highest density of snags/cavity trees (e.g., cluster of snags)
- Has a large amount of loose, peeling bark
- Cavity or crevice is high in snag/cavity tree (>10m)
- Tree species that provide good cavity habitat (e.g., white pine, maple, aspen, ash, oak)
- Canopy is more open (to determine canopy cover, determine the percentage of the ground covered by a vertical projection of the outermost perimeter of the natural spread of the foliage of trees); and
- Exhibits early stages of decay (decay Class 1-3; refer to Watt and Caceres 1999).

STEP 4: Acoustic Field Data Collection

- Monitoring in Ontario should occur in the evenings between June 1 and June 30. If activity is not observed at the site on the initial visit, a minimum of 10 visits should take place to confirm that the site is not maternity roost habitat.
- Acoustic monitoring should begin at dusk and continue for 5 hours, for up to 10 nights, or until the maternity roost habitat is confirmed.
- Surveys should occur on warm/mild nights (i.e., ambient temperature above approximately 10°C) with low winds and no precipitation.
- Acoustic monitoring should use modern broadband bat detectors (these may be automated systems in conjunction with computer software analysis packages or manual devices) with condenser microphones.

 Acoustic monitoring systems should allow the observer to determine the signal to noise ratio of the recorded signal (e.g., from oscillograms or time-amplitude displays). These systems provide information about signal strength and increase the quality and accuracy of the data being analyzed.
 Microphones should be positioned to maximize bat detection (e.g., microphone(s) situated away from nearby obstacles to allow for maximum range of detection, microphone(s) angled slightly away from the prevailing wind to minimize wind noise).
 It is recommended that the same brand and/or model acoustic recording system be used throughout the survey (if multiple devices are required), as the type of system may influence detection range/efficiency. If different systems must be used, this variation should be quantified.
 Information on the equipment used should be recorded, including information on all adjustable settings (e.g., gain level), the position of the microphones, dates and times by station when recoding was conducted.

STEP 5: Detailed Mapping of Snag/Cavity Trees

The following considerations are recommended to identify the presence of potential maternity roost habitat:
 The presence of SAR bats through acoustic monitoring
 Quality of potential habitat through snag density
 Potential habitat as a whole (e.g., through ELC polygon delineation)
 Where proponents intend to build within the potential habitat as a whole it is recommended that proponents map the location of the highest quality habitat by delineating locations of candidate roost trees.
 The following procedure is recommended for mapping maternity roost habitat:

- All surveys should be done during leaf-off
- All surveys should be conducted with binoculars
- Walk transects 20m apart throughout the entire polygon in open woodlands with good visibility
- Walk transects 5m apart throughout the entire polygon in woodlands with coniferous understory or poor visibility
- Plot all snags/cavity trees using a GPS and noting characteristics (refer to criteria in STEP 3)
- Conduct surveys only on days with no precipitation and not after recent snowfall

 After the snags/cavity trees are mapped and the best quality trees are identified (refer to criteria in Step 3), bat habitat eco-elements (e.g., clusters of the best quality trees) may be identified and may assist in determining if avoidance of those eco-elements is appropriate to address negative impacts.

Van der Woerd, Mark

From: Van der Woerd, Mark
Sent: February-10-21 11:22 AM
To: Snell, Shamus (MECP)
Cc: Slattery, Barbara (MECP); Washburn, Kristan; Evan Tomek
Subject: RE: Enbridge Storage Enhancement Project

Hi Shamus,

Thanks for responding and outlining the next steps. We are reviewing the materials and will connect if any questions emerge. Is the best way to connect via email moving forward?

Have a great day,
Mark

Mark van der Woerd
AECOM Environment
mark.vanderwoerd@aecom.com
(289) 439-9803

From: Snell, Shamus (MECP) <Shamus.Snell@ontario.ca>
Sent: February-02-21 8:30 AM
To: Van der Woerd, Mark <Mark.VanderWoerd@aecom.com>
Cc: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Subject: [EXTERNAL] RE: Enbridge Storage Enhancement Project

Hi Mark,

Thank you for responding to our comments and suggestions regarding the Enbridge Storage Enhancement Project. Barb has sent your responses to me as many of those comments originated with me.

As noted in your response you reached out to Species at Risk Branch (SARB) and as of the date of your letter you had not received a response from us. I have since provided a formal response to the information request and have attached a copy of it for your reference. Please be aware that the SARB continues to receive a high volume of requests which may cause delays in our responses.

Before having additional discussions about site specific mitigation measures I would request that you consider the information contained within the information request and submit to SAROntario@ontario.ca a completed Preliminary Screening. This will ensure that any proposed avoidance and mitigation measures are focused on the species and habitat which have the potential to occur onsite. I have attached a copy of "Client's Guide to Preliminary Screening for Species at Risk" to assist with this.

Thank you for re-sending the maps all the details can now be viewed.

Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch

Ministry of Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: Van der Woerd, Mark <Mark.VanderWoerd@aecom.com>
Sent: January 19, 2021 5:01 PM
To: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Cc: Evan Tomek <Evan.Tomek@enbridge.com>; Washburn, Kristan <Kristan.Washburn@aecom.com>
Subject: RE: Enbridge Storage Enhancement Project

Hi Barb,

I hope you are having a great week. Please find attached our response to the letter that was provided in your email below. If you have any questions, please don't hesitate to give me a call.

Best,
Mark

Mark van der Woerd
AECOM Environment
mark.vanderwoerd@aecom.com
(289) 439-9803

From: Slattery, Barbara (MECP) <barbara.slattery@ontario.ca>
Sent: November-16-20 3:24 PM
To: Van der Woerd, Mark <Mark.VanderWoerd@aecom.com>
Subject: [EXTERNAL] Enbridge Storage Enhancement Project

With best regards,

Barb Slattery, EA/Planning Coordinator
Ministry of the Environment, Conservation and Parks
Project Review Unit, Environmental Assessment Branch
(365) 366-8185

We want to hear from you. How was my service? You can provide feedback at 1-888-745-8888.

Client's Guide to Preliminary Screening for Species at Risk

Ministry of the Environment, Conservation and Parks

Species at Risk Branch, Permissions and Compliance

DRAFT - May 2019

Table of Contents

1.0 Purpose, Scope, Background and Context

1.1 Purpose of this Guide

This guide has been created to:

- help clients better understand their obligation to gather information and complete a preliminary screening for species at risk before contacting the ministry,
- outline guidance and advice clients can expect to receive from the ministry at the preliminary screening stage,
- help clients understand how they can gather information about species at risk by accessing publicly available information housed by the Government of Ontario, and
- provide a list of other potential sources of species at risk information that exist outside the Government of Ontario.

It remains the client's responsibility to:

- carry out a preliminary screening for their projects,
- obtain best available information from all applicable information sources,
- conduct any necessary field studies or inventories to identify and confirm the presence or absence of species at risk or their habitat,
- consider any potential impacts to species at risk that a proposed activity might cause, and
- comply with the *Endangered Species Act* (ESA).

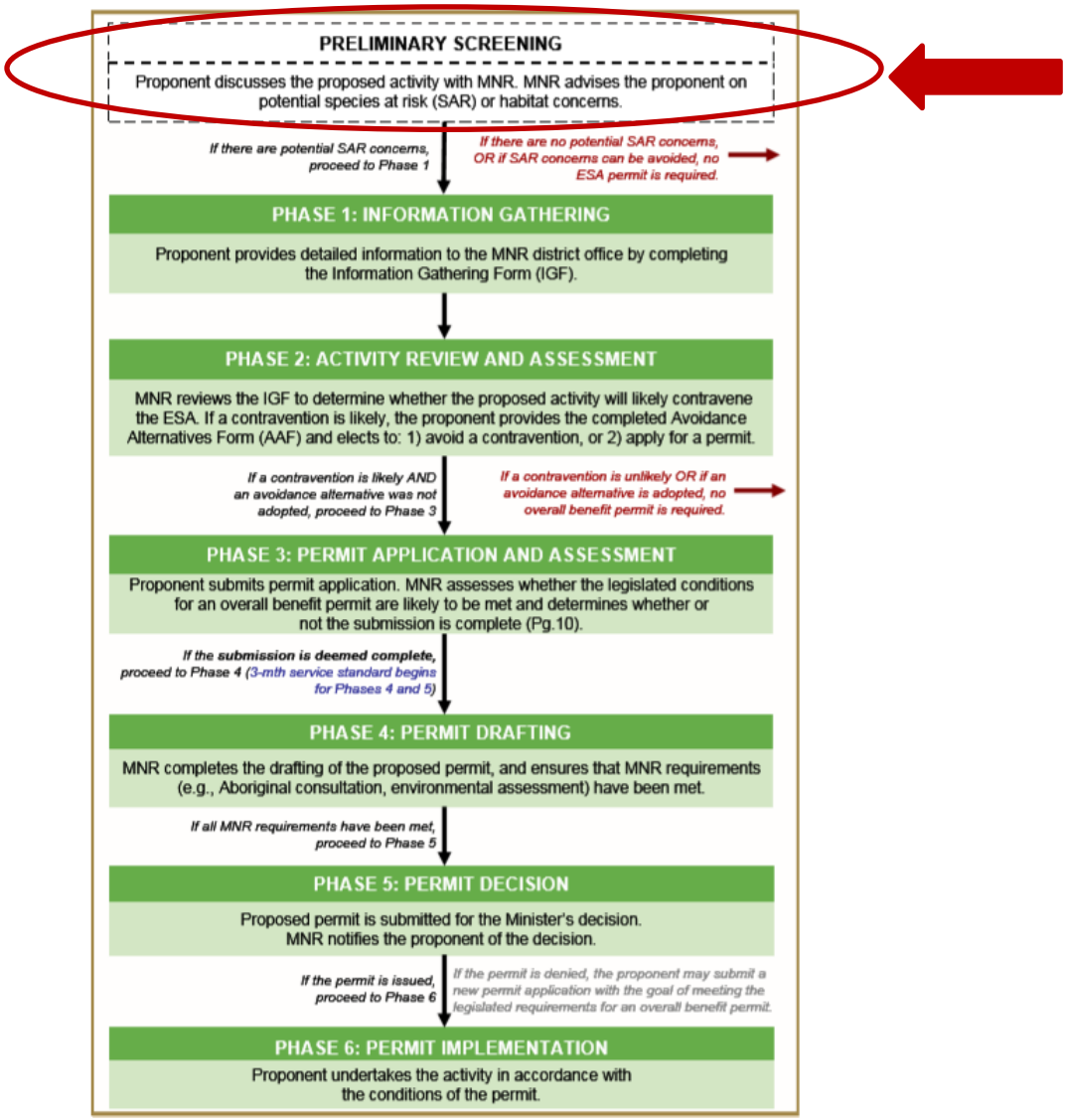
To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide, at a minimum, prior to contacting Government of Ontario ministry offices for further information or advice.

1.2 Scope

This guide is a resource for clients seeking to understand if their activity is likely to impact species at risk or if they are likely to trigger the need for an authorization under the ESA. It is not intended to circumvent any detailed site surveys that may be necessary to document species at risk or their habitat nor to circumvent the need to assess the impacts of a proposed activity on species at risk or their habitat. This guide is not an exhaustive list of available information sources for any given area as the availability of information on species at risk and their habitat varies across the province. This guide is intended to support projects and activities carried out on Crown and private land, by private landowners, businesses, other provincial ministries and agencies, or municipal government.

1.3 Background and Context

To receive advice on their proposed activity, clients must first determine whether any species at risk or their habitat exist or are likely to exist at or near their proposed activity, and whether their proposed activity is likely to contravene the ESA. Once this step is complete, clients may contact the ministry at SAROntario@ontario.ca to discuss the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. At this stage, the ministry can provide advice and guidance to the client about potential species at risk or habitat concerns, measures that the client is considering to avoid adverse effects on species at risk or their habitat and whether additional field surveys are advisable. This is referred to as the "Preliminary Screening" stage. For more information on additional phases in the diagram below, please refer to the *Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits* policy available online at https://www.ontario.ca/page/species-risk-overall-benefit-permits. Please note: any reference to MNR in the diagram is replaced by MECP.



2.0 Roles and Responsibilities

To provide the most efficient service, clients should initiate species at risk screenings and seek information from all applicable information sources identified in this guide prior to contacting Government of Ontario ministry offices for further information or advice.

Step 1: Client seeks information regarding species at risk or their habitat that exist, or are likely to exist, at or near their proposed activity by referring to all applicable information sources identified in this guide.

Step 2: Client reviews and consider guidance on whether their proposed activity is likely to contravene the ESA (see section 3.4 of this guide for guidance on what to consider).

Step 3: Client gathers information identified in the checklist in section 4 of this guide.

Step 4: Client contacts the ministry at SAROntario@ontario.ca to discuss their preliminary screening. Ministry staff will ask the client questions about the main purpose, general methods, timing and location of their proposed activity as well as information obtained about species at risk and their habitat at, or near, the site. Ministry staff will also ask the client for their interpretation of the impacts of their activity on species at risk or their habitat as well as measures the client has considered to avoid any adverse impacts.

