ENBRIDGE

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VIA EMAIL and RESS

May 26, 2022

Nancy Marconi
Registrar
Ontario Energy Board
2300 Yonge Street, Suite 2700
Toronto, Ontario, M4P 1E4

Dear Nancy Marconi:

Re: Enbridge Gas Inc. ("Enbridge Gas")
Ontario Energy Board ("OEB") File No. EB-2022-0003
NPS 20 Waterfront Relocation Project – Interrogatory Responses

In accordance with Procedural Order No. 1, attached please find interrogatory responses of Enbridge Gas for the NPS 20 Waterfront Relocation Project.

If you have any questions, please contact the undersigned.

Sincerely,

(Original Digitally Signed)

Dave Janisse
Technical Manager, Leave to Construct Applications

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff ("STAFF")

INTERROGATORY

Reference:

Exhibit B, Tab 1, Schedule 1, Page 6
Exhibit B, Tab 1, Schedule 3, Page 1
Exhibit D, Tab 1, Schedule 1, Attachment 1

Preamble:

In a letter from the City of Toronto to Enbridge Gas dated July 29, 2021, the City of Toronto stated that it is prepared to allow Enbridge Gas to remain on the existing Keating Railway Bridge until April 30, 2023. The City of Toronto also stated that it is prepared to permit Enbridge Gas to relocate its pipeline to a permanent location on the Keating Rail Bridge utility corridor on terms and conditions that would be contained in a mutually acceptable long-term license. Among other matters, the City of Toronto said the licence should address a proportionate contribution by Enbridge Gas to the capital maintenance and repair of the new utility corridor.
To date, Enbridge Gas has not filed a copy of any licence granted to it by the City of Toronto for use of the new utility corridor.

Question:

a) When does Enbridge Gas anticipate that the licence agreement will be executed? Has a draft licence agreement been prepared? If so, can Enbridge Gas file the draft as part of its interrogatory responses. If not, why not?

b) What will be the term of the licence agreement? What are the terms on which the licence may be renewed, and can the City of Toronto refuse to renew it? Can the licence be terminated by the City of Toronto before it expires? What are the implications for ratepayers if the City of Toronto refuses to renew the licence, terminates the licence, or requires Enbridge Gas to relocate its pipeline from the new utility corridor when the term of the licence expires?

c) Have the terms and conditions relating to the "proportionate contribution" to the capital maintenance and repair of the new utility corridor been addressed? If so,

please briefly describe the terms and conditions and provide an estimate for the amount of the contribution. If not, please briefly describe the anticipated terms and conditions and provide an estimate for the amount of the contribution.

Response

a) The license agreement which will permit Enbridge Gas to relocate its pipeline to a permanent location on the newly constructed Keating Railway Bridge utility corridor is still under negotiation with the City of Toronto. Enbridge Gas expects to finalize this agreement by the end of August 2022.

b) and c) Terms and conditions under the licence agreement are still being finalized, and therefore Enbridge Gas is unable to provide this information at this time.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff ("STAFF")

INTERROGATORY

Reference:

Exhibit C, Tab 1, Schedule 1, Pages 5-7

Preamble:

Enbridge Gas re-assessed several alternatives that were initially assessed as part of its original application including micro-tunnelling, station relocations or enhancements, etc.[1] Enbridge Gas noted that the Integrated Resource Planning (IRP) framework states that if an identified system constraint/need must be met in under three years then an IRP evaluation is not required,[2] and that Waterfront Toronto requires the removal of the existing gas main from the Keating Railway Bridge to the south side of the Lake Shore Bridge by April 30, 2023 (which is less than three years). Finally, Enbridge Gas states that, since the existing gas main is embedded within its distribution network, there is no ability for a third-party natural gas market participant to deliver gas directly to the region served by the existing natural gas main. Therefore, market-based supply side alternatives do not exist to meet the Project need.

There is no evidence to suggest whether Enbridge Gas considered replacing the existing pipeline with a smaller diameter pipeline as an alternative to a like-for-like replacement.

Question:

Did Enbridge Gas assess the alternative of replacing the existing NPS 20 pipeline with a smaller than NPS 20 diameter pipeline? If so, what where the results of that assessment? If not, why not?

[1] EB-2020-0198, Exhibit B-1-1
[2] EB-2020-0091, Decision and Order, July 22, 2021

Response

Enbridge Gas assessed the replacement of the existing NPS 20 pipeline with a smaller diameter pipeline as part of this Project. Enbridge Gas determined that a reduction to NPS 16 would cause the flow velocity to double, increasing restriction through the pipeline and reducing capacity to the area of benefit shown in Exhibit B, Tab 1, Schedule 1, Figure 3. This is consistent with previous assessments completed for the Company's NPS 20 Replacement Cherry to Bathurst Project, where Enbridge Gas ran additional scenarios to determine if the Cherry to Bathurst segment of the KOL pipeline could be downsized to NPS 16 and determined that minimum system pressures could not be maintained at or greater than 100 psig in any of the scenarios.[3]

Furthermore, reducing the size of the NPS 20 gas main spanning the Keating Railway Bridge would preclude Enbridge Gas from being able to complete in-line inspections on the Lisgar to Station B portion of the KOL.

[3] EB-2020-0136, Exhibit B, Tab 1, Schedule 1, p. 19-25.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff ("STAFF")

INTERROGATORY

Reference:

Exhibit D, Tab 1, Schedule 1, Pages 1 to 4

Preamble:

The total cost for the Project is estimated to be $23.5 million, less a contribution from Waterfront Toronto of $5.0 million, for a net Project cost of $18.5 million. Waterfront Toronto will also be responsible for the costs it incurs related to consulting and construction services to design and construct a new utility corridor on the Keating Rail bridge, the estimated value of which is approximately $3 million.

Enbridge Gas says that the cost estimate for the Project includes a 30.0% contingency applied to all direct capital and abandonment costs to reflect the preliminary design stage of the Project. Enbridge Gas says that this contingency amount has been calculated based on the risk profile of the Project and is consistent with contingency amounts calculated for similar Enbridge Gas projects – specifically, the NPS 20 Cherry to Bathurst Replacement Project[3] and the St. Laurent North Replacement Project[4].

Enbridge Gas says that it has prudently managed the potential ratepayer impacts of the Project by determining a new, lower cost preferred alternative and negotiating a fair contribution to the Project from Waterfront Toronto.

OEB staff prepared the following summary table to facilitate a comparison of the costs between the Cherry to Bathurst Replacement Project, the St. Laurent North Replacement Project and the Waterfront Relocation Project.