Step 5: Ministry staff will provide advice on next steps.

Option A: Ministry staff may advise the client they can proceed with their activity without an authorization under the ESA where the ministry is confident that:

- no protected species at risk or habitats are likely to be present at or near the proposed location of the activity; or
- protected species at risk or habitats are known to be present but the activity is not likely to contravene the ESA; or
- through the adoption of avoidance measures, the modified activity is not likely to contravene the ESA.

Option B: Ministry staff may advise the client to proceed to Phase 1 of the overall benefit permitting process (i.e. Information Gathering in the previous diagram), where:

- there is uncertainty as to whether any protected species at risk or habitats are present at or near the proposed location of the activity; or
- the potential impacts of the proposed activity are uncertain; or
- ministry staff anticipate the proposed activity is likely to contravene the ESA.

3.0 Information Sources

Land Information Ontario (LIO) and the Natural Heritage Information Centre (NHIC) maintain and provide information about species at risk, as well as related information about fisheries, wildlife, crown lands, protected lands and more. This information is made available to organizations, private individuals, consultants, and developers through online sources and is often considered under various pieces of legislation or as part of regulatory approvals and planning processes.

The information available from LIO or NHIC and the sources listed in this guide should not be considered as a substitute for site visits and appropriate field surveys. Generally, this information can be regarded as a starting point from which to conduct further field surveys, if needed. While this data represents best available current information, it is important to note that a lack of information for a site does not mean that species at risk or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in more remote parts of the province. The absence of species at risk location data at or near your site does not necessarily mean no species at risk are present at that location. On-site assessments can better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

Information on the location (i.e. observations and occurrences) of species at risk is considered sensitive and therefore publicly available only on a 1km square grid as opposed to as a detailed point on a map. This generalized information can help you understand which species at risk are in the general vicinity of your proposed activity and can help inform field level studies you may want to undertake to confirm the presence, or absence of species at risk at or near your site.

Should you require specific and detailed information pertaining to species at risk observations and occurrences at or near your site on a finer geographic scale; you will be required to demonstrate your need to access this information, to complete data sensitivity training and to obtain a Sensitive Data Use License from the NHIC. Information on how to obtain a license can be found online at https://www.ontario.ca/page/get-natural-heritage-information.

Many organizations (e.g. other Ontario ministries, municipalities, conservation authorities) have ongoing licensing to access this data so be sure to check if your organization has this access and consult this data as part of your preliminary screening if your organization already has a license.

3.1 Make a Map: Natural Heritage Areas

The Make a Natural Heritage Area Map (available online at https://www.ontario.ca/page/make-natural-heritage-area-map provides public access to natural heritage information, including species at risk, without the user needing to have Geographic Information System (GIS) capability. It allows users to view and identify generalized species at risk information, mark areas of interest, and create and print a custom map directly from the web application. The tool also shows topographic information such as roads, rivers, contours and municipal boundaries.

Users are advised that sensitive information has been removed from the natural areas dataset and the occurrences of species at risk has been generalized to a 1-kilometre grid to mitigate the risks to the species (e.g. illegal harvest, habitat disturbance, poaching).

The web-based mapping tool displays natural heritage data, including:

- Generalized Species at risk occurrence data (based on a 1-km square grid),
- Natural Heritage Information Centre data.

Data cannot be downloaded directly from this web map; however, information included in this application is available digitally through Land Information Ontario (LIO) at https://www.ontario.ca/page/land-information-ontario.

3.2 Land Information Ontario (LIO)

Most natural heritage data is publicly available. This data is managed in a large provincial corporate database called the LIO Warehouse and can be accessed online through the LIO Metadata Management Tool at https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home. This tool provides descriptive information about the characteristics, quality and context of the data. Publicly available geospatial data can be downloaded directly from this site.

While most data are publicly available, some data may be considered highly sensitive (i.e. nursery areas for fish, species at risk observations) and as such, access to some data maybe restricted.

3.3 Additional Species at Risk Information Sources

- The Breeding Bird Atlas can be accessed online at http://www.birdsontario.org/atlas/index.jsp?lang=en
- eBird can be accessed online at https://ebird.org/home
- iNaturalist can be accessed online at https://www.inaturalist.org/
- The Ontario Reptile and Amphibian Atlas can be accessed online at https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas
- Your local Conservation Authority. Information to help you find your local Conservation Authority can be accessed online at https://conservationontario.ca/conservation-authorities/find-a-conservation-authority/

  Local naturalist groups or other similar community-based organizations
- Local Indigenous communities
- Local land trusts or other similar Environmental Non-Government Organizations
- Field level studies to identify if species at risk, or their habitat, are likely present or absent at or near the site.
- When an activity is proposed within one of the continuous caribou ranges, please be sure to consider the caribou Range Management Policy. This policy includes figures and maps of the continuous caribou range, can be found online at https://www.ontario.ca/page/range-management-policy-support-woodland-caribou-conservation-and-recovery

3.4 Information Sources to Support Impact Assessments

- Guidance to help you understand if your activity is likely to adversely impact species at risk or their habitat can be found online at https://www.ontario.ca/page/policy-guidance-harm-and-harass-under-endangered-species-act and https://www.ontario.ca/page/categorizing-and-protecting-habitat-under-endangered-species-act
- A list of species at risk in Ontario is available online at https://www.ontario.ca/page/species-risk-ontario. On this webpage, you can find out more about each species, including where is lives, what threatens it and any specific habitat protections that apply to it by clicking on the photo of the species.

4.0 Check-List

Please feel free to use the check list below to help you confirm you have explored all applicable information sources and to support your discussion with Ministry staff at the preliminary screening stage.

- ✓ Land Information Ontario (LIO)
- ✓ Natural Heritage Information Centre (NHIC)
- ✓ The Breeding Bird Atlas
- ✓ eBird
- ✓ iNaturalist
- ✓ Ontario Reptile and Amphibian Atlas
- ✓ List Conservation Authorities you contacted:_____

  _____
- ✓ List local naturalist groups you contacted:_____

  _____
- ✓ List local Indigenous communities you contacted:_____

  _____
- ✓ List any other local land trusts or Environmental Non-Government Organizations you contacted:_____

  _____
- ✓ List and field studies that were conducted to identify species at risk, or their habitat, likely to be present or absent at or near the site: _____

  _____
- ✓ List what you think the likely impacts of your activity are on species at risk and their habitat (e.g. damage or destruction of habitat, killing, harming or harassing species at risk):_____

  _____

Hydro One Networks Inc (HONI)

Van der Woerd, Mark

Subject:	EGI Storage Enhancement Project - Meeting with HONI
Location:	Microsoft Teams Meeting
Start:	Mon 23/11/2020 11:00 AM
End:	Mon 23/11/2020 12:00 PM
Recurrence:	(none)
Meeting Status:	Meeting organizer
Organizer:	Van der Woerd, Mark
Required Attendees:	Van der Woerd, Mark; SecondaryLandUse@HydroOne.com; Evan Tomek; Chantelle.Rodger@enbridge.com; Chris.Pincombe@enbridge.com
Optional Attendees:	Matey.MATEV@HydroOne.com

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Join with a video conferencing device
176484854@teams.bjn.vc
Video Conference ID: 115 623 389 8
Alternate VTC dialing instructions

Or call in (audio only)
+1 647-738-5585,,904337000# Canada, Toronto
(877) 267-9915,,904337000# Canada (Toll-free)
Phone Conference ID: 904 337 000#
Find a local number | Reset PIN

Learn More | Meeting options

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Environmental Report, Exh C/Tab 1/Sch 1/p.3 and Attachment 2

Preamble:

The ER states the following:

> Based on electricity infrastructure layers available, Hydro One transmission lines and easements are present in the project study area. The proposed works at TL 9H will require a drill rig to cross under large tower transmission lines to access the site. Approval from Hydro One may be required. Further, current discussions with the landowner are ongoing to determine a suitable location for a permanent laneway crossing under hydro transmission lines at TL 8. In addition, the Preferred Pipeline Route will cross through a Hydro One easement in which a crossing agreement may also be required. Lastly, the proposed works for the Crossover Station may encroach in an existing Hydro One easement, however, while at the time of writing this report, the design details for this site have not determined the encroachment level.

Attachment 2 which contains a summary of comments by agencies and responses by Enbridge Gas states that Hydro One requested that Enbridge Gas set up a meeting to discuss the project in more detail and Enbridge Gas had responded to this request by sending Hydro One proposed meetings dates and times to review the Project in more detail.

Questions:

a) Please provide an update on any discussions that Enbridge Gas has had with Hydro One since the application was filed. Please include the dates of communication, the issues and concerns identified by Hydro One, as well as Enbridge Gas's responses and actions to address these issues and concerns.

b) Please provide information on agreements that have been reached between Enbridge Gas and Hydro One regarding Hydro One property or infrastructure that is impacted by the Project.

Response:

a) Since the application was filed, representatives from Enbridge Gas and Aecom had a meeting with the Senior Network Management Officer of Hydro One on November 23, 2020 to discuss the proposed project and how it would impact Hydro One's lands/easements. At this meeting, no issues or concerns were identified by Hydro One. Detailed drawings of Enbridge Gas's proposed works are being finalized and will be provided to Hydro One for their review to determine the approvals/agreements that will be required.

b) No agreements have been reached between Enbridge Gas and Hydro One to date, however Enbridge Gas will continue to work with Hydro One to secure necessary approvals/agreements prior to construction. No issues to securing such approvals/agreements are anticipated.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh C/Tab 1/Sch 1/p.3

Preamble:

The application states that a Stage 1 Archaeological Assessment (AA) for the project was completed by Aecom. The AA determined that the potential for the recovery of both First Nation and Euro-Canadian archaeological resources within the current study area is high, and that a Stage 2 AA is recommended for all areas of potentially undisturbed land within the study area limits. The Stage 2 AA will commence in Fall 2020 and a clearance letter from the Ministry of Heritage, Sport, Tourism and Cultural Industries (MHSTCI) will be obtained prior to construction.

Questions:

a) Please confirm whether the completed Stage 1 AA report has been submitted to the MHSTCI for review and inclusion into the *Ontario Public Register of Archaeological Reports*.
b) Please provide an update on status of the MHSTCI's review of the Stage 1 AA and when Enbridge Gas expects a response from the MHSTCI with respect to the Stage 1 AA.
c) Please provide details of the planned archaeological assessment, including when this will be completed and when Enbridge Gas expects to submit its Stage 2 AA to the MHSTCI for review.
d) Please indicate when Enbridge Gas anticipates a response from the MHSTCI with respect to the Stage 2 AA.
e) Please indicate the timeline by which Enbridge Gas must receive archaeological assessment approval from the MHSTCI to start the project on time.
f) Please comment on the implications for the project if Enbridge Gas is unable to receive approval from the MHSTCI before the timeline specified in part (e).

Response:

a) The Stage 1 AA report was submitted to the Ministry for review and inclusion into the *Ontario Public Register of Archaeological Reports* on September 29, 2020.

b) The MHSTCI has not reviewed the Stage 1 AA yet. Enbridge submitted an Expedited Review Request to the Ministry on February 3, 2021 requesting review of the Stage 1 AA by March 12, 2021.

c) Enbridge Gas submitted a Stage 2 AA to the MHSTCI on February 3, 2021 for the following proposed works in the vicinity of the Ladysmith Station:

    i. upgrading the existing gathering system at the Ladysmith Storage Pool from Nominal Pipe Size (NPS) 16 to NPS 20, and;

    ii. connecting well TL9H to the gathering system.

    A Stage 2 AA is also required for the proposed Payne Storage Pool and Ladysmith Storage Pool pipeline connection and the proposed construction of approximately 2.2 km of NPS 24 natural gas pipeline to connect the Payne Storage Pool to the Corunna Compressor Station. The Stage 2 AA for such works will commence as early as spring 2021.

d) Enbridge Gas submitted an Expedited Review Request to the MHSTCI on February 3, 2021 requesting review of the Stage 2 AA by March 12, 2021. The second Stage 2 AA will be submitted to the MHSTCI as early as late spring 2021 and Enbridge Gas anticipates a response from the MHSTCI by late summer 2021.

e) Enbridge Gas must receive archaeological assessment approval from the MHSTCI for the first Stage 2 AA by June 1, 2021 to start the work in the vicinity of the Ladysmith Station on time.

    Enbridge Gas must receive archaeological assessment approval from the MHSTCI for the second Stage 2 AA by June 5, 2022 to start the remainder of the project on time.

f) If Enbridge is unable to receive approval from the MHSTCI before the timelines specified in part e) it will delay the start of construction which could increase project costs, however Enbridge anticipates receiving approval from the MHSTCI prior to the specified timelines.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh F/Tab 1/Sch 1/p.1,2

Preamble:

In accordance with the OEB's Environmental Guidelines, Enbridge Gas contacted the Ministry of Energy Northern Development and Mines (MENDM) in respect to the Crown's duty to consult related to the Project on April 17, 2020. The MENDM by way of a letter delegated the procedural aspects of the Crown's Duty to Consult for the Project to Enbridge on June 17, 2020 (Delegation Letter). The MENDM identified five Indigenous communities[1] that Enbridge Gas should consult in relation to the Project.

Enbridge Gas provided the MENDM with its Indigenous Consultation Report for the Project and is awaiting a letter of opinion from the MENDM regarding the adequacy of procedural aspects of the duty to consult.

Questions:

a) Please provide an update on Indigenous consultation activities since the application was filed.
b) Please summarize all the issues and concerns raised by the Indigenous communities in the process of Indigenous consultation to date and describe Enbridge Gas's plans, actions, and commitments to address these concerns and resolve the outstanding issues.
c) Please update the evidence with any correspondence between the MENDM and Enbridge Gas since the application was filed, regarding the MENDM's review of Enbridge Gas's consultation activities.
d) Please indicate when Enbridge Gas expects to receive a letter of opinion from the MENDM on the adequacy of procedural aspects of Indigenous consultation undertaken by Enbridge Gas for the project.

[1] Aamjiwnaang First Nation, Bkejwanong (Walpole Island First Nation), Chippewas of the Thames First Nation, Chippewas of Kettle and Stony Point, Oneida Nation of the Thames

Response:

a) Please see Exhibit I.STAFF 8 Attachment 1 for all Indigenous consultation activities, including updates since the application was filed.

b) During the meeting with Walpole Island First Nation (WIFN), the WIFN representative advised Enbridge Gas representatives about the Chenail Ecarte Reserve and their asserted land claim territory within the proposed project area. On April 26, 2000, WIFN filed a Statement of Claim regarding its land claim in the Ontario Superior Court of Justice against the Attorney General of Canada and Her Majesty the Queen in Right of Ontario, Action No. 00-CV-189329 (Action). WIFN provided Enbridge Gas with a copy of the Statement of Claim as well as an Order dated March 26, 2019, which provides that, by way of consent (Order), the parties to the Action agreed to put the Action in abeyance to allow for negotiations in relation to the issues outlined in the Statement of Claim. The Order explains that the matter before the court deals with unextinguished Aboriginal title and rights over a large area of southern Ontario including navigable waters. It is a complex matter and covers a large historical timeframe which would require an extensive amount of preparation before trial. As such, entering into negotiations is a more effective and efficient way to resolve the pending litigation. WIFN has advised Enbridge Gas representatives that both the federal and provincial governments (Governments) have not taken steps to negotiate a resolution of the Action. WIFN has advised that until the Governments take positive steps to resolve the Action, they will not deem any project consultation within their asserted traditional territory to be adequate.

   Enbridge Gas considers the issues set out in the Statement of Claim to be a government to government discussion between WIFN and Canada.

   Enbridge Gas respects the assertion of rights over the traditional territory and will continue to consult and engage with WIFN based on their asserted rights.

c) Please see Exhibit I.STAFF 8 Attachment 2 for all email interactions with the MENDM.

d) At this time Enbridge Gas is not aware of the MENDM's timeline to provide a letter of opinion on the adequacy of procedural aspects of Indigenous consultation undertaken by Enbridge Gas for the project.

Updated: February 10, 2021

Enbridge Gas Inc: 2021-2022 Storage Enhancement Project

INDIGENOUS CONSULTATION REPORT: SUMMARY TABLES

Aamjiwnaang First Nation ("AFN") **Environment Coordinator** **519-336-8410**		
Was project information provided to the community?	☒ Yes ☐ No	On August 10, 2020, an Enbridge representative notified Chief Plain and the AFN representative of the 2021-2022 Storage Enhancement project ("Project". The Project notification letter included a map and description of the Project. No response was received. On August 14, 2020, an Enbridge representative sent an additional notification letter to Chief Plain and the AFN representative of the Project. The Project notification letter included a map and description of the Project. No response was received. On October 6, 2020, an Enbridge representative emailed AFN's Environment Coordinator to advise that the Environmental Report was available and provided the internet link for the report. The Enbridge representative requested that any comments be provided on the Environmental Report by November 13, 2020, as per the Ontario Energy Board's *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario 7th Edition 2016* ("Guidelines"). The Enbridge representative also indicated that they would like to set up a virtual meeting to provide the community with an opportunity to ask any questions and provide their views on the potential impact the Project may have on the community's rights and interests. On October 22, 2020, an Enbridge representative emailed AFN's Environment Coordinator to see if a virtual consultation meeting could be set up to discuss the Project. On the same day, the AFN Environment Coordinator responded advising that the Environment Committee would be meeting in person on November 3, 2020 at the Aamjiwnaang Community Center. She asked whether the Enbridge representative was able to attend the meeting. The Enbridge representative responded advising that she would be able to meet on November 3 in the morning. On October 29, 2020, AFN's Environment Coordinator emailed the Enbridge representative advising that the Environment Committee would be meeting in person on November 17, 2020 at the Aamjiwnaang Community Center. He asked whether the

		Enbridge representative were able to attend the meeting. The Enbridge representative responded advising that this date would work well for the Enbridge team to meet and 5pm was set as the time. On November 13, 2020, the AFN representative sent emailed the Enbridge representative to advise that the meeting had been switched to a viritual format. On November 17, 2020, a virtual meeting was held between Enbridge and AFN. The Enbridge representatives reviewed the presentation and Project map. The Enbridge representatives explained the purpose of the Project: • Project is to meet growing market demand for incremental storage space in Ontario provide energy reliability and security • Safely increasing the maximum operating pressure of three existing storage pools (Ladysmith, Corunna and Seckerton) • Drilling one injection/withdrawal well in the Ladysmith existing storage pool (TL9H) • Install approximately 70 metres of NPS 10-inch steel pipeline from the proposed TL 9H well to the main Ladysmith gathering pipeline • Upgrade the existing 200 metres Ladysmith NPS 16 gathering pipeline to NPS 20 steel pipeline • Modifications to the existing Payne-Kimball Station, is proposed to provide a connection between the Payne Storage Pool pipeline and the Ladysmith Storage Pool pipeline • Install 2.2 km of NPS 24” steel pipeline to connect the Payne Storage Pool Compressor Station to the Corunna Compressor Station • Install Emergency Shutdown (ESD) valves on each natural gas storage well at the Corunna and Seckerton pools. All wells at Ladysmith currently have ESD valves installed. All ESDs installed on the wells will have the capability to be shut-in remotely from the Enbridge Control Room, either individually or on a per Pool basis The Enbridge representative went over the environmental aspects of the project including Species at Risk and habitat.

<table>
<tr><td></td><td></td><td>They provided the timelines for the Project and how the OEB process works.</td></tr>
<tr><td>Was the community responsive/did you have direct contact with the community?</td><td>☒ Yes
☐ No</td><td>AFN and Enbridge representatives have been in direct contact. A meeting was held on November 17, 2020.</td></tr>
<tr><td>Did the community members or representatives have any questions or concerns?</td><td>☒ Yes
☐ No</td><td>
<table>
<tr><th>AFN Question</th><th>Enbridge Response</th></tr>
<tr><td>An AFN representative asked what archaeology will be done/has been done?</td><td>The Enbridge representative advised that only part of the project will be competed next year. The Enbridge Enviromental Planner advised he was out assessing if the fields were ready for archaelogoy and Stantec, acting on behalf of Enbridge, would be reaching out to inform dates for Stage 2 work begining the following week.</td></tr>
<tr><td>The AFN representative asked about the Bat Habitat and mitigation for the trees being taken down for the project.</td><td>The Enbridge representative advised that they would be doing assessments for bat habitat. If identified, they would reach out to the approprioate Ministry for guidance on how to mitigate. Examples of mitigation are bat boxes, replacement of trees taken down. The Enbridge representaive advised that Enbridge has a 2-1 tree replacement program. For every tree taken down, two get planted. Enbridge also takes care of those trees until they no longer need it.</td></tr>
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</td></tr>
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		The AFN representative asked what are injection well and what is underground storage?	The Enbridge representative described the underground storage facilities and how an injection well works. The Enbridge presetntaive offered a tour to the environmental committee to see the Dawn Storage facilities.
Does the community have any outstanding concerns?	☐ Yes ☒ No	To date, there are no outstanding concerns from AFN. Enbridge will continue to engage with AFN regarding the Project though the project process and the lifecycle of the asset.	
Chippewas of Kettle and Stony Point First Nation ("CKSPFN") **Consultation Coordinator** **519-786-2125**			
Was project information provided to the community?	☒ Yes ☐ No	On August 10, 2020, an Enbridge representative notified Chief Henry and CKSPFN representatives of the Project. The Project notification letter included a map and description of the Project. On August 14, 2020, an Enbridge representative sent an additional notification letter to Chief Henry and CKSPFN representatives of the Project. The Project notification letter included a map and description of the Project. On October 6, 2020, an Enbridge representative emailed Chief Henry and CKSPFN representatives to advise that the Environmental Report was available for the Project and provided the internet link for the report. The Enbridge representative requested that any comments be provided on the Environmental Report by November 13, 2020, as per the Ontario Energy Board's Guidelines. The Enbridge representative also indicated that they would like to set up a virtual meeting to provide the community with an opportunity to ask any questions and provide their views on the potential impact the Project may have on the community's rights and interests.	

		On October 15, 2020, an Enbridge representative emailed the CKSPFN representative to set up a time to virtually meet on a couple of Projects. On October 22, 2020, an Enbridge representative sent an email to CKSPFN representatives requesting a virtual meeting to discuss the Project. On November 6, 2020, an Enbridge representative called the CKSPFN band office to speak with the CKSPFN representive. A message was left with a contact number asking for a return call. On December 3, 2020, an Enbridge representative sent an email to the CKSPFN representative requesting a virtual meeting. The Enbridge representative sent the presentation that is being used to talk about the project. On the same day, the CKSPFN representative responded back acknowledging the presentation and advised they would be in touch today. On December 9, 2020, a telephone call occurred between the CKSPFN and Enbridge representatives. The Enbridge representatives reviewed the presentation and Project map. The Enbridge representatives explained the purpose of the Project: • Project is to meet growing market demand for incremental storage space in Ontario provide energy reliability and security • Safely increasing the maximum operating pressure of three existing storage pools (Ladysmith, Corunna and Seckerton) • Drilling one injection/withdrawal well in the Ladysmith existing storage pool (TL9H) • Install approximately 70 metres of NPS 10-inch steel pipeline from the proposed TL 9H well to the main Ladysmith gathering pipeline • Upgrade the existing 200 metres Ladysmith NPS 16 gathering pipeline to NPS 20 steel pipeline • Modifications to the existing Payne-Kimball Station, is proposed to provide a connection between the Payne Storage Pool pipeline and the Ladysmith Storage Pool pipeline

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<tr><td></td><td></td><td>

Install 2.2 km of NPS 24” steel pipeline to connect the Payne Storage Pool Compressor Station to the Corunna Compressor Station
Install Emergency Shutdown (ESD) valves on each natural gas storage well at the Corunna and Seckerton pools. All wells at Ladysmith currently have ESD valves installed. All ESDs installed on the wells will have the capability to be shut-in remotely from the Enbridge Control Room, either individually or on a per Pool basis

The Enbridge representative went over the environmental aspects of the project including Species at Risk and habitat. They provided the timelines for the Project and how the OEB process works.
The CKSPFN representative advised that they hoped for a consultation committee to be set up by the end of Jan 2021 as they are looking for new members following their recent election.
The Enbridge representative reminded the CKSPFN representative that capacity funding was always available and to reach out if they required it.
</td></tr>
<tr><td>Was the community responsive/did you have direct contact with the community?</td><td>☒ Yes
☐ No</td><td>A telephone call to discuss the project occurred on December 8, 2020.</td></tr>
<tr><td>Did the community members or representatives have any questions or concerns?</td><td>☒ Yes
☐ No</td><td>
<table>
<tr><th>CKSPFN Question</th><th>Enbridge Response</th></tr>
<tr><td>An CKSPFN representative asked how often Enbridge needs to shut down storage wells due to an emergency?</td><td>The Enbridge representative advised that they did not have that information on hand and would get back to them with a response.