[3] EB-2020-0136
[4] EB-2020-0293

Project	Cherry to Bathurst	St. Laurent North Ph-3	St. Laurent North Ph-4	Waterfront Relocation
Docket	EB-2020-0136	EB-2020-0293	EB-2020-0293	EB-2022-0003
NPS	20	2, 4, 6, 12, 16	4, 12	20
Material	Steel	Steel & Plastic	Steel & Plastic	Steel
Length (m)	4,500	13,713	6,100	350
Material Costs	$3,486,320	$358,484	$1,268,313	$2,531,319
Labour Costs	$71,820,730	$20,369,317	$49,053,572	$10,176,815
External Permiting & Land Costs	$1,055,700	$6,303	$687,387	$20,241
Outside Service Costs	$5,199,780	$2,783,359	$4,523,815	$2,230,858
Direct Overhead Costs	$950,975	$531,061	$605,700	$272,759
Sub-Total	$82,513,505	$24,048,524	$56,138,787	$15,231,992
Contingency %	30.0	14.1	29.5	30.0
Budgeted Contingency	$24,754,052	$3,384,108	$16,551,960	$4,569,598
Indirect Overhead Costs	$24,073,159	$5,647,458	$15,228,034	$3,251,073
Interest During Construction	$1,707,176	$348,748	$673,345	$407,708
Total Project Costs	**$133,047,922**	**$33,428,852**	**$88,592,155**	**$23,460,401**
Unit Cost ($/m)	**$29,566**	**$2,438**	**$14,523**	**$67,030**

Question:

a) Please confirm that Enbridge Gas is responsible for the costs to physically remove the existing pipeline from the Keating Railway Bridge and the temporary bypass from the Lakeshore Bridge. If this cannot be confirmed, please clarify who is responsible for those costs. If known, please provide the separate estimated costs to physically remove the existing pipeline from the Keating Railway Bridge and the temporary bypass from the Lakeshore Bridge.

b) Please explain:

i. The rationale for a $5 million contribution by Waterfront Toronto as opposed to some other amount.
ii. Why the City of Toronto has not committed any capital funding toward the Project?
iii. Whether the City of Toronto is contributing any capital funding toward the new utility corridor. If so, how much?

c) Please discuss the costs of the Waterfront Relocation Project relative to the Cherry to Bathurst Replacement Project and the St. Laurent North Replacement Project. Please explain why the costs of the Waterfront Relocation Project are reasonable relative to the lower per unit costs of the two comparator projects. Please reference in the response such considerations as pipeline material and diameter, construction methods and risks.

d) If the Cherry to Bathurst Replacement Project and the St. Laurent North Replacement Project are not appropriate comparator projects, please provide alternative comparator projects and discuss how they demonstrate that the costs of the Waterfront Relocation Project are reasonable.

e) What estimation standard was used in the development of the Project costs (e.g., American Association of Cost Engineers)? What maturity level is the cost estimate (i.e., what class is the estimate)?

f) Please identify and briefly describe any risks associated with the Project and explain how the proposed contingency budget is appropriate and consistent with the identified risks.

g) Please identify and describe the controls that would be used to help manage costs after the OEB issues its decision (e.g., fixed bid contract, Owner's Engineer).

Response:

a) Waterfront Toronto is responsible for the cost of removing and disposing of the abandoned gas main on the existing Keating Railway Bridge. Enbridge Gas is responsible for cost and expense associated with removing and disposing of the abandoned gas main from the Temporary Bypass.

The Company has not prepared a cost estimate for removing and disposing the abandoned gas main from the Keating Railway Bridge, as it is the responsibility of Waterfront Toronto to complete this work. The estimated cost of removing and disposing of the Temporary Bypass is approximately $2.1 million. This includes removal of the above-ground portions of the Temporary Bypass and abandoning-in-place the underground portions of the Temporary Bypass.

b)

i. The $5 million contribution to Project cost from Waterfront Toronto is the maximum amount that Waterfront Toronto would agree to. The contribution was made in addition to Waterfront Toronto assuming the costs of disposing the abandoned the gas main on the existing Keating Railway Bridge and for the construction/consulting activities associated with building the utility corridor on the newly constructed bridge. The negotiations with Waterfront Toronto were informed and constrained by the specific circumstances necessitating the relocation of the pipeline including: (a) the termination of the license to occupy the railway bridge; (b) the need to maintain a secure supply for Enbridge Gas's

customers; (c) the judgement of the court in the City of Toronto Application; (d) the OEB's decision in EB-2020-0198 regarding its ability to require contributions from Waterfront Toronto; and (e) the separate legal status of Waterfront Toronto and the City of Toronto. In the end, the cash contribution is part of a total package which includes schedule accommodation to enable the current proposed Project at a much lower total cost than other alternatives, and significant non-cash contributions.

ii. The budget for the PLFPEI project is maintained by Waterfront Toronto. All three levels of government have contributed to the funding of Waterfront Toronto, including the City of Toronto. The City of Toronto is an indirect contributor of the PLFPEI project, and therefore an indirect contributor to the $5 million contribution to the Project.

iii. The utility corridor is part of the PLFPEI project which is funded by all three levels of government (including the City of Toronto).

c) Project cost estimates are created specific to the unique circumstances surrounding each project, and therefore unit cost comparisons are not always an appropriate metric to compare different projects. In pipeline installation projects, tie-ins represent the largest costs per meter for the project due to the technical complexity associated with the work. In the instance of this Project, there are four tie-ins required (two for the Temporary Bypass and two for the Permanent Relocation) instead of the typical two, which increased the overall per-meter costs along with the additional costs of multiple mobilization and demobilization activities. This effect is exacerbated due to the short lengths of each installation, as the Project does not benefit from the economies of scale that can be shown on longer pipeline installations.

Costs relative to the St. Laurent project are further increased on a per-meter basis due to the complexities associated with installing NPS 20 gas main as compared to smaller diameters and different materials.

As outlined in Exhibit C, Tab 1, Schedule 1, the proposed Project is the lowest cost alternative that will allow the relocation to occur within the timing of PLFPEI project.

d) The Project is unique as in both the Temporary Bypass and the Permanent Relocation has above grade installation, which differs from most projects. However, a similar project that required a shorter length of pipe to be installed is the Don River NPS 30 Replacement Project (EB-2018-0108). Enbridge Gas reproduced OEB staff’s table below to include a comparison of per meter costs.

Project	Don River NPS 30 Replacement Project	Waterfront Toronto Relocation Project
Docket	EB-2018-0108	EB-2022-0003
NPS	30	20
Material	Steel	Steel
Length (m)	326	350
Material Costs	$679,569	$2,531,319
Labour Costs	$17,481,147	$10,176,815
External Permitting & Land Costs	$4,823,230	$20,241
Outside Services Costs	Included in Labour Costs	$2,230,858
Direct Overhead Costs	$754,045	$272,759
Sub-Total	$23,706,759	$15,231,992
Contingency %	30.0	30.0
Budgeted Contingency	$5,842,647[5]	$4,569,598
Indirect Overhead Costs	Not included in Post Construction financial report	$3,251,073
Interest During Construction	Not included in Post Construction financial report	$407,708
Total Project Costs	**$23,706,759**	**$23,460,401**
Unit Cost ($/m)	**$72,720**	**$67,030**

e) The estimate standard used by Enbridge Gas is the American Association of Cost Engineers International Cost Estimate Classification System. The Project cost estimate is a Class 4 estimate.

f) The contingency amount applied to the Project is reflective of the status of project development, project risk profile and expected construction characteristics. As the Project is to be constructed in an urban environment, construction is occurring on several bridges, and work is being completed in coordination with nearby active construction on Waterfront Toronto's PLFPEI project, the 30% contingency applied is reflective of this high risk compared to projects with less complex construction characteristics.

Some additional risks for this project include, but are not limited to: (i) standard construction risks encountered in the downtown Toronto area which include encountering unknown abandoned utilities and subsurface structures which were not identified in the subsurface utility engineering studies, (ii) issues with the weldability of the pipeline due to laminations which will involve tracing the existing gas main back to find a weldable location for tapping equipment (thus lengthening the overall Project relocation and footprint), (iii) environmental risks brought on by contaminated soils, and (iv) the proximity to the Keating Channel.