On December 12, 2020, the Enbridge representative sent an email response to CKSPFN following up on this question. The Project Manager for the Storage Enhancement project</td></tr>
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			advised me that he doesn't recall having to shut-in a well due to an emergency in the 14 years that he has been with Enbridge.
		An CKSPFN representative asked what happens to these wells during a power outage? Would Enbridge be able to shut them down?	The Enbridge representative advised that they did not have that information on hand and would get back to them with a response. On December 12, 2020, the Enbridge representative sent an email response to CKSPFN following up on this question. The Emergency shut off valves close on loss of power and have to be manually opened. So if there is a power outage in the area of the pool, the wells will all shut down.
		An CKSPFN representative asked is Stage 2 archaeology has been started yet.	The Enbridge representative advised the Stage 2 archaeology was completed on November 30th. CKSPFN had sent two monitors to the archaeology site.
Does the community have any outstanding concerns?	☐ Yes ☒ No	To date, CKSPFN does not have any outstanding concerns; Enbridge will continue to engage with CKSPFN regarding the Project though the project process and the lifecycle of the asset.	
Chippewas of the Thames First Nation ("COTTFN") **Consultation Coordinator** **519-289-5555**			
Was project information provided to the community?	☒ Yes ☐ No	On August 10, 2020, an Enbridge representative notified Chief French and COTTFN representatives of the Project. The Project notification letter included a map and description of the Project.	

		On August 12, 2020, the COTTFN representative sent a letter to the Enbridge representative confirming receipt of the Project notification and advising that after reviewing the Project information, they have identified minimal concerns. They requested that as the Project progresses and studies are completed, they be forwarded to consultation@cottfn.com. COTTFN also advised that if an Archaeology Assessment will be conducted, they require notification and an opportunity to actively participate by sending First Nation Field Liaisons on behalf of COTTFN. On August 14, 2020, an Enbridge representative sent an additional notification letter to Chief French and the COTTFN representative of the Project. The Project notification letter included a map and description of the Project. No response was received. On October 6, 2020, an Enbridge representative emailed the COTTFN representatives to advise that the Environmental Report was available and provided the internet link for the report. The Enbridge representative requested that any comments be provided on the Environmental Report by November 13, 2020, as per the Ontario Energy Board's Guidelines. The Enbridge representative also indicated that they would like to set up a virtual meeting to provide the community with an opportunity to ask any questions and provide their views on the potential impact the Project may have on the community's rights and interests. On October 22, 2020, an Enbridge representative was corresponding with the COTTFN regarding a different Project and confirmed a meeting date of November 3 to discuss multiple projects. On November 3, 2020, a virtual meeting was held between Enbridge and COTTFN. The Enbridge representatives reviewed the presentation and Project map. The Enbridge representatives explained the purpose of the Project: • Project is to meet growing market demand for incremental storage space in Ontario provide energy reliability and security • Safely increasing the maximum operating pressure of three existing storage pools (Ladysmith, Corunna and Seckerton)

<table>
<tr><td></td><td></td><td>

Drilling one injection/withdrawal well in the Ladysmith existing storage pool (TL9H)
Install approximately 70 metres of NPS 10-inch steel pipeline from the proposed TL 9H well to the main Ladysmith gathering pipeline
Upgrade the existing 200 metres Ladysmith NPS 16 gathering pipeline to NPS 20 steel pipeline
Modifications to the existing Payne-Kimball Station, is proposed to provide a connection between the Payne Storage Pool pipeline and the Ladysmith Storage Pool pipeline
Install 2.2 km of NPS 24” steel pipeline to connect the Payne Storage Pool Compressor Station to the Corunna Compressor Station
Install Emergency Shutdown (ESD) valves on each natural gas storage well at the Corunna and Seckerton pools. All wells at Ladysmith currently have ESD valves installed. All ESDs installed on the wells will have the capability to be shut-in remotely from the Enbridge Control Room, either individually or on a per Pool basis

The Enbridge representative went over the environmental aspects of the project including Species at Risk and habitat. They provided the timelines for the Project and how the OEB process works.
On February 9, 2021, the Enbridge representative sent an email to COTTFN to set up a meeting to discussion current and upcoming Enbridge projects (Storage Enhancement) and the capacity support needed by the community to engage with Enbridge. The COTTFN representative responded and a meeting is to be set the week of February 22, 2021.
</td></tr>
<tr><td>Was the community responsive/did you have direct contact with the community?</td><td>☒ Yes
☐ No</td><td>COTTFN has confirmed receipt of the information and a virtual meeting was held on November 3, 2020.</td></tr>
<tr><td>Did the community</td><td>☒ Yes
☐ No</td><td>
<table>
<tr><th>COTTFN Question</th><th>Enbridge Response</th></tr>
<tr><td>A COTTFN representative raised concerns about the short time frame between</td><td>The Enbridge representative recognized that times have been challenging right now</td></tr>
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<table>
<tr><td>members or representatives have any questions or concerns?</td><td></td><td><table><tr><td>project notification to filing with OEB.</td><td>with COVID. Enbridge is committed to ongoing consultation on all our projects and will continue to work with the COTTFN representative on any concerns they have on this project.</td></tr><tr><td>The COTTFN representative asked about monitors on the Project</td><td>The Enbridge representative advised that he would send over the monitor agreement and COTTFN would be notified of the Stage 2 archaeology timeframe.</td></tr></table></td></tr>
<tr><td>Does the community have any outstanding concerns?</td><td>☐ Yes
☒ No</td><td>To date COTTFN does not have any outstanding concerns. Enbridge will continue to engage with COTTFN regarding the Project though the project process and the lifecycle of the asset.</td></tr>
<tr><td colspan="3">Oneida Nation of the Thames (“Oneida Nation”)
Environment and Consultation Coordinator
(519) 652-6922</td></tr>
<tr><td>Was project information provided to the community?</td><td>☒ Yes
☐ No</td><td>On August 10, 2020, an Enbridge representative notified Chief Chrisjohn and an Oneida Nation representative of the Project. The Project notification letter included a map and description of the Project.

On August 14, 2020, an Enbridge representative sent an additional notification letter to Chief Chrisjohn and the Oneida Nation representative of the Project. The Project notification letter included a map and description of the Project. No response was received.

On October 6, 2020, an Enbridge representative emailed the Oneida Nation representative to advise that the Environmental Report was available and provided the internet link for the report. The Enbridge representative requested that any comments be provided on the Environmental Report by November 13, 2020, as per the Ontario Energy Board’s Guidelines.</td></tr>
</table>

		On October 22, 2020, an Enbridge representative emailed the Oneida Nation representative to set up a virtual meeting on the Project. The Enbridge representative advised that we would be willing to provide capacity funding for their staff to review the documents. No response was received. On December 3, 2020, an Enbridge representative sent an email to the Oneida Nation representative requesting a virtual meeting. The Enbridge representative sent the presentation that is being used to talk about the project. On December 17, 2020, an Enbridge representative left a phone message with Oneida Nation representative to contact Enbridge representative to discuss upcoming projects involving Oneida Nation.
Was the community responsive/did you have direct contact with the community?	☐ Yes ☒ No	At this time, the Enbridge representative has not received a response from Oneida Nation regarding the Project.
Did the community members or representatives have any questions or concerns?	☐ Yes ☒ No	
Does the community have any outstanding concerns?	☐ Yes ☒ No	To date Oneida Nation does not have any outstanding concerns. Enbridge will continue to engage with Oneida Nation regarding the Project though the project process and the lifecycle of the asset.
Walpole Island First Nation ("WIFN") **Consultation Manager** **519-628-5700**		

Was project information provided to the community?	☒ Yes ☐ No	On August 10, an Enbridge representative notified Chief Miskokomon of the Project. The Project notification letter included a map and description of the Project. On August 14, 2020, an Enbridge representative sent an additional notification letter to Chief Miskokomon. The Project notification letter included a map and description of the Project. No response was received. On October 6, 2020, an Enbridge representative emailed the Chief to advise that the Environmental Report was available and provided the internet link for the report. The Enbridge representative requested that any comments be provided on the Environmental Report by November 13, 2020, as per the Ontario Energy Board's Guidelines. On October 22, 2020, an Enbridge representative emailed the WIFN consultation representatives advising them of the Project, providing a description and map and the link to the Environmental Report. The Enbridge representative requested a virtual meeting to discuss the Project. On November 2, 2020, the WIFN representative responded to the Enbridge representative with some dates for a virtual meeting. The parties confirmed a meeting for November 6, 2020. On November 6, 2020, a virtual meeting was held between Enbridge and WIFN. The Enbridge representatives reviewed the presentation and Project map. The Enbridge representatives explained the purpose of the Project: • Project is to meet growing market demand for incremental storage space in Ontario provide energy reliability and security • Safely increasing the maximum operating pressure of three existing storage pools (Ladysmith, Corunna and Seckerton) • Drilling one injection/withdrawal well in the Ladysmith existing storage pool (TL9H) • Install approximately 70 metres of NPS 10-inch steel pipeline from the proposed TL 9H well to the main Ladysmith gathering pipeline • Upgrade the existing 200 metres Ladysmith NPS 16 gathering pipeline to NPS 20 steel pipeline

		• Modifications to the existing Payne-Kimball Station, is proposed to provide a connection between the Payne Storage Pool pipeline and the Ladysmith Storage Pool pipeline • Install 2.2 km of NPS 24" steel pipeline to connect the Payne Storage Pool Compressor Station to the Corunna Compressor Station • Install Emergency Shutdown (ESD) valves on each natural gas storage well at the Corunna and Seckerton pools. All wells at Ladysmith currently have ESD valves installed. All ESDs installed on the wells will have the capability to be shut-in remotely from the Enbridge Control Room, either individually or on a per Pool basis The Enbridge representative went over the environmental aspects of the project including Species at Risk and habitat. They provided the timelines for the Project and how the OEB process works. The WIFN representative provided background information on their territory and the Chenail Ecarte Reserve, their asserted land claim territory in which the Project falls upon. On November 5, 2020, a WIFN representative sent an email to the Enbridge representative providing a budget for a third party review on the Project. On November 6, 2020, the WIFN representative provided un updated estimate for the review of technical documents on the Project. This estimate was agreed to by Enbridge. On November 24, 2020, the Enbridge representative sent an email to the WIFN representative to provide a capacity funding agreement for the third party review of the environmental report and Archaeological Assessment and WIFN staff time to review. On December 1, 2020, the WIFN representative returned the signed capacity funding agreement.
Was the community responsive/did you have direct contact with the community?	☒ Yes ☐ No	WIFN and Enbridge representatives have communicated over email and a virtual meeting was held.

<table>
<tr><td></td><td></td><td></td></tr>
<tr><td>Did the community members or representatives have any questions or concerns?</td><td>☐ Yes
☒ No</td><td>
<table>
<tr><th>WIFN Question</th><th>Enbridge Response</th></tr>
<tr><td>A WIFN representative advised that the land that the Project falls on is their traditional territory and their Chenail Ecarte Reserve.</td><td>The Enbridge representative advised they would work with WIFN based on this asserted right.</td></tr>
<tr><td>The WIFN representative provided a new copy of the estimate for the technical review of the project.</td><td>The Enbridge representative advised they would review the estimate and would send over a capacity funding agreement for this Project.</td></tr>
</table>
</td></tr>
<tr><td>Does the community have any outstanding concerns?</td><td>☐ Yes
☒ No</td><td>To date, there are no outstanding concerns from WIFN. Enbridge will continue to engage with WIFN regarding the Project though the project process and the lifecycle of the asset.</td></tr>
</table>

From: Lauren Whitwham <Lauren.Whitwham@enbridge.com>
Sent: December 3, 2020 9:29 AM
To: Johnston-Weiser, David (ENDM) <David.Johnston-Weiser@ontario.ca>
Subject: Update on Storage

Hi David,

I'm just putting together the updates for the Storage Enhancement Project.

Wondering how you'd like it. Would you like all the previous information removed or would you like the new information added to the originally submitted summary?

Thanks,
Lauren

From: Johnston-Weiser, David (ENDM)
To: Lauren Whitwham
Subject: [External] RE: Update on Storage
Date: Thursday, December 3, 2020 9:44:05 AM

Hi Lauren,

If you could add them to the originally submitted summary highlighting the new information that would be great.

Thanks,

David

From: Johnston-Weiser, David (ENDM)
To: Lauren Whitwham; Ashe, Rosalind (ENDM)
Cc: Kevin Berube
Subject: [External] RE: London Lines sufficiency letter
Date: Wednesday, December 16, 2020 4:28:02 PM

Hello Lauren,

Please note that Rosalind and I have begun to examine the sufficiency of consultation on the London Lines Pipeline Project (as well as the 2021/2022 Gas Storage Enhancement project). Because the capacity funding agreement for London Lines is so recent (December 1), Walpole Island First Nation indicated that our meeting was premature. Walpole Island First Nation is in the process of having a third party examine if the project has the potential to affect any of the community's Aboriginal and Treaty rights. After this review has been completed, Walpole Island First Nation will be ready to comment on their consultation experience.

Should you have any questions regarding this, please let Rosalind or I know.

Thank you for your understanding regarding this matter.

David Johnston-Weiser
Indigenous Energy Policy Intern

From: Lauren Whitwham <Lauren.Whitwham@enbridge.com>
Sent: January 13, 2021 10:17 AM
To: Johnston-Weiser, David (ENDM) <David.Johnston-Weiser@ontario.ca>; Ashe, Rosalind (ENDM) <Rosalind.Ashe@ontario.ca>
Subject: Filed Summary Storage Updated

Hi there,

Thanks for the call yesterday. Hope you had a nice relaxing break.

Going forward, would you mind setting up group calls that includes Matt Jackson and Kevin Berube when we chat. It will be easier for us to provide our updates and ensure that we all receive the same info at the same time.

I have updated the Storage Enhancement consultation log and highlighted the most recent information since it was last sent to you. This includes the meeting with Kettle and Stony Point and the Capacity funding agreement letter with Walpole Island.

If you have any questions or concerns, please let us know.

Thanks,
Lauren

From: Ashe, Rosalind (ENDM)
To: Lauren Whitwham; Johnston-Weiser, David (ENDM)
Subject: [External] RE: Filed Summary Storage Updated
Date: Wednesday, January 13, 2021 11:35:37 AM

Thank you, Lauren. Yes, it was surprisingly nice to have the time to relax – although I missed my family in Ottawa.

We really appreciated the high-level summaries on the call – very helpful in terms of plotting out a timeline when time is of the essence! In future, we can set up group calls.

Sincerely,

Rosalind

From: Lauren Whitwham <Lauren.Whitwham@enbridge.com>
Sent: January 25, 2021 12:56 PM
To: Johnston-Weiser, David (ENDM) <David.Johnston-Weiser@ontario.ca>
Cc: Ashe, Rosalind (ENDM) <Rosalind.Ashe@ontario.ca>
Subject: FW: Update on technical review on London Lines Replacement Project

Hi David,

Below is an email exchange with Walpole on the third party review for London Lines and storage enhancement.

Thanks,
Lauren

From: [redacted]
Sent: Monday, January 25, 2021 11:28 AM
To: Lauren Whitwham <Lauren.Whitwham@enbridge.com>
Subject: [External] Re: Update on technical review on London Lines Replacement Project

Hi Lauren,

I seriously cannot wait until the schools reopen.

I actually reached out to [redacted] last week and I was told that they should have something to me by the end of the week.

From: Lauren Whitwham <Lauren.Whitwham@enbridge.com>
Sent: February 1, 2021 3:06 PM
To: Johnston-Weiser, David (ENDM) <David.Johnston-Weiser@ontario.ca>; Ashe, Rosalind (ENDM) <Rosalind.Ashe@ontario.ca>
Cc: Delaquis, Dan (ENDM) <Dan.Delaquis@ontario.ca>; Matt Jackson <Matt.Jackson@enbridge.com>
Subject: Updated Logs for Enbridge Projects

Good afternoon David and Rosalind,

Hope you had a nice weekend and are doing your best to stay safe and happy during these different times.

I've attached the updated and complete logs for the London Lines Replacement Project and the 2021-2022 Storage Enhancement Project.

We continue to try to work with Chippewas of the Thames to ensure that their concerns are addressed. We have made multiple attempts to provide capacity funding but have not had a response from the community. Kevin will continue to engage as we proceed in the process. We also continue to engaged with Walpole Island and are waiting on the third party review. We will address any concerns that come out of the review. At this point, there are no specific outstanding concerns that have been brought forward from any of the five communities on the delegation list. As always, if any concerns arise, we will address them as we do on all other project.

In order to maintain schedules for these projects, we will require a decision by end of February. Please let us know if there is anything we can do to help in your process.

Thanks and all the best,
Lauren

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh B/Tab 1/Sch 1/p. 15

Preamble:

Enbridge Gas is proposing to re-route the NPS 20 Ladysmith Transmission pipeline to connect the Payne pipeline and the Ladysmith pipeline, within the existing Kimball-Payne Station. A section of the existing NPS 20 Ladysmith Transmission pipeline will be removed and two short segments of NPS 20 pipeline, totaling 79 metres, will be installed. The proposed pipeline will be located on private property and an easement will have to be negotiated with the landowner.

Questions:

a) Please provide an update on negotiations with the private landowner for obtaining an easement, including any concerns that have been expressed by the landowner with respect to the proposed project.
b) Does Enbridge Gas expect to obtain the required easement prior to the commencement of construction? If not, please explain.

Response:

a) Refer to response at Exhibit I.MNRF.11.

b) Yes, Enbridge expects to obtain the easement prior to commencement of construction.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh C/Tab 1/Sch 1/p. Exh E/Tab 1/Sch 1/p.2,3

Preamble:

In its application, Enbridge Gas indicates that for the Crossover station installation, a temporary land use (TLU) agreement and approximately 0.38 acres permanent easement will be required and approximately 0.7 acres of land will need to be purchased. Enbridge Gas states that negotiations are ongoing with the landowner.

Questions:

a) Based on the statements made by Enbridge Gas in Exhibit C of the application, it appears that installation of the Crossover Station is no longer being pursued. If this is correct, are the permanent easement, TLU agreement and land purchase as indicated above in Exhibit E of the application still required?
b) If these lands are still required, please explain why they are required, and:
    i. Please provide an update on discussions/negotiations with the affected landowner(s).
    ii. Please include any concerns that have been expressed by the landowner(s) with respect to the proposed project.
    iii. Please provide an indication of when the land purchase agreement will be executed.

Response:

a) As stated in Exhibit C, Tab 1, Schedule 1, page 2, paragraph 6 of the pre-filed evidence, the existing Payne Storage Pool pipeline and Ladysmith Storage Pool pipeline which were proposed to be connected at a new Crossover Station adjacent to the existing Payne / Kimball Station is no longer required. Instead the two pipelines are proposed to be connected by re-routing the Ladysmith Storage Pool pipeline into the Payne / Kimball Station. This proposed work is what is referenced in Exhibit E, Tab 1, Schedule 1, page 2 as the “Crossover Installation” and the permanent easement, TLU agreement and land purchase are still required.

b) These lands are still required as explained in part a.

i. Please refer to response at Exhibit I.MNRF.11.
ii. No concerns have been raised by the affected landowners.
iii. The land purchase closed on December 22, 2020.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh E/Tab 1/Sch 1, p.3

Preamble:

Enbridge Gas states that its land agents have contacted the parties directly impacted by the Project. In the case of well TL 9H, station upgrade, bi-direction valve & station piping, the party is a tenant farmer.

Questions:

a) Please provide an update on discussions/negotiations with the tenant farmer. Please include any concerns that have been expressed by the tenant farmer with respect to the proposed project.

b) Please provide any evidence (e.g. letter of acknowledgment) signed by the tenant farmer that demonstrates agreement to the location of the proposed facilities and no objection to the commencement of drilling of the well and construction of associated facilities.

Response:

a) The tenant farmer has been notified of the project and has not expressed any concerns about the project.

b) In 2019, Enbridge Gas entered into a license agreement with the tenant farmer wherein Enbridge Gas has licensed the relevant lands on a temporary revocable basis to the tenant farmer. This agreement provides Enbridge Gas with the right to use the lands for its operations, and to terminate the license at any time. Therefore, no further document such as a letter of acknowledgement was deemed to be required in this case

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh E/Tab 1/Sch 1, p.4,5

Preamble:

Enbridge Gas states that for the 2.2 km NPS 24 pipeline, eight properties will be affected by the pipeline, one of which Enbridge Gas owns and rents to a local farmer. Enbridge Gas states that the local farmer has been notified. The other 7 properties are owned by 6 landowners who have all been notified and negotiations for TLU agreement and an easement are ongoing.

Enbridge Gas stated that it received a letter informing it that the six third party landowners have engaged the Canadian Association of Energy and Pipeline Landowner Associations (CAEPLA) to represent their interests. The application states that Enbridge Gas is planning to have a preliminary meeting with CAEPLA the week of November 23, 2020.

Questions:

a) Please provide an update on discussions/negotiations with respect to obtaining the required easement and executing the TLU agreement with the affected landowner(s)? Please include any concerns that have been expressed by the landowner(s) with respect to the proposed project and any responses provided to address these concerns and any outstanding concerns.
b) Please confirm that Enbridge Gas will obtain the required easements and execute the necessary TLU agreements prior to the commencement of construction? If not, please explain.

Response:

a) Enbridge Gas purchased one of the affected properties on December 22, 2020 leaving six properties and five landowners. These five landowners are represented by CAEPLA. Please refer to Exhibit I.MNRF.11 for an update on negotiations with CAEPLA.

b) It is Enbridge Gas's intention to obtain all required easements and TLU prior to the commencement of construction.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh E/Tab 2/Sch 1, 2

Preamble:

Exhibit E contains forms of agreement that Enbridge Gas is proposing to offer to landowners directly affected by the Project.

Section 97 of the OEB Act provides that leave under section 90 shall not be granted until the OEB is satisfied that an applicant has offered or will offer each owner of land affected by the approved route or location an agreement in a form approved by the OEB.

Questions:

a) Have the forms of agreement shown in Exhibit E been previously approved by the OEB? If so, in which proceedings?
b) Does Enbridge Gas anticipate any difficulties with obtaining from any of the directly affected landowners any permits, easements or executing any land purchase or TLU agreements required for the construction of the Project? If so, please provide a detailed explanation.
c) Does Enbridge Gas expect to obtain all required permits, easement agreements and execute all land purchase and TLU agreements prior to construction of the Project? If not, please explain.

Response:

a) The forms of agreement in Exhibit E have both been previously approved by the OEB in EB-2019-0188 (North Bay Project).

b) No, Enbridge does not anticipate any difficulties with obtaining the required land rights with the affected landowners.

c) Yes, Enbridge expects to obtain all land rights prior to construction.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh A/Tab 2/Sch 1, p.4

Preamble:

In order to meet the proposed in-service date of November 2021 and to commence construction activities in April 2021, Enbridge Gas requests the OEB to issue the requested approvals and report to the MNRF by the end of March 2021.

Questions:

a) Please comment on the implications for the Project if Enbridge Gas does not receive approval from the OEB by the end of March 2021. What is the latest time by which approval from the OEB is required in order to meet the November 2021 in-service date?

Response:

a) Enbridge Gas has coordinated the project work with Enbridge Gas Operations, to ensure that the storage pools will be returned to service as planned and there will be no disruption to Enbridge Gas customers. Pool outages have been planned based on receiving approval from the OEB by the end of March 2021. Contingency has been built in the schedule and a delay until the end of April 2021 could be accommodated. If the approval date extends beyond this date, then parts of the project may have to be delayed until 2022.

   The proposed date also allows Enbridge Gas to procure and ensure that contractors will be available for the proposed project activities. For example, Enbridge Gas has other drilling projects in the area and would like to take advantage of the availability of the Western Canadian drilling equipment and personnel currently in Ontario, providing cost and logistic savings.

   The project construction schedule from April to October 2021 also takes advantage of drier summer months, thereby minimizing the impact of construction on agricultural lands and other features, such as watercourses.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh B/Tab 1/Sch 1, p.11

Preamble:

Enbridge Gas states that the drilling of one horizontal gas storage well TL 9H is required to increase the deliverability from the Ladysmith Storage Pool.

Questions:

a) Please provide information on the incremental deliverability (in GJ/day) that is expected to be provided from the drilling and operation of the proposed well.
b) Please confirm whether the incremental deliverability from this well is required to fulfil any particular long term contracts that Enbridge Gas has entered/expects to enter into or for any particular facilities. Please provide an explanation.

Response:

a) The incremental deliverability from TL9H is expected to be 33,000 GJ/day.

b) The incremental deliverability is not tied to any particular long-term contract. The incremental deliverability created by TL 9H will support the marketing of the incremental space created by the project (i.e. storage contract parameters include entitlement to a specific amount of space and a specific amount of deliverability). The incremental storage capacity and deliverability will be marketed to third parties as part of Enbridge Gas' unregulated business.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh A/Tab 2/Sch 1, p.3

Preamble:

Enbridge Gas states that it is proposing to construct the following gathering pipelines:

a. install approximately 70 metres of new NPS 10 steel pipeline to connect the proposed TL 9H well to the Ladysmith gathering lines
b. upgrade approximately 200 metres of the existing Ladysmith NPS 16 gathering pipelines to NPS 20
c. re-route approximately 150 metres of the NPS 20 Ladysmith transmission pipeline to connect the Payne pipeline and the Ladysmith pipeline within the existing Kimball-Payne Station
d. install 2.2 kilometres of NPS 24 steel pipeline to connect the Payne Compressor Station to the Corunna Compressor Station

Questions:

a) Does Enbridge Gas consider that leave to construct approval from the OEB is required for the pipeline construction proposed in a.? If so, please explain.
b) Is the upgrade proposed in b. specifically required to accommodate the increased pressure from the Ladysmith Storage Pool?
c) Please explain why the re-routing work proposed in c. is required.
d) Please explain why the 2.2 km pipeline proposed in d. is required.