[5] Contingency was allocated to project-specific items listed in the line items above. A total of $1,611,382 was remained unused on an actual basis.

g) Enbridge Gas's contracting strategy for the Project is under development. The fully executed contract will consider provisions to manage unexpected risks to mitigate cost overruns. Additionally, Enbridge Gas will have a dedicated Project Manager onsite to manage the construction contractor and ensure all risks are managed in a cost-effective manner. Contingency will be allocated to mitigate identified cost pressures and overruns as they arise.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff ("STAFF")

INTERROGATORY

Reference:

Exhibit D, Tab 1, Schedule 1, Page 4

Preamble:

Enbridge Gas says that a Discounted Cash Flow assessment was not completed because the Project is underpinned by compliance requirements and will not create any incremental capacity or new revenues from customers.

Question:

Did Enbridge Gas's use any other financial metrics to compare alternatives (e.g., NPV)? If so, please discuss what metrics were used and what Enbridge Gas's conclusions were. If not, why not?

Response:

Enbridge Gas compared project alternatives based on total capital cost. A summary of this comparison is provided in Table 2 of Exhibit C, Tab 1, Schedule 1.

Enbridge Gas did not use any other financial metrics, such as an NPV analysis, to compare alternatives. Since the proposed Project has a significantly lower cost than all other alternatives, and all alternatives had similar project timing and useful lives, the time-value of money considered by an NPV analysis would not be a factor when making any decisions on the preferred alternative.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff ("STAFF")

INTERROGATORY

Reference:

Exhibit F, Tab 1, Schedule 1, Attachment 2

Preamble:

The updated Environmental Report for the Project was submitted to the Ontario Pipeline Coordinating Committee, the Toronto and Region Conservation Authority (TRCA), the City of Toronto, and the Mississaugas of the Credit First Nation on December 17, 2021. An updated consultation log covering the period between December 17, 2021 and February 22, 2022 was included in the application. According to the updated consultation log:

- Enbridge Gas informed the Ministry of Heritage, Sport, Tourism and Culture Industries that a Stage 1 Archaeological Assessment would be completed and filed by February 21, 2022.

- Enbridge Gas informed the TRCA that it would provide the TRCA with information on a) any impacts to the Don Roadway Flood Protection Landform and b) Enbridge Gas's sediment and debris management plans as part of the TRCA permitting process.

Question:

a) Please provide an update on the status of the Stage 1 Archaeological Assessment.

b) Please provide an update on the TRCA permitting process. Does Enbridge Gas foresee any reason why it may not receive any necessary permits from the TRCA?

Response:

a) A Stage 1 Archaeological Assessment ("AA") was completed in 2018 for the three alternative routes as well as an additional 10 m buffer along the entire lengths of the three routes. This report was submitted to the MHSTCI on July 29, 2020. Based on comments received from the MHSTCI, an updated report was submitted May 17, 2022. This report is currently under review.

   An additional Stage 1 AA was submitted on February 23, 2022 to assess the archaeological potential of the Preferred Route, which was not previously evaluated in 2018. The report was entered into the Ontario Public Register of Archaeological Reports by the MHSTCI on April 5, 2022. The letter can be found at Attachment 1 to this response.

b) No permits have been applied for with the TRCA at this time. Enbridge Gas does not foresee any issues in obtaining permits from the TRCA, should the OEB grant Enbridge Gas leave-to-construct the Project.

Ministry of Heritage, Sport, Tourism, and Culture Industries

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Programs and Services Branch
Heritage, Tourism and Culture Division
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Ontario

Apr 5, 2022

Patrick Hoskins (P415)
Stantec Consulting
400 - 1331 Clyde Ottawa ON K2C3G4

RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Proposed Don River NPS 20 Pipeline Relocation: Stage 1 Archaeological Assessment: Part of Lot 15 and 14, Broken Front Concession, Geographic Township of York, former York County, now City of Toronto, Ontario", Dated Feb 22, 2022, Filed with MHSTCI Toronto Office on Feb 24, 2022, MHSTCI Project Information Form Number P415-0334-2022, MHSTCI File Number 0006957

Dear Mr. Hoskins:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18.[1] This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 *Standards and Guidelines for Consultant Archaeologists* set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment of the study area as depicted in Figure 20 of the above titled report and recommends the following:

"The Stage 1 archaeological assessment determined that the study area retains low to no archaeological potential due to various modern disturbances. Thus, the study area retains low to no potential for the identification or recovery of archaeological resources. In accordance with Section 1.3.2 and Section 7.7.4 Standard 1.b of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Stage 2 archaeological assessment is not required for the study area (Figure 20).

The MHSTCI is asked to review and accept this report into the Ontario Public Register of Archaeological Reports."

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 *Standards and Guidelines for*

Consultant Archaeologists and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Andrea Williams
Archaeology Review Officer

cc. Archaeology Licensing Officer
Tanya Turk,Enbridge Gas Inc.
Tanya Turk,Enbridge Gas Inc.

[1] *In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.*

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff ("STAFF")

INTERROGATORY

Reference:

Exhibit G, Tab 1, Schedule 1, Page 1
Exhibit G, Tab 1, Schedule 1, Attachments 1 and 2

Preamble:

Enbridge Gas states that the two proposed pipelines follow public road allowance for the majority of the Project. However, bylaw or easement may be required where municipal road allowances are not dedicated. Attachment 1 contains Enbridge Gas's standard form of Working Area agreement that would be provided to landowners. Attachment 2 contains the standard form of Easement Agreement that would be provided to landowners if a permanent easement is required. Enbridge Gas states that these agreements are the same as those used in Enbridge Gas's St. Laurent North Replacement Project.[5]

OEB staff notes that the forms of agreement filed with the OEB for the St. Laurent North Replacement Project were previously approved by the OEB for use in Enbridge Gas's Innes Road Project.[6]

Question:

a) Please briefly describe the status of negotiations for any bylaw or easement that is required where municipal road allowances are not dedicated. When are these negotiations anticipated to be completed? Is there any risk to the Project costs or schedule arising from these negotiations? Please explain.

b) Please confirm that no changes have been made to the forms of agreement since they were last approved for use by the OEB. If this cannot be confirmed, please identify and explain any changes.

[5] EB-2020-0293
[6] EB-2012-0438, OEB Decision and Order, April 11, 2013, pp. 5-6

Response:

a) The Permanent Relocation phase of the Project will be located within the road allowance. Easements will not be required. For the Temporary Bypass, Enbridge Gas is currently working with Waterfront Toronto on the proposed alignment. Once the alignment has been finalized, Enbridge Gas can then determine if easements are required. Enbridge Gas has discussed the requirements of the proposed Project with the Waterfront Toronto and does not anticipate any issues acquiring easement or bylaw land rights, if necessary, for the Temporary Bypass.

b) Confirmed.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff ("STAFF")

INTERROGATORY

Reference:

Exhibit F, Tab 1, Schedule 1, Pages 4 and 7

Preamble:

The Ministry of Heritage, Sport, Tourism and Culture Industries (Ministry of Heritage) advised Enbridge Gas that its Environmental Report is not complete until a Stage 1 Archaeological Assessment (AA) for the Preferred Route (PR) has been completed and submitted to the Ministry of Heritage, and its recommendations incorporated into the ER.

Enbridge Gas stated:

- An expedited review request was sent to the Ministry of Heritage on January 10, 2022. On January 25, 2022, the Ministry of Heritage provided comments to the report, requesting additional information on portions of the study area. Enbridge Gas responded to the Ministry of Heritage on February 23, 2022, addressing their concerns.[7]

- Enbridge Gas advised the Ministry of Heritage on February 22, 2022, that a Stage 1 AA for the PR would be submitted for review the week of February 21, 2022.[8]

- Enbridge Gas states that a Stage 1 AA that included the current PR was submitted to the Ministry of Heritage for review and acceptance into the Ontario Public Register of Archaeological Reports on February 22, 2022, and an expedited review request was sent February 23, 2022.[9]

[7] F-1-1 page 7
[8] F-1-1 page 4
[9] F-1-1 page 7

Enbridge Gas stated that it will provide the clearance letter to the OEB once it is received from Ministry of Heritage.