Response:

a) Enbridge Gas has applied for leave to construct to install 70 meters of NPS 10 steel pipeline from the well to the main gathering line. This proposed pipeline will have an operating pressure of 9,930 kPA triggering the need for leave to construct.

b) The upgrade of the existing Ladysmith gathering pipeline is required to accommodate the proposed increased pressure and the incremental deliverability from the new well.

c) In order to create the deliverability associated with the Project the following modifications are required:

- Drill TL 9H in the Ladysmith Pool
- Upsize Ladysmith gathering system and station piping from NPS 16 to NPS 20
- Construct 2.2 kilometres of NPS 24 steel pipeline to connect the Payne Compressor Station to the Corunna Compressor Station
- Connect the Payne and Ladysmith pipelines

The re-routing work is a necessary component of the connection between the Payne and Ladysmith pipelines. In order to minimize disruption to landowners and to minimize environmental impact, the Payne and Ladysmith pipelines will be connected within the existing Payne-Kimball Station. The Payne pipeline is already located in the Station, but the Ladysmith pipeline must be re-routed to the Station. An alternate solution of installing a new station where the pipelines meet in an agricultural field was considered. However, the existing Payne-Kimball Station was only approximately 55 metres to the southwest; contained the Payne pipeline; and could accommodate the equipment with only a small increase to the station footprint. The most expedient and non-invasive solution was to connect the pipelines, by rerouting the Ladysmith pipeline, at the Payne-Kimball Station.

This connection between Payne and Ladysmith will allow gas from the Ladysmith Storage Pool to be routed to the Dawn Compressor Station via the Payne Storage Pool pipeline. Valving and pressure protection will be installed to accommodate the MOP differences between the Ladysmith and Payne pipelines. These facilities will also allow for gas to be routed between the Dawn Compressor Station, the Corunna Compressor Station, the Payne Storage Pool and the Ladysmith Storage Pool.

d) The proposed pipeline is also necessary to create a portion of the deliverability associated with this Project. It will also allow a direct connection between the Payne Storage Pool and the Corunna Compressor Station. The pipeline will provide flexibility for the Payne Storage Pool to be filled and emptied in a more efficient manner through either the Corunna Compressor Station or the Dawn Compressor Station.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh B/Tab 1/Sch 1, p.18

Preamble:

Enbridge Gas states that modifications to the existing Payne-Kimball Station are required to provide a connection between the Payne Storage Pool pipeline and the Ladysmith Storage Pool pipeline. The modifications will route and control gas from the Ladysmith Storage Pool to the Dawn Compressor Station via the Payne Storage Pool pipeline. Control valves will be installed to allow the higher pressure gas (1440 psig) from the Ladysmith Storage Pool to be reduced to the MOP (1000 psig) of the Payne Storage Pool pipeline and will allow the flow of gas from the Ladysmith Storage Pool to the Dawn Compressor Station via the Payne Storage Pool pipeline.

The proposed crossover will also have the function of routing gas between the Dawn Compressor Station, the Corunna Compressor Station, the Payne Storage Pool, and the Ladysmith Storage Pool. The crossover installation will involve the installation of piping and valving between the two pipelines and the re-routing of approximately 150m of the existing Ladysmith NPS 20-inch steel pipeline.

Questions:

a) Are these modifications limited to the installation of control valves or is there other work contemplated as part of the required modifications?
b) Please explain why these modifications are necessary.
c) Please confirm whether Enbridge Gas will undertake the crossover installation work. If not, please explain how the re-routing work is sufficient for routing gas as Enbridge Gas has proposed.

Response:

a) The Ladysmith pipeline will be re-routed to the Payne-Kimball Station. The Payne and Ladysmith pipelines will be connected through an arrangement of piping and valves within the footprint of the Payne-Kimball Station as shown in Exhibit B, Tab 1, Schedule 1, Attachment 14 of the pre-filed evidence. Other than these installations,

there will not be any further modifications to the Payne-Kimball Station as part of this proposed project.

b) Connecting the Payne and Ladysmith pipelines at the Payne-Kimball Station allows a portion of the facilities, as described in response at Exhibit I.STAFF.16 part c, to create the deliverability associated with the proposed project. This connection will also provide additional flexibility and redundancy by allowing gas movement to both the Corunna Compressor Station and the Dawn Compressor Station. Currently the Payne Storage Pool can only be accessed by the Dawn Compressor Station and the Ladysmith Storage Pool can only be accessed by the Corunna Compressor Station.

c) In order to fulfill the objectives of this portion of the proposed project, Enbridge Gas will undertake both the crossover installation and the pipeline re-routing.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh A/Tab 2/Sch 1

Preamble:

Enbridge Gas has applied for a well drilling licence under section 40(1) of the OEB Act. Should the OEB determine that it is appropriate to do so it would issue a favourable report to the Minister of Natural Resources and Forestry recommending the issuance of a well licence and may also recommend certain conditions.

Questions:

Please comment on the attached OEB staff proposed conditions of approval. Please note that these conditions are draft and subject to additions or changes.

Application under Section 40 of the OEB Act
Enbridge Gas Inc. EB-2020-0256
DRAFT CONDITIONS OF APPROVAL

1. Enbridge Gas Inc. (Enbridge Gas) shall rely on the evidence filed with the OEB in the EB-2020-0256 proceeding and comply with applicable laws, regulations and codes pertaining to the construction of the proposed well.

2. The authority granted under this licence to Enbridge Gas is not transferable to another party without leave of the OEB. For the purpose of this condition another party is any party except Enbridge Gas.

3. Enbridge Gas shall construct the facilities and restore the land in accordance with its application and evidence given to the OEB, except as modified by this licence and these Conditions.

4. Enbridge Gas shall implement all the recommendations of the Environmental Report filed in the proceeding.

5. Enbridge Gas shall ensure that the movement of equipment is carried out in compliance with all procedures filed with the OEB, and as follows:
   a) Enbridge Gas shall make reasonable efforts to keep the affected landowner(s) as well as adjacent landowners and their respective tenant farmers, or their designated representatives, informed of its plans and construction activities.
   b) The installation of facilities and construction shall be coordinated to minimize disruption of agricultural land and agricultural activities.

6. Enbridge Gas shall, subject to the recommendation by an independent tile contractor and subject to the landowner's approval, construct upstream and downstream drainage headers adjacent to the drilling area and access roads that cross existing systematic drainage tiles, prior to the delivery of heavy equipment, so that continual drainage will be maintained.

7. Both during and after construction, Enbridge Gas shall monitor the impacts of construction, and shall file with the OEB one electronic (searchable PDF) version of each of the following reports:
   a) A Post Construction Report, within three months of the in-service date, which shall:
      i. Provide a certification, by a senior executive of the company, of Enbridge Gas's adherence to Condition 1
      ii. Describe any impacts and outstanding concerns identified during construction
      iii. Describe the actions taken or planned to be taken to prevent or mitigate any identified impacts of construction
      iv. Include a log of all complaints received by Enbridge Gas, including the date/time the complaint was received, a description of the complaint, any actions taken to address the complaint, the rationale for taking such actions
      v. Provide a certification, by a senior executive of the company, that the company has obtained all other approvals, permits, licences, and certificates required to construct, operate, and maintain the proposed project

   b) A Final Monitoring Report, no later than fifteen months after the in-service date, or, where the deadline falls between December 1 and May 31, the following June 1, which shall:
      i. Provide a certification, by a senior executive of the company, of Enbridge' adherence to Condition 1
      ii. Describe the condition of any rehabilitated land
      iii. Describe the effectiveness of any actions taken to prevent or mitigate any identified impacts during construction
      iv. Include the results of analyses and monitoring programs and any recommendations arising therefrom

v. Include a log of all complaints received by Enbridge Gas, including the date/time the complaint was received, a description of the complaint, any actions taken to address the complaint, the rationale for taking such actions

8. For the purposes of these conditions, conformity of Enbridge Gas:
   a) With CSA Z341.1-18 “Storage of Hydrocarbons in Underground Formations” shall be to the satisfaction of the Ministry of Natural Resources and Forestry (MNRF)
   b) With the requirements for wells as specified in the *Oil, Gas and Salt Resources Act*, its Regulation 245/97, and the Provincial Operating Standards v.2 shall be to the satisfaction of the MNRF

9. Enbridge Gas shall designate one of its employees as project manager who will be responsible for the fulfillment of these conditions, shall provide the employee’s name and contact information to the MNRF, the OEB and to all the appropriate landowners, and shall clearly post the project manager’s contact information in a prominent place at the construction site.

Response:

Enbridge Gas accepts the proposed draft conditions of approval.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff (STAFF)

Interrogatory

Reference:

Exh A/Tab 2/Sch 1

Preamble:

Enbridge Gas has applied for leave to construct facilities under section 90(1) of the OEB Act.

Questions:

Please comment on the draft conditions of approval proposed by OEB staff. If Enbridge Gas does not agree with any of the draft conditions of approval, please identify the specific conditions that Enbridge Gas disagrees with. Explain the rationale for disagreement and for any proposed changes or amendments.

Application under Section 90 of the OEB Act
Enbridge Gas Inc. EB-2020-0256
DRAFT CONDITIONS OF APPROVAL

1. Enbridge Gas Inc. (Enbridge Gas) shall construct the facilities and restore the land in accordance with the OEB's Decision and Order in EB-2020-0256 and these Conditions of Approval.
2. (a) Authorization for leave to construct shall terminate 12 months after the decision is issued, unless construction has commenced prior to that date.

   (b) Enbridge Gas shall give the OEB notice in writing:
   i. of the commencement of construction, at least ten days prior to the date construction commences
   ii. of the planned in-service date, at least ten days prior to the date the facilities go into service
   iii. of the date on which construction was completed, no later than 10 days following the completion of construction
   iv. of the in-service date, no later than 10 days after the facilities go into service

3. Enbridge Gas shall obtain all necessary approvals, permits, licences, certificates, agreements and rights required to construct, operate and maintain the Project.

4. Enbridge Gas shall implement all the recommendations of the Environmental Report filed in the proceeding, and all the recommendations and directives identified by the Ontario Pipeline Coordinating Committee review.

5. Enbridge Gas shall advise the OEB of any proposed change to OEB-approved construction or restoration procedures. Except in an emergency, Enbridge Gas shall not make any such change without prior notice to and written approval of the OEB. In the event of an emergency, the OEB shall be informed immediately after the fact.

6. Both during and after construction, Enbridge Gas shall monitor the impacts of construction, and shall file with the OEB one electronic (searchable PDF) version of each of the following reports:

   (a) A post construction report, within three months of the in-service date, which shall:
      i. provide a certification, by a senior executive of the company, of Enbridge Gas's adherence to Condition 1
      ii. describe any impacts and outstanding concerns identified during construction
      iii. describe the actions taken or planned to be taken to prevent or mitigate any identified impacts of construction
      iv. include a log of all complaints received by Enbridge Gas, including the date/time the complaint was received, a description of the complaint, any actions taken to address the complaint, the rationale for taking such actions
      v. provide a certification, by a senior executive of the company, that the company has obtained all other approvals, permits, licenses, and certificates required to construct, operate, and maintain the proposed project

   (b) A final monitoring report, no later than fifteen months after the in-service date, or, where the deadline falls between December 1 and May 31, the following June 1, which shall:
      i. provide a certification, by a senior executive of the company, of Enbridge Gas' adherence to Condition 5
      ii. describe the condition of any rehabilitated land
      iii. describe the effectiveness of any actions taken to prevent or mitigate any identified impacts of construction
      iv. include the results of analyses and monitoring programs and any recommendations arising therefrom
      v. include a log of all complaints received by Enbridge Gas, including the date/time the complaint was received; a description of the complaint; any actions taken to address the complaint; and the rationale for taking such actions

7. Enbridge Gas shall designate one of its employees as project manager who will be responsible for the fulfillment of these conditions, and shall provide the employee's name and contact information to the OEB and to all the appropriate landowners, and shall clearly post the project manager's contact information in a prominent place at the construction site.

Response:

Enbridge Gas accepts the proposed draft conditions of approval.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's pre-filed evidence, at page 6, item 2, and at page 7, item 4 of updated evidence the Applicant has indicated that they wish to increase delta pressuring to a maximum of 17.2 kPa/m (0.76 psi/ft) for the Corunna and Seckerton Pools, and 16.5 kPa/m (0.73 psi/ft) for the Ladysmith pool, both of which are allowed under CSA Z341.1–18.

Questions:

a) Please confirm that the Applicant intends to follow the current CSA Z341.1–18 standard and going forward intends to adopt any future revisions to CSA Z341.1-18.

Response:

a) Enbridge Gas will comply with the current CSA Z341.1-18 standard and will adopt any future revisions of CSA Z341.1.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's pre-filed evidence, at page 7, item 5 the Applicant has indicated that they will install new well heads and emergency shut down ("ESD") valves. At page 10, item 16, updated evidence, the Applicant indicates it intends to install control valves capable of isolating the storage facility from the transmission pipeline at the Ladysmith Station. At page 10, item 17, updated evidence, the Applicant indicates it intends to install ESD valves on each natural gas storage well at the Corunna and Seckerton pools. At pages 10-11, item 19, updated evidence, the Applicant indicates it intends to install for the Corunna and Seckerton Pools:

A. New master valves on 18 wells;
B. New wellheads on 18 wells; and
C. The installation of ESD valves on 14 wells

Questions:

a) Why the installation of these new works?

b) Was it further to a risk assessment related to same?

c) Does the Applicant intend to install ESD valves on all storage injection/withdrawal wells for all future projects?

d) Will a new Form 7 (Well Completion) from the Provincial Standards under the *Oil, Gas and Salt Resources Act* be filed with the MNRF with respect to these works?