OEB staff notes that the current application was filed with the OEB on February 24, 2022.

Question:

a) The sequence of communications between Enbridge Gas and the Ministry of Heritage is difficult to follow. Please confirm that the Stage 1 AA for the PR was submitted to the Ministry of Heritage on February 23, 2022. Otherwise, please provide the date that the Stage 1 AA submitted to the Ministry of Heritage.

b) Has the Ministry of Heritage responded to the Enbridge Gas's submission of the Stage 1 AA for the PR? If so, what was the Ministry of Heritage's response? If not, when does Enbridge Gas anticipate a response from the Ministry of Heritage?

Response:

a) Confirmed.

b) Please see the response at Exhibit I.STAFF.5 part a).

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff ("STAFF")

INTERROGATORY

Reference:

Exhibit E, Tab 1, Schedule 1, Page 2, Table 1
Exhibit F, Tab 1, Schedule 1, Appendix B5 – 2021 Consultation Materials

Preamble:

OEB staff notes that several elements of the design specifications and testing procedures in Table 1 are yet to be determined; these include pipe grade, wall thickness and the hoop stress at design pressure – all of which are required information for the Technical Standards and Safety Authority (TSSA) to complete a review of the project.

In an email to Enbridge Gas dated October 29, 2021, the TSSA requested that Enbridge Gas complete and submit a project review form.

Question:

a) Has Enbridge Gas submitted a completed project review form to the TSSA for the Project? If not, why not? If so, what is the status of the review?

b) Does Enbridge Gas intend to file with the OEB a complete Table 1? If not, why not? If so, when?

c) Has Enbridge Gas filed with the TSSA a risk assessment per CSA Z662 Annex B? If not, why not? If so, please explain the status of that filing?

Response:

a) Enbridge Gas has resubmitted an application for project review to the TSSA for the Project. The application has been accepted and is under review by the TSSA.

b) It is common that complete pipeline design specifications and leak test parameters for a project are not final at the time Enbridge Gas applies for leave to construct

approval from the OEB. These specifications are finalized as final project designs are completed and materials ordered. In some cases, these specifications will not be final until immediately prior to project construction. Should the OEB determine that its approval of the Project should be conditional upon the Company filing final design specifications and leak test parameters, Enbridge Gas will file an updated version of Table 1 in Exhibit E, Tab 1, Schedule 1 once the requested information is finalized.

c) Enbridge Gas has not filed a risk assessment with the TSSA. CSA Z662 Annex B is an informative (non-mandatory) part of the standard and as such, there is no requirement for Enbridge Gas to file with the TSSA a risk assessment. The Annex provides guidelines on the application of risk assessment to pipeline systems.

ENBRIDGE GAS INC.

Answer to Interrogatory from
OEB Staff ("STAFF")

INTERROGATORY

Reference:

Exhibit F, Tab 1, Schedule 1, Table 2-4
Exhibit G, Tab 1, Schedule 1, Page 1, Table 1
Exhibit H, Tab 1, Schedule 1, Attachment 1, Page 4

Preamble:

In Table 1, Enbridge Gas lists a series of potentially required permits and agreements.

In a letter to the Ministry of Energy dated October 4, 2021, Enbridge Gas identified a number of "potential required authorizations" that are not listed in Table 1; they are Infrastructure Ontario, Ministry of Natural Resources, Hydro One Networks, and various rail operators (CN Rail, CP Rail and Metrolinx).

Table 2-4 indicates that the temporary above ground by-pass will require two railway crossings and there will be one railway crossing for the final pipeline construction.

Question:

a) Please confirm that the additional potential required authorizations listed in Enbridge Gas's letter to the Ministry of Energy are not listed in Table 1 because they are not applicable to this Project. If this cannot be confirmed, then please explain why the additional authorizations were not listed in Table 1. In particular, please comment on the railway crossing permit required from CN Railway for the NPS 20 temporary bypass.

b) If applicable, please briefly describe the status of any additional potential required authorizations. When are these authorizations anticipated to be granted? Is there any risk to the Project costs or schedule arising from the need to obtain these authorizations?

Response:

a) The letter to the Ministry of Energy dated October 4, 2021 lists potential required authorizations for the Project, based on what was known at the time of writing and based on Enbridge Gas's experience with previous projects. The permits listed in Table 1 of Exhibit G, Tab 1, Schedule 1 were updated based on what was known of the Project at the time of filing and did not include permits that were no longer anticipated. Permit requirements will be confirmed after Enbridge Gas is granted leave to construct for the Project.

b) Table 1 below lists the permits/authorizations anticipated as of May 26, 2022, which will be confirmed after Enbridge Gas is granted leave to construct for the Project. Based on the current schedule and the expected lead times for these permits/authorizations, Enbridge Gas does not foresee any risk to schedule at this time.

Table 1: Status and Timing of Permits/Authorizations for the Project

AUTHORITY	PURPOSE	STATUS/TIMING
Toronto Harbor Commissioners/Toronto Port Authority (Ports Toronto)	Potential temporary or permanent easement(s), as required.	Enbridge Gas has confirmed that there will be no permanent easement required for the Project. Details on temporary easements for working purposes have not yet been finalized. If temporary easements are required, they will be identified and executed by December 31, 2022 to allow Enbridge Gas to begin construction in early 2023.
Toronto & Region Conservation Authority	Permit for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, as required.	Enbridge Gas will apply for this permit after leave to construct approval is granted. No permits have been applied for with the TRCA at this time.
City of Toronto	Noise Exemption Permit, as required.	The Noise Exemption Permit would only be required if over night work is deemed necessary. No noise exemption permit has been identified as being needed, nor has been applied for at this time.

City of Toronto Transportation Services – ROW Management	Street Occupation Permit. Cut Permit Application for Installation of Services within the City of Toronto Streets. Follow Toronto Public Utilities Coordinating Committee process and contact required utilities.	Enbridge Gas intends to follow the Toronto Public Utilities Coordinating Committee ("TPUCC") process for the Project. The Company anticipates the first round of utility circulation to take place in July 2022.
City of Toronto Toronto Water Environmental Monitoring & Protection	Sewer Discharge Permit(s)/Agreement(s) as per Chapter 681 of the City of Toronto Municipal Code if discharging private water into the city's sewer system, as required.	No sewer discharge permit has been identified as being required, nor has been applied for at this time.
City of Toronto Urban Forestry	Permit to remove or injure trees as per Chapter 813, 658 and/or 608 of the City of Toronto Municipal Code, as required.	No permits have been applied for with the City of Toronto at this time. Enbridge Gas does not foresee any issues in obtaining permits from the City.
MHSTCI	An AA (i.e., a Stage 1 and 2 AA along the right-of-way (RoW)) to identify areas of archaeological potential is required prior to any ground disturbance and/or site alteration. The completed AA reports are forwarded to the MHSTCI for review.	A Stage 1 AA has been submitted to the MHSTCI for the PR and accepted into the Ontario Public Register of Archaeological Reports. See the response at Exhibit I.STAFF.5 part a).
Ontario Ministry of the Environment, Conservation and Parks (MECP) Environmental Approvals Branch	Environmental Activity and Sector Registry (EASR) registration if dewatering from a natural source of more than 50,000 litres (L) per day but less than 400,000 L per day is required. Permit to Take Water (PTTW) if water taking is greater than 400,000L per day.	This permit requirement will be confirmed and applied for after leave to construct approval is granted, if necessary, based on the hydrological conditions of the study area. A PTTW or EASR have not been applied for at this time.
MECP Species at Risk Branch	Consultation may be required with the MECP to identify the approval process under the ESA (e.g., permit, registration, letter of advice), if applicable. Approval would be required for any protected species and/or their habitat under the ESA.	Removal of natural vegetation (SAR habitat) is not anticipated. Should SAR and SAR habitat be identified, Enbridge Gas will undertake consultation with the MECP to confirm permitting requirements.
Environment and Climate Change Canada	Nest sweeps to be conducted at a maximum of 7 days prior to vegetation removal during the bird nesting season, (e.g., April 1 to August 31), as per the *Migratory Birds Convention Act, 1994.*	Nest sweeps will be conducted if vegetation removal is required between April 1 - August 31.