Response:

a) The wellheads and master valves are being upgraded to meet the current CSA Z341.1-18 Standard. The ESD valves, while not being required by CSA Z341-18, are being added to improve the operational safety of the storage injection/withdrawal wells.

b) The ESDs are not being installed as the result of a risk assessment. Enbridge Gas has chosen, in accordance with its own policies, to install ESD valves for pressure elevation projects and to install ESD valves on newly drilled injection/withdrawal wells, even though this is not a requirement of the CSA Z341.1-18 Standard. To date, 146 ESD valves have been installed on 277 existing injection/withdrawal wells.

c) At this time, Enbridge Gas plans to install ESD valves on all storage injection/withdrawal wells in future pressure elevation projects.

d) Enbridge Gas will submit Well Completion Forms (Form 7) in compliance with Section 13.4 of the Provincial Standards.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence, at page 10, item 18, updated evidence,** the Applicant indicates that all above-ground well and piping components will be reviewed to ensure compliance with CSA Z662-15 and O.Reg. 210/01 made under the *Technical Standards and Safety Act, 2000* at the increased maximum operating pressure ("MOP").

Questions:

a) When will this work be completed?

b) Please confirm that this work will be completed prior to operating at the new MOPs for each pool (Corunna, Seckerton, and Ladysmith).

Response:

a) The MOP verification studies have been completed for all above ground piping and pipelines. The studies have identified some remedial work and verifications that will be completed during Q2/Q3 of 2021.

b) Any work required by the MOP studies will be completed prior to operating the Pools at the new MOPs.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence, at pages 327,333 and 338**, concerning each of the three reservoirs, pressure increases in the MOP was considered up to a pressure gradient of 0.8 psi/ft.

Questions:

a) Are there any plans to further increase to a higher gradient than the 0.73 psi/ft for the Ladysmith Pool and 0.76 psi/ft for the Corunna and Seckerton Pools specifically requested in the application?

b) Does the Applicant confirm that full application to the OEB would be made for approval of any future increased gradient beyond the 0.73 psi/ft and 0.76 psi/ft requested, involving the potential for a hearing with intervenors?

c) Please confirm that the MOP shall not exceed 80% of the fracture pressure of the caprock formation in each of the three pools (Corunna, Seckerton, and Ladysmith).

Response:

a) There are no plans to elevate the Ladysmith Pool above the 0.73 psi/ft or to elevate the Corunna and Seckerton Pools above the 0.76 psi/ft gradient. Any future increase in gradient will need to satisfy technical and economic feasibility requirements.

b) Enbridge Gas will apply to the OEB for any future gradient increase in the Ladysmith Pool beyond 0.73 psi/ft and in the Corunna and Seckerton Pools beyond 0.76 psi/ft.

c) Enbridge Gas confirms that the MOP in the Ladysmith, Corunna and Seckerton Pools will not exceed 80% of fracture pressure of the caprock formation.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence, at pages 331, 336 and 341,** the Applicant indicates that the "What If" analyses conducted for each of the pools were done within the scope of the CSA Z341.1-18 regulation. In the Applicant's **prefiled evidence, at pages 329, 334 and 339**: Regarding the assessment of neighbouring activities, the Applicant concludes that no impact to the integrity of the storage facility or storage zone have been caused by neighbouring wells and subsurface activities.

Questions:

a) Was any consideration given to other regulatory public safety and environmental requirements, for e.g., under the *Occupational Health and Safety Act* or under the *Environmental Protection Act*?

b) Has the proposed increase in pressure:

   i. been considered from a risk perspective with respect to the impacts of uncontrolled surface or subsurface gas release to the environment and public health and safety?
   ii. considered potential impacts from potential changes to activities in surrounding storage pools?

Response:

a) The "What-If" analysis was done in compliance with Section 5.1 of CSA Z341. While not specifically reviewed in reference to these statutes, the safety of the workers, the public and the environment is always considered during the "What-If" sessions. During the sessions, each "What-If" was evaluated for the consequences of the "What-If" and the safeguards that Enbridge Gas has in place in order to mitigate the consequences. Risk ranking is also performed in the sessions for each "What-If". If the safeguards are found to be insufficient, an action item is created for Enbridge Gas to complete. In addition, the analysis includes an examination of public and

worker exposure potential in the event of an ignited incident. The analysis also incorporates the findings of the Neighbouring Assessment and any concerns

identified in the Neighbouring Assessment are examined in the “What-If” sessions. Enbridge Gas has many programs outside of the “What-If” analysis that also address these concerns. For example, an Environmental Report (ER) was completed for the project and includes identification of physical, natural and socio-economic features and the potential effects of the project on these features. Part of this analysis included an Archaeological Assessment and Species at Risk Assessment. The ER provided guidance to operate the project in a manner that protects the environment and manages potential effects through the implementation of the proposed mitigation outlined in the ER.

b)

i. In preparation for the project Enbridge Gas completed a review of all active wells within each of the pools. This review identified the wellhead upgrades that have been included in this project. Based on the construction of the wells and subsequent integrity assessments, Enbridge Gas is confident in the ability of the wells to prevent any subsurface release of gas.

   Enbridge Gas also reviewed active and abandoned wells within 1km of the base gas of each of the pools. A well assessment was completed for each well and no concerns were identified concerning the potential for these wells to act as a conduit for the movement of gas from the storage pools into the overlying formations or to the surface. These assessments considered the proximity of nearby residences, roadways and other neighbouring facilities that may be impacted by an uncontrolled surface or subsurface gas release. The quality of these abandonments and the potential for communication was deemed to be acceptable and would not be impacted by the increased operating pressure of each of these storage pools. The risk to the environment and public health and safety did not necessitate any additional work to be done on these abandoned wells.

ii. Proximity and operating characteristics were reviewed as part of the Neighbouring Assessment and “What-if” analysis. Any nearby storage pools are owned and operated by Enbridge Gas and are continuously monitored.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence, at page 17, item 25; page 19, item 32; page 20, item 39:** Regarding caprock integrity, reference is made to Geofirma Engineering studies that "incorporated data from geo-mechanical and regional *in situ* tests completed on the reservoir and caprock formations".

Questions:

a) Please provide a chronological list of the studies and tests that are referred to above.

Response:

a) The list of studies is provided at Exhibit I.MNRF.6 Attachment 1 to this response.

Geofirma Engineering Ltd
1 Raymond St., Suite 200
Ottawa, Ontario K1R 1A2
Tel: (613) 232-2525
Fax: (613) 232-7149
www.geofirma.com

MEMORANDUM

Date: February 8, 2021

To: Kathy McConnell, Technical Manager Storage & Reservoir, Enbridge Gas Inc.
Shelie Cascadden, Senior Geologist, Enbridge Gas Inc.

From: Robert Walsh, Geofirma Engineering Ltd.

RE: Response to Question About Studies Used for Caprock Integrity Modeling

QUESTION:

From MNRF and OEB:

In the Applicant's **pre-filed evidence, at page 17, item 25; page 19, item 32; page 20, item 39:** Regarding caprock integrity, reference is made to Geofirma Engineering studies that "incorporated data from geo-mechanical and regional *in situ* tests completed on the reservoir and caprock formations".

Interrogatory:

a. Please provide a chronological list of the studies and tests that are referred to above.

RESPONSE:

This memo summarizes the sources of the data used for numerical modeling studies of Corunna, Seckerton, and Ladysmith pools. The reports consulted include a large number of laboratory tests on core samples of caprock, a number of in-situ tests in caprock formations, and earlier geological, engineering, and modeling studies. These reports have been arranged in chronological order in the list below.

Source reports:

Core Laboratories, 1966. Core Analysis – Imp Sombra 4-14-13. Core Laboratories Canada Ltd., Calgary, Alberta.

Gill, D. 1985. Depositional Facies of Middle Silurian (Niagaran) Pinnacle Reefs, Belle River Mills Gas Field, Michigan Basin, Southeastern Michigan. In: Roehl P.O., Choquette P.W. (eds) Carbonate Petroleum Reservoirs, pp. 121-140. Springer, New York, NY.

Core Laboratories. 1988. Core Analysis Results TEC DOW #4 6-21-XII. File Number 52131-88-0548. Core Laboratories, Calgary, AB.

Core Laboratories, 1989. Core Analysis – Union Enniskillen #54. Core Laboratories Canada Ltd., Calgary, Alberta.

Core Laboratories, 1990. ICG #2 Enniskillen 4-22-II A-2 and Guelph Formations Ontario. Core Laboratories Canada Ltd., Calgary, Alberta

Raven, KG, DW Lafleur, RA Sweezey. 1990. Monitoring well into abandoned deep-well disposal formations at Sarnia, Ontario., Canadian Geotechnical Journal, 27: 105-118.

Northwest Labs, 1998. Core Analysis Report – Union Bentpath East 1 Dawn 2-26-V1. Northwest Labs, Calgary, Alberta.

Hycal Energy Research Laboratories, 1999. Union Gas – Bentpath East Caprock Study. Hycal Energy Research Laboratories Ltd., Calgary, Alberta.

Hycal Energy Research Laboratories, 1999. Union Gas – Booth Creek Caprock Study. Hycal Energy Research Laboratories Ltd., Calgary, Alberta.

AGAT, 2000. Threshold Pressure and Mechanical Properties Study Union Mandaumin #4 & Bluewater #1 Wells Silurian Formation, AGAT Laboratories, Calgary, AB.

AGAT, 2001. Threshold Pressure and Mechanical Properties Study Union Bickford 27, Union Terminus 12, Union Rosedale 9, Union Bentpath 11, Union Dawn 156, Union Dawn 183 & Union Dawn 139 Wells, AGAT Laboratories, Calgary, AB.

AGAT Laboratories, 2005. Threshold Pressure – Airport No.2 Sarnia -33-FLH A2 Anhydrite Formation. AGAT Laboratories Ltd, Calgary, Alberta.

TerraTek. 2006. Failure Characterization of Rotary Sidewall Plugs from Various Wells – Union Gas Storage Program. TerraTek, Salt Lake City, Utah.

Terralog, 2006. Geomechanical Analysis for Delta pressure Operations at Five Union Gas Storage Fields in Southwestern Ontario. Terralog Technologies USA Inc., Arcadia, California.

TerraTek. 2007. Unconfined and Triaxial Compression Testing for Failure Characterization of: Well UD.282, Dawn 156 Pool, and Well SC.1, St Clair Pool. TerraTek, Salt Lake City, Utah.

Enhanced Well Stimulation. 2007. Comments Concerning Formation Breakdown Tests - Union Gas Ltd. D156 High-Deliverability Project, Enhanced Well Stimulation Inc, Athens, Texas.

Market Hub Partners. 2007. Airport 1 Micro Fracture Test, Market Hub Partners, Ontario, Canada.

Union Gas, 2007. Engineering Review Delta Pressure - Enniskillen 28 Pool. Union Gas Ltd., Sarnia, Ontario.

AGAT Laboratories, 2007a. Threshold Pressure Test Results - ICG2 Enniskillen 4-22-II Oil Springs East Storage Pool. AGAT Laboratories Ltd.

AGAT Laboratories, 2007b. Threshold Pressure Test Results – Well St.Clair 1, Sombra 8-B-XI A2 Shale Formation. Calgary, Alberta.

AGAT Laboratories, 2007c. Threshold Pressure Test Results – Wells- Eddy's Mills#1, Dawn 3-32-VIII, ICG2 Enniskillen 4-22-II, Union Enniskillen No.60, and Union Payne No.15. Calgary, Alberta.

Hobbs, MY, SK Frape, O. Shouakar-Stash, LR Kennell. 2008. Phase I Regional Hydrogeochemistry, Southern Ontario, OPG 00216-REP-01300-00006-R0, Ontario Power Generation Inc., Toronto, Ontario.

Union Gas, 2008. Engineering Review Delta Pressure – Dow A Pool. Union Gas Ltd., Sarnia, Ontario.

Union Gas, 2008. Engineering Review Delta Pressure – Oil Springs East Pool. Union Gas Ltd., Sarnia, Ontario.

Union Gas, 2008. Engineering Review Delta Pressure – Enniskillen 28 Pool. Union Gas Ltd., Sarnia, Ontario.

Hycal Energy Research Laboratories, 2009. Union Gas Limited Bentpath East Storage Pool Well #1 and #2 Caprock Study. Hycal Energy Research Laboratories Ltd., Calgary, Alberta.