Transport Canada Navigation Protection Program	Enbridge Gas will follow the appropriate notification and approvals process identified under the Canadian Navigable Waters Act, if required, and implement relevant mitigation measures to avoid or minimize temporary disruption to the navigability of the waterways.	Enbridge Gas will undertake consultation with Transport Canada to confirm required notifications and approvals after the Company has received leave to construct approval.
Fisheries and Oceans Canada (DFO)	DFO review and possible Fisheries Act authorization is required at watercourse crossings containing species protected under the Species at Risk Act (SARA) (2002).	Should the OEB grant Enbridge Gas leave to construct, Enbridge Gas will confirm if DFO authorizations are required at that time. No permits have been applied for with DFO at this time.
Hydro One Networks Inc	Working in close proximity to Hydro towers	No permits have been applied for at this time.
City of Toronto	Licence agreement to locate the Permanent Relocation pipeline in the utility corridor on the new Keating Railway Bridge	See response at Exhibit I.STAFF.1

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence ("ED")

INTERROGATORY

Reference:

Exhibit B, Tab 1, Schedule 1, Page 1

Preamble:

Enbridge Gas has identified the need to relocate and abandon approximately 154 m of NPS 20-inch HP ST natural gas main. The main must be relocated due to: (i) a conflict with Waterfront Toronto's PLFPEI project and (ii) termination of the license granted by the City of Toronto allowing Enbridge Gas to utilize the Keating Railway Bridge to support the existing NPS 20-inch natural gas main.

Question(s):

(a) In its application for EB-2020-0198 Enbridge stated that sections of the pipeline in the Kipling Oshawa Loop ("KOL") near the Don River had been identified as in need of replacement (the "Don River Replacement Project").[1] Please explain the extent to which this project overlaps with the Don River Replacement Project.

(b) If this project is approved and constructed, is the Don River Replacement Project still necessary in whole or in part? Please explain.

(c) If the main did not need to be relocated due to the termination of the licence, when would it need to be replaced due to other reasons (e.g. integrity issues)?

(d) Please list the dates on which the pipe in question would have been replaced in the various previous iterations of this project.

[1] See: EB-2020-1098, Exhibit B, Tab 1, Schedule 1, Pages 4-6.

Response

a) The requirement to relocate a portion of the NPS 20 natural gas steel main spanning the Don River was within the original scope of the Don River Replacement Project (October-December 2017). In November 2017, the Don River Replacement Project was split into two distinct projects: (i) the NPS 30 XHP ST replacement became the NPS 30 Don River Replacement Project (EB-2018-0108) and (ii) the NPS 20 HP ST replacement became the NPS 20 Natural Gas Pipeline Replacement Project. In May and June 2018, Enbridge Gas conducted integrity work on the NPS 20 natural gas steel main to gain a better understanding of its condition. An integrity dig, visual inspection and structural assessment were completed, and results showed that the NPS 20 natural gas steel main was in good condition and not in need of replacement. As such, in August 2018, Enbridge Gas cancelled the NPS 20 Natural Gas Pipeline Replacement Project. There is no overlap between the NPS 30 Don River Replacement Project (EB-2018-0108) and the current Project.

b) Please see the response to part a) above. The NPS 20 Natural Gas Pipeline Replacement Project is not necessary and has been cancelled. The decision to cancel the NPS 20 Natural Gas Pipeline Replacement Project was made independent of the current Project.

c) If the main did not need to be relocated due to the termination of the licence, it would still need to be relocated due to the conflict with Waterfront Toronto's PLFPEI project. The buried main west of the Don River is required to be relocated due to the widening of the Don River and associated road works. As part of the PLFPEI, the proposal is to replace the existing railway bridge with a utility corridor that will transverse the widened river.

d) See the response to part a) above for a brief history of the Don River Replacement Project and the NPS 20 Natural Gas Pipeline Replacement Project. The Don River Replacement Project was proposed to be placed into service in 2019. Prior to its cancellation, the NPS 20 Natural Gas Pipeline Replacement Project was proposed to be placed into service in 2020. The first iteration of the current Project, filed as EB-2020-0198, was proposed to be in service by March 2022 to meet the original PLFPEI project schedule. The Project as currently filed in this proceeding proposes the Temporary Bypass to be placed into service by April 30, 2023, and the Permanent Relocation to be placed into service by August 31, 2024. These timelines align with the current PLFPEI project schedule and have been agreed to with Waterfront Toronto and the City of Toronto.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence ("ED")

INTERROGATORY

Reference:

Exhibit B, Tab 1, Schedule 1, Attachment 3, Page 1

Preamble:

"This will also confirm that the City is prepared to permit Enbridge to relocate its pipeline to a permanent location on the Keating rail bridge "utility corridor" on terms and conditions that would be contained in a mutually acceptable long-term license. Among other matters, the license should address a proportionate contribution by Enbridge to the capital maintenance and repair of the utility corridor."

Question(s):

(a) Please provide complete details on the "proportionate contribution by Enbridge to the capital maintenance and repair of the utility corridor" that will be provided. If none will be provided, please confirm that was requested.

Response

Please see the response at Exhibit I.STAFF.1.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence ("ED")

INTERROGATORY

Reference:

Exhibit D, Tab 1, Schedule 1, Page 1

Question(s):

(a) Approximately when will replacement costs for the proposed pipelines be fully depreciated? Please make and state all assumptions and caveats as necessary.

(b) How much of the cost of the pipeline replacement will likely remain undepreciated by (i) 2040 and (ii) 2050? Please make and state all assumptions and caveats as necessary.

Response

a) Using the existing amortization policy and assuming the assets are fully intact without any damages and replacements, the proposed pipelines will be fully depreciated in 2064.

b) Using the existing amortization policy and assuming the assets are fully intact without any damages and replacements, the undepreciated capital cost of the Project (classified as HP ST Main pipeline) will be:

   (i) In 2040: $11,141,550.

   (ii) In 2050: $6,636,930.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence ("ED")

INTERROGATORY

Reference:

Exhibit D, Tab 1, Schedule 1, Attachment 2, Page 16

Preamble:

Following installation and energization of the temporary above ground by-pass, Enbridge will deenergize and abandon in place the applicable portions of the existing NPS 20 gas main. The abandoned pipe will subsequently be removed and disposed of by Waterfront Toronto as part of the Project.

Question(s):

(a) Please confirm that Waterfront Toronto is only responsible for removing and disposing the abandoned pipe on the existing Keating Railway Bridge.

(b) Please confirm that Enbridge is responsible for removing and disposing of the abandoned pipe on the Temporary Bypass (i.e., on the decking to be built on the south side of Lake Shore Blvd). If not, please clarify which party is responsible for this work.

Response

a) Confirmed.

b) Confirmed. Enbridge Gas is responsible for removing and disposing of the abandoned pipe on the above ground portions of the Temporary Bypass. The below ground portions of the Temporary Bypass will be abandoned in place.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence ("ED")

INTERROGATORY

Reference:

Exhibit D, Tab 1, Schedule 1, Attachment 2, Page 22

Preamble:

…existing gas mains and services are to be abandoned in place and any subsequent removal and disposal of such abandoned gas mains and services shall be at the sole cost and expense of Waterfront Toronto and prior to such removal Waterfront Toronto shall first confirm the status of such abandonment by contacting Enbridge; […]

Question(s):

(a) Please confirm whether Waterfront Toronto is responsible for the cost and expense of removing and disposing of abandoned gas mains and services on: (i) the Keating Railway Bridge; and (ii) the Temporary Bypass.

(b) Please provide a detailed estimate of the cost of removing and disposing of abandoned gas mains and services from: (i) the Keating Railway Bridge; and (ii) the Temporary Bypass.

(c) Please confirm that the costs to be incurred by Waterfront Toronto to remove and dispose of abandoned gas mains and services will be paid by Waterfront Toronto in addition to the $5,000,000 Waterfront Toronto is paying as a contribution in aid of construction.

Response

a) and b) Please see the response to Exhibit I.STAFF.3, part a).

c) Costs incurred by Waterfront Toronto in relation to the removal and disposition of the abandoned gas main on the existing Keating Railway Bridge are independent of the $5 million contribution to the Project.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Environmental Defence ("ED")

INTERROGATORY

Reference:

Exhibit C, Tab 1, Schedule 1, Page 2

Preamble:

First, once the south half of the Lake Shore Bridge is constructed and widened, the existing NPS 20-inch natural gas main will be relocated temporarily from the Keating Railway Bridge to the south side of Lake Shore Blvd and will run above grade along the newly constructed decking on the south side of the Lake Shore Bridge. This first stage of relocation is referred to as the ("Temporary Bypass").

Question(s):

(a) Please confirm that the "newly constructed decking on the south side of the Lake Shore Bridge" is being built by and paid for Waterfront Toronto.

(b) Please explain whether the decking on the south side of the Lake Shore Bridge is being built solely to accommodate the Temporary Bypass.

Response

a) Confirmed.

b) The decking on the south side of the Lake Shore Bridge is required as part of the PLFPEI project. The sequencing of Waterfront Toronto's construction schedule was adjusted to accommodate the Temporary Bypass installation by advancing the timing of the construction of the south side of the Lake Shore Bridge (including bridge decking).

ENBRIDGE GAS INC.

Answer to Interrogatory from
Energy Probe ("EP")

INTERROGATORY

Reference:

Exhibit D, Tab 1, Schedule 1, Page 1, Table 1

Question:

a) Please provide a more detailed table of estimated project costs that separately shows cost components of the following phases of the project: the cost removal of the existing NPS 20, the construction of the Temporary Bypass, the cost of removal of the Temporary Bypass, and the construction cost of the Permanent Relocation.

b) Will the costs of removal of the existing NPS 20 and of the Temporary Bypass be charged to Accumulated Depreciation? If the answer is no, please explain why not.

Response

a) Enbridge Gas has forecasted and will record the cost of the Project as a whole rather than by specific phase of construction. In an effort to be as responsive as possible, Enbridge Gas has broken out the cost components for materials and labour costs as requested. This is not possible for the remaining cost items, as these items pertain to the Project as a whole and not any specific component or phase of the Project. As discussed in the response to Exhibit I.STAFF.3 part a), the cost of removal of the existing NPS 20 gas main is the responsibility of Waterfront Toronto.

Table 1: Materials and Labour Project Costs by Component

Item	Construction of Temporary Bypass	Removal of Temporary Bypass	Construction of Permanent Relocation
Material Costs	$1,374,144	N/A	$1,157,174
Labour Costs	$4,209,255	$2,055,581	$3,911,979

b) The abandonment costs of both the existing pipeline and the Temporary Bypass will be charged/debited to accumulated depreciation, thereby reducing the provision or outstanding liability for future abandonment costs (or costs of retirement or net salvage amount) recognized by the Company.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Energy Probe ("EP")

INTERROGATORY

Reference:

Exhibit D, Tab 1, Schedule 1, Pages 2 and 3, and Attachment 1

Preamble:

Any portion of the cost of relocation that Enbridge does not recover from Waterfront Toronto, Enbridge will recover from its ratepayers in gas distribution rates. Since Enbridge shareholders will not bear any of the cost, Energy Probe is concerned that Enbridge may not have tried hard enough to get a better deal in its negotiations with Waterfront Toronto.

Question(s):

a) On which dates did the negotiation meetings that resulted in the agreement with Waterfront Toronto take place?

b) Please provide the titles of Enbridge representatives at the negotiation meetings and indicate if they had the authority to settle.

c) How can the OEB be assured that the $5 million contribution is the best deal Enbridge could make to reach an agreement with Waterfront Toronto?

Response

a) Enbridge Gas and Waterfront Toronto met on June 14, 2021 and June 23, 2021 to negotiate Waterfront Toronto's contribution to the Project costs. Following these meetings, the Project Work Agreement was drafted, reviewed, and executed via email correspondence.

b) The Enbridge Gas representatives at the negotiation meetings were the Manager, Capital Development & Delivery and the Supervisor, Capital Development. Authority to negotiate/settle was delegated to these representatives by the Director, System

Improvement. The Project Work Agreement between Waterfront Toronto and Enbridge Gas was executed by the Director, System Improvement.

c) Please see the response at Exhibit I.STAFF.3, part b).

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Question(s):

a) The original Leave to Construct application (EB-202-0198) indicated that urgent relocation of the pipeline was required prior to May 2022. Please explain why that date is no longer relevant and what the latest possible date is for relocating the existing pipeline.

b) Has any work along the Don River (e.g. Waterfront Toronto, City of Toronto or TRCA) occurred to date? If yes, please explain why the pipeline did not need to be relocated prior to this work.

Response

a) Please refer to Exhibit B, Tab 1, Schedule 1, paragraphs 9 - 11. In this section of pre-filed evidence, the Company summarized the events leading to the change in deadline for Enbridge Gas to remove the NPS 20-inch natural gas main from the Keating Railway Bridge from May 2, 2022 to April 30, 2023. A letter from the City of Toronto confirming the new deadline is included as Attachment 3 to Exhibit B. April 30, 2023 is the latest possible date for relocating the existing pipeline.

b) There has been demolition work performed on the Lake Shore Bridge and Gardiner Expressway by Waterfront Toronto. The demolition work to the Lake Shore Bridge is only taking place on the south side of the bridge (eastbound lanes) which allows the existing pipeline to remain in place on the north side of the Keating Railway Bridge, as the pipeline is not in conflict with the ongoing work on the south side of the Lake Shore Bridge. In addition, Enbridge Gas and Waterfront Toronto coordinated protective measures to the existing pipeline prior to commencement of this work.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

[Ex. A, Tab 2, Sch. 1]

Question(s):

Please confirm that Enbridge will proceed with the project if incremental capital is not provided by the OEB. If that is not correct, please explain.