Hycal Energy Research Laboratories, 2009. Union Gas Limited Oil City Storage Pool Union Oil City 1 (Enniskillen -17-V Well) Caprock Study. Hycal Energy Research Laboratories Ltd., Calgary, Alberta.

Hycal Energy Research Laboratories, 2009. Union Gas Limited Bluewater Storage Pool Union Bluewater 1, Sarnia 5-3-II Well Caprock Study. Hycal Energy Research Laboratories Ltd., Calgary, Alberta.

Calder, N, J Avis, P Humphreys, F King, P Suckling and R Walsh. 2009. Postclosure Safety Assessment (V1): Gas Modeling, NWMO DGR-TR-2009-07. Nuclear Waste Management Organization, Toronto, Ontario.

Union Gas, 2009. Engineering Review Delta Pressure - BentPath East Pool. Union Gas Ltd., Sarnia, Ontario.

Union Gas, 2009. Engineering Review Delta Pressure - Oil City Pool. Union Gas Ltd., Sarnia, Ontario.

Union Gas, 2009. Engineering Review Delta Pressure – Bluewater Pool. Union Gas Ltd., Sarnia, Ontario.

Weatherford, 2011. Tecumseh Storage Facilities, Caprock Permeability and Rock Mechanics Study (Weatherford Labs File #: 48475). Weatherford Laboratories, Calgary, AB.

Lam, T and S. Usher. 2011. Regional Geomechanics – Southern Ontario, NWMO DGR-TR-2011-13, Nuclear Waste Management Organisation, Toronto, Ontario.

Raven, KG, D McCreath, R Jackson, I Clark, D Heagle, S Sterling, M Melaney. 2011. Descriptive Geosphere Site Model, OPG's Deep Geologic Repository for Low and Intermediate Level Waste, NWMO DGR-TR-2011-24, Nuclear Waste Management Organisation, Toronto, Ontario.

Weatherford, 2012. Enbridge Gas Distribution Inc. Caprock Permeability and Rock Mechanics Study. Weatherford Laboratories, Calgary, Alberta.

Sproule. 2012. Enbridge Gas Storage Integrated Reservoir Study – Phase III Volume 3 Black Creek (December 2012), Sproule Associates Limited, Calgary, AB.

Sproule. 2012. Enbridge Gas Storage Integrated Reservoir Study – Phase III Volume 1 Coveny (December 2012), Sproule Associates Limited, Calgary, AB.

Sproule. 2012. Enbridge Gas Storage Integrated Reservoir Study – Phase II Volume 4 Kimball-Colinville, Corunna-Seckerton, Ladysmith and Wilkesport (May 2011), Sproule Associates Limited, Calgary, AB.

Sproule. 2013. Wilkesport Gas Storage Update (December 2013), Sproule Associates Limited, Calgary, AB.

Hydro Resolutions, 2013. Analysis of UB.13 Pulse Tests. Hydro Resolutions LLC, Rio Rancho, New Mexico.

Geofirma, 2014a. Union Bentpath 13 – Lab Geomechancial Strength Testing of UB.13 Core, UG-TR-13-02, Geofirma Engineering Ltd., Ottawa, Ontario.

Geofirma, 2014b. Union Bentpath 13 – Westbay Installation and Monitoring, UG-TR-13-03, Geofirma Engineering Ltd., Ottawa, Ontario.

Geofirma, 2014c. Union Bentpath 13 – Lab Geochemical Testing, UG-TR-13-04, Geofirma Engineering Ltd., Ottawa, Ontario.

Union Gas, 2015. Dawn 59-85 Pool – Geologic and Engineering Report. Union Gas Ltd., Sarnia, Ontario.

Geofirma, 2018. Laboratory Geomechanical and Petrophysical Testing of UD.288 Core. Geofirma Engineering Ltd., Ottawa, Ontario.

Geofirma, 2020. Geoscientific Caprock Characterization Study: Ladysmith Gas Storage Pool, Lambton County, Ontario (Draft). Geofirma Engineering Ltd., Ottawa, Ontario.

Enbridge, 2020. Seckerton Pool Geologic and Engineering Report, Underground Storage Department, Enbridge Gas Inc, Chatham. Ontario, April 2020.

Enbridge, 2020. Ladysmith Pool Geologic and Engineering Report, Underground Storage Department, Enbridge Gas Inc, Chatham. Ontario, April 2020.

Enbridge, 2020. Corunna Pool Geologic and Engineering Report, Underground Storage Department, Enbridge Gas Inc, Chatham. Ontario, June 2020.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence at page 47, item 4**, the Applicant identifies in its discussion about the Environmental Report that "Aecom will conduct site investigations in fall 2020 to confirm habitat suitability for SAR species and based on these investigations, additional mitigation and avoidance measures may be developed and implemented to avoid impacts to SAR." Further, the Applicant also indicates that "if necessary, a permit or other authorization from the Ministry of the Environment, Conservation and Parks ("MECP") will be obtained to ensure compliance with the *Endangered Species Act, 2007."*

Questions:

a) Please update as to the described site investigations and their outcomes.

b) Please update as to whether authorization from MECP is required, including whether MECP has offered comment in this regard.

Response:

a) Aecom conducted site investigations to confirm habitat suitability for SAR species in the work area in the vicinity of the Ladysmith Station, which included the following proposed works:

   - upgrading the existing gathering system at the Ladysmith Storage Pool from Nominal Pipe Size (NPS) 16 to NPS 20, and;
   - connecting well TL9H to the gathering system.

   The area was a ploughed, agricultural field that had previously been planted with soybeans and did not provide suitable habitat for SAR species.

   Site investigations to confirm habitat suitability for SAR species in the work areas associated with the proposed Payne Storage Pool and Ladysmith Storage Pool

pipeline connection, and the proposed 2.2 km of NPS 24 natural gas pipeline to connect the Payne Storage Pool to the Corunna Compressor Station will commence in spring 2021.

b) MECP has not confirmed whether authorization is required. They have reviewed the project information and have recommended species-specific surveys take place along the proposed 2.2 km of NPS 24 natural gas pipeline route for the following species: Bank Swallow, Barn Swallow, Chimney Swift, Bobolink, Eastern Meadowlark, Butler's Garter Snake, and bat species. Site investigations will be conducted along the proposed 2.2 km pipeline route starting in spring 2021 to confirm habitat suitability for the above listed species. If suitable habitat for any of the species is confirmed, species specific surveys will be conducted as necessary. The results of the site investigations and species-specific surveys will be shared with the MECP at which point they will determine if authorization is required.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

At **page 56, item 8.2 of the Environmental Report**, there is a discussion about area water wells. It indicates:
"If there is a potential for water wells to be affected by the Project, Enbridge should implement their standard water well monitoring program. An independent hydrologist shall be retained to assess the need for and to develop if necessary a 5

well monitoring program. Should a private domestic water well be affected by Project construction, a potable water supply should be provided, and the water should be repaired or restored as required."

Questions:

a) What assessment of area water wells was conducted? What were its conclusions?

b) Will the recommendations set out above in s. 8.2 of the Environmental Report be implemented and if so, to what degree?

Response:

a) Aecom, in consultation of with the MECP, performed a desktop assessment of water wells relative to the Project Study Area. The locations of the water wells are shown in the Environmental Report in Figure 5-7 on Page 118.

   Enbridge's standard well monitoring program has not been implemented yet but will be prior to construction. Notification letters will be distributed to landowners within a 1 km radius of the proposed project, or within a radius recommended by a third-party hydrogeologist based on water well records in the area. The notification letters will describe the proposed project, the well monitoring program, and will invite landowners with water wells to participate in the program. For landowners interested in participating, a third-party hydrogeologist will collect water quality samples and document the visible well condition at ground surface. Depending on

well condition and accessibility, the program would also include measurement of groundwater levels under static and pumping conditions if accessible. Monitoring would only be completed with permission of the well owner and would be dependent on safe access to the well.

b) The recommendations set out in section 8.2 of the Environmental Report will be implemented. In addition to the measures outlined in the above section, should a private domestic water well be affected by project construction, a potable water supply will be provided, and the water well will be repaired or restored as required.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence, at page 48, item 8**, regarding archaeological assessment, the Applicant indicates that in response to the "high" likelihood of recovery of both First Nation and Euro-Canadian archaeological items through the proposed works a Stage 2 Archaeological Assessment will commence "in Fall 2020" and a clearance letter from clearance letter from the Ministry of Heritage, Sport, Tourism and Cultural Industries ("MHSTCI") will be obtained prior to construction.

Questions:

a) Please offer an update regarding the Stage 2 Archaeological Assessment study.

b) Is it still anticipated that a clearance letter will be obtained from MHSCI and if so, when?

Response:

a) Please refer to Enbridge Gas's response at Exhibit I.STAFF.7 part c.

b) A clearance letter will be obtained from the MHSTCI prior to construction. Please refer to Enbridge Gas's response at Exhibit I.STAFF.7 parts b and d.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence at page 50** there is description of discussions with Hydro One concerning potential impacts of the proposal to Hydro One infrastructure.

Questions:

a) What potential impacts are anticipated to Hydro One Infrastructure

b) Please summarize discussions with Hydro One and what was the outcome of those discussions?

Response:

a) The proposed works at TL9H will require construction equipment to cross under large transmission lines to access the site. In addition, the Preferred Pipeline Route will cross through a Hydro One easement.

b) Please refer to Enbridge Gas's response at Exhibit I.STAFF.5 part a, and Exhibit I.STAFF.6 for a summary of discussions with Hydro One and the outcomes of such discussions.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence at pages 74 – 75, items 15 – 20 and in its updated evidence, at pages 23 – 24, items 58 and 67**, the Applicant identifies requirements for land purchases and easements from private landowners to enable crossover pipeline installation and facility modification works.

Questions:

a) What is the status of the negotiations with the subject landowners that will be directly impacted by the project?

b) In particular, please include a summary of the meeting with the Canadian Association of Energy and Pipeline Landowner Associations that was scheduled for November, 2020, and its outcome.

Response:

a) Enbridge Gas completed the land purchase in 2020. For cost effectiveness and to meet the landowner's needs, Enbridge Gas purchased the landowner's entire 50 acre parcel rather than a 0.7 acre portion of the property.

   Enbridge Gas has met with the other affected landowners, discussed the project and shared the plans and drawings. Once the CAEPLA negotiation for the 2.2km pipeline project is complete, Enbridge will meet with the landowners and offer the same compensation package and Easement/TLU agreements as negotiated with CAEPLA.

b) Since filing this application, Enbridge Gas initiated discussions with CAEPLA's Director of Special Projects and has since had ongoing discussions with CAEPLA in lieu of a formal meeting, CAEPLA has suggested that the Easement, TLU and Letter of Understanding Agreements as well as the compensation package that was used on the Panhandle Project should be used for this project. Enbridge Gas is currently in the process of reviewing these documents internally.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence at page 178, item 4**, the Applicant indicates that its Indigenous Consultation Report was provided to the Ontario Ministry of Energy Northern Development and Mines ("MENDM") on November 13, 2020.

Questions:

a) Has an MENDM decision regarding the sufficiency of indigenous consultation been received yet? What was its decision?

b) Has any indigenous feedback about the proposal been received since November 6, 2020? If so, please summarize.

Response:

a) Please refer to response at Exhibit I.STAFF.8 part d.

b) Please refer to response at Exhibit I.STAFF.8 part b.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence, at pages 295 - 296, items 3, 6 and 7**: Regarding the well work schedule, there are indications as to construction windows for the project.

Questions:

a) Please confirm what impact the COVID-19 pandemic and associated government directives and orders are expected to have on the timing referred to above for the accomplishment of these or other work-related steps related to this proposal.

Response:

a) At the present time, we do not expect there to be any significant impact on the timing referred to in the schedule due to the COVID-19 pandemic. Construction activities will be conducted taking into account any necessary safety precautions as a result of the pandemic.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Ministry of Natural Resources and Forestry (MNRF)

Interrogatory

Preamble:

In the Applicant's **pre-filed evidence at page 14, item 14**, the Applicant indicates they are intending to update the Emergency Response Plan ("ERP") for each pool (Ladysmith, Corunna, Seckerton).

Questions:

a) Have the ERP(s) that exist for these pools been reviewed and updated specifically for the purposes of this application?

b) Has this update included, or will it include, a consideration of provisions addressing the notification of neighbours, the public and agencies in the event of an emergency (e.g., has contact information been updated)?

c) If no, please confirm that the Applicant intends to complete this work prior to operating the pools (Ladysmith, Corunna, Seckerton) at the proposed MOPs.

Response:

a) Enbridge Gas has reviewed the ERP to ensure that any changes that will occur as a result of the proposed project do not trigger any requirement to update the ERP. In addition, Enbridge Gas reviews and updates the ERP annually with any new information or changes, including any contact update information.

b) As explained above, no update to the ERP was required. For clarity, no update to the contact information was required.

c) Not applicable.