Response

Enbridge Gas is not seeking cost recovery of the Project as part of this application. Enbridge Gas expects that, upon rebasing, the net capital costs associated with the Project will be included within rate base. Enbridge Gas will allocate Project costs to rate classes according to the applicable OEB-approved cost allocation methodology in place at the time the Company applies for such rate recovery.

In this application, Enbridge Gas is applying for leave to construct the Project. Enbridge Gas will proceed with construction of the Project if the OEB grants the Company leave to construct.

Please see the response at Exhibit I.SEC.1.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Question(s):

a) Please explain how the proposed temporary and permanent pipelines requirements relate to the broader scope and timing of flood protection work to be performed along the Don River.

b) Is it possible that additional relocations will be required for future flood management work along the Don River? Please explain what has been done to mitigate that risk.

Response

a) The proposed Temporary Bypass and Permanent Relocation pipeline requirements relate solely to the widening of the mouth of the Don River as part of the PLFPEI project. Because the mouth of the river will be widened, the Lake Shore Bridge and Keating Railway Bridge will also need to be widened as part of the PLFPEI project scope. The existing pipeline is located on the Keating Railway Bridge and as such, must be relocated to facilitate the widening of the Keating Railway Bridge.

   The PLFPEI project, as it relates to the Project, is scheduled in the following phases:
   - Waterfront Toronto will complete necessary construction on the south side of the Lake Shore Bridge;
   - The existing NPS 20-inch natural gas steel main will be relocated temporarily from the Keating Railway Bridge (existing location) to the south side of Lake Shore Bridge (Temporary Bypass);
   - Waterfront Toronto will complete necessary construction on the north side of the Lake Shore Bridge and rebuild the Keating Railway Bridge; and
   - The NPS 20-inch natural gas main will be permanently relocated to a specifically designed utility corridor on the north side of the newly constructed Keating Railway Bridge (Permanent Relocation).

b) Waterfront Toronto has shared the full scope of the PLFPEI project with Enbridge Gas and both parties have identified all corresponding conflicts of the PLFPEI

project with the existing NPS 20-inch natural gas main. There are no additional future relocations of this pipeline that will be required as part of the PLFPEI project. Enbridge Gas and Waterfront Toronto are engaged in ongoing biweekly discussions regarding the status of the PLFPEI project, which will ensure Enbridge Gas is apprised of any potential changes to the scope that could necessitate an update to the NPS 20 Waterfront Relocation Project.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

[Ex. C, Tab 1, Sch. 1]

Question(s):

Please explain why a permanent pipeline cannot be constructed avoiding the impact and expense of a temporary pipeline?

Response

Please see Exhibit C, Tab 1, Schedule 1, paragraphs 10 -19. Several single-phase permanent relocation alternatives were evaluated but were not preferred due to: (i) cost, (ii) safety risk from ongoing congestion of third-party project work in the vicinity, (iii) land constraints related to new routing, (iv) potential risk of damage to the Company's pipeline from ongoing PLFPEI work, and (v) inability to meet the required deadline for Enbridge Gas to remove the NPS 20-inch natural gas main off the Keating Railway Bridge[1].

[1] Exhibit B, Tab 1, Schedule 1, P. 6, Enbridge Gas is required to remove the NPS 20-inch natural gas main from the Keating Railway Bridge by April 30, 2023.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Question(s):

Please confirm that the amortization period for the proposed permanent pipeline is 40 years. If incorrect, please indicate the correct value.

Response

Confirmed.

ENBRIDGE GAS INC.

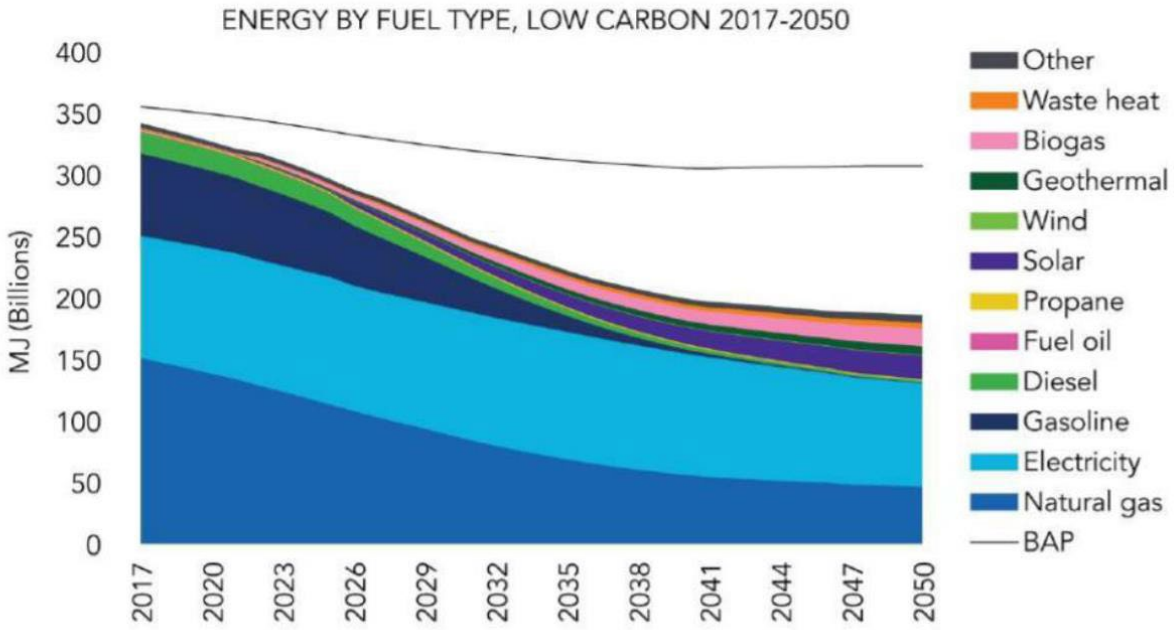
Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

"The existing NPS 20-inch natural gas main forms a critical section of Enbridge Gas's Kipling Oshawa Loop ("KOL"). It is supplied from the Station B feeder station in the east and it supplies a large area of downtown Toronto with natural gas." [Ex. B, Tab 1, Sch. 1, pg 2]. "The Project is the best alternative to meet the project need and is in the best interests of ratepayers with respect to Project cost and reliability and quality of gas service to the City of Toronto" [Ex. A, Tab 2, Sch. 1, pg. 3].

City of Toronto Transform TO Report, Figure 33



Question(s):

a) Has Enbridge conducted a peak demand assessment of the future load for the KOL loop and/or Toronto over the life of the proposed pipeline life (i.e. to 2063)? If not why not. If yes, please provide a copy of all materials and reports related to the demand assessment.

b) Has Enbridge conducted a recent integrity assessment for the KOL? If no, why not. If yes, please provide a copy of any reports or other materials related to the integrity assessment of the KOL.

c) Please provide details on any other sections of the KOL that will need to be replaced or relocated from now to 2063.

d) Has Enbridge considered the proposed decrease in natural gas use in the City of Toronto in its assessment of the proposed pipeline? If yes, please provide a copy of all materials related to this assessment. If no, why not.

Response

a) Assessment of future natural gas demands for the KOL and/or the broader Toronto region is beyond the scope of this proceeding. See the response to part d) below for further information.

b) Enbridge Gas described the integrity assessment on this segment of pipeline, completed in 2018, in EB-2020-0198, Exhibit B, Tab 1, Schedule 1. For convenience, an excerpt from this evidence as well as the applicable attachments are included with this response:

> In May and June 2018, concurrent with the consultation phase of the NPS 20 Natural Gas Pipeline Replacement Project, Enbridge Gas conducted integrity work on the NPS 20 HP ST segment of pipeline to be replaced in order to gain a better understanding of the condition of the pipeline. This integrity work involved an integrity dig which exposed the natural gas main at one location on the west side of the Bridge and completing a visual pipe condition inspection. In addition, recent records for in line inspections and pipeline integrity digs on the east side of the Bridge were referenced to confirm the condition of the pipeline.
>
> The integrity dig on the west side of the Bridge and the records for the pipeline on the east side of the Bridge indicated that the NPS 20 HP ST pipeline was recently repaired and was in good condition and therefore did not require replacement. Results of the integrity dig on the west side of the Bridge are set out at Attachment

> 1 to this Exhibit. The integrity records for the sections of pipeline on the east side of the Bridge are set out at Attachments 2 to 5 of this Exhibit.
>
> In addition, Enbridge Gas had a structural assessment and failure calculations (Structural Assessment) completed for the pipeline on the Bridge. The Structural Assessment indicated that there were no signs of erosion around the Bridge and that no abutment deterioration was observed. It also indicated that the saddle supports and bracket that support the pipeline on the Bridge were in good condition. The Structural Assessment recommended that flood risk and therefore damage to the pipeline on the Bridge could be mitigated by installing a metal fence around the on-land portion of the pipeline to protect against large debris that the Don River may carry at high water levels. The Structural assessment is set out at Attachment 6 to this Exhibit.
>
> Based on the results of the integrity dig and records, and the Structural Assessment, Enbridge Gas determined that the condition of the pipeline was better than anticipated by the initial AHR ... As a result of this integrity work and the condition of the pipeline, in August of 2018 Enbridge Gas cancelled the NPS 20 Natural Gas Pipeline Replacement Project.

c) At this time, there are no plans to replace any section of the KOL. Enbridge Gas does not plan replacements beyond the time horizon of the 10-year Asset Management Plan.

   Enbridge Gas is aware of two future relocation projects on the NPS 20 KOL pipeline. The first is due to a third-party conflict located north of Lakeshore Blvd. and east of the Don River. The second is located at 2150 Lake Shore Blvd West to accommodate a third-party development that conflicts with the NPS 20 KOL gas main. There are other potential relocations that may or may not be required but are too early in the project lifecycle to comment on with any level of certainty.

d) No. The proposed Project is necessary to meet the imminent timelines required by Waterfront Toronto for the PLFPEI. The Project is limited to relocation of a 154m segment, or less than 1% of the total length, of the NPS 20 KOL system which conflicts with PLFPEI project activities. As outlined in the response at Exhibit I.STAFF.2, Enbridge Gas has assessed and determined that reduction of the size of the pipeline to NPS 16 while maintaining supply security to area of benefit is not possible. Furthermore, any broad assessment of the future demands within the City of Toronto or an assessment of any related IRP Plan would be applicable to the NPS 20 KOL as a whole and not limited to the 154m segment of pipeline that is at issue in this proceeding.

   As outlined in Exhibit C, Tab 1, Schedule 1, there is no other viable and cost-effective alternative that meets the required timing for the PLFPEI project.

ENBRIDGE

Pipeline Integrity Preliminary Field Report

NDE Vendor:
Date: Thursday, January 05, 1900

Line:
Target Feature:
Girth Weld:

Pipe Information

Line Name: Lakeshore/Cherry st.
Reference Girth Weld: 2
Target Feature: investigative
Pipe Installation Year: 1956
Pipe Grade: Unknown
Long Seam Type: Seamless
Pipe Standard:
Network:
High node:
Low node:
Nominal Pipewall Thickness (mm): unknown (
Actual Pipewall Thickness (mm): 7.2-8.9
Line Diameter (mm): 508

Excavation Information

Upstream GW	Exposed Length (m)	Type of Joint Exposure	Longseam Orient.	GPS Latitude (°)	GPS Longitude (°)	GPS Elevation at TDC (m)
1	2.10	Partial	N/A	not exposed	Not Exposed	Not Exposed
2	12.97	Full	N/A	43.64864	-79.3531	89m
3	1.73	Partial	N/A	43.64864	-79.35321	90

Feature Information

Feature Number	Type of Feature	ILI Feature Number	Reference GW	Feature Start (mm) Relative to GW	Feature End (mm) Relative to GW	Length (mm)	Feature Start (mm) Relative to Circ	Feature End (mm) Relative to Circ	Width (mm)	Max Depth (mm)	Remaining wall	Actual wall	Is Feature On or Near GW or SW	Repair (if grind, state depth)
OI-1	Mill scab	N/A	2.00	-1886	-1868	18	1530	1554	24	N/A	N/A	7.60	No	left as is
OI-2	Mill scab	N/A	2.00	-1858	-1848	10	1416	1431	15	N/A	N/A	7.80	No	left as is
OI-3	Mill scab	N/A	2.00	-1838	-1808	30	0	30	30	N/A	N/A	7.85	No	left as is
OI-4	Mill scab	N/A	2.00	-1782	-1764	18	1364	1390	26	N/A	N/A	7.55	No	left as is
OI-5	Mill scab	N/A	2.00	-1734	-1605	129	55	183	128	N/A	N/A	7.95	No	Removed by grinding (Grind Depth 0.75)
OI-6	Mill scab	N/A	2.00	-1412	-1388	24	1482	1489	7	N/A	N/A	7.90	No	left as is
OI-7	Mill scab	N/A	2.00	-1186	-962	224	35	140	105	N/A	N/A	8.00	No	Removed by grinding (Grind Depth 0.8)
OI-8	Mill scab	N/A	2.00	-1175	-1002	173	315	437	122	N/A	N/A	8.00	No	left as is
OI-9	Mill scab	N/A	2.00	-1125	-455	670	1410	1446	36	N/A	N/A	8.00	No	left as is
OI-10	Mill scab	N/A	2.00	-1148	-962	186	35	140	105	N/A	N/A	8.00	No	left as is
OI-11	Mill scab	N/A	2.00	-477	-470	7	1490	1505	15	N/A	N/A	8.30	No	left as is
OI-12	Arc strike	N/A	2.00	-24	-9	15	1558	1571	13	N/A	N/A	8.98	Yes	Removed by grinding (Grind Depth 1.18)
OI-13	Arc strike	N/A	2.00	-18	-7	11	665	685	20	N/A	N/A	7.62	Yes	Not removed Due to proximity to ground cement
OI-14	Arc strike	N/A	2.00	-17	-7	10	1310	1324	14	N/A	N/A	8.45	Yes	Removed by grinding (Grind Depth 0.75)
OI-15	Arc strike	N/A	2.00	-13	-6	7	1345	1355	10	N/A	N/A	8.45	Yes	Removed by grinding (Grind Depth 0.75)
OI-16	Arc strike	N/A	2.00	2	7	5	1150	1159	9	N/A	N/A	7.90	Yes	Removed by grinding (Grind Depth 0.2)
OI-17	Arc strike	N/A	2.00	7	13	6	280	288	8	N/A	N/A	8.00	Yes	Removed by grinding (Grind Depth 0.4)
OI-18	Arc strike	N/A	2.00	7	13	6	586	595	9	N/A	N/A	7.68	Yes	Removed by grinding (Grind Depth 0.62)
OI-19	Arc strike	N/A	2.00	7	11	4	600	610	10	N/A	N/A	7.68	Yes	Removed by grinding (Grind Depth 0.32)
OI-20	Mil Scab	N/A	2.00							N/A	N/A		No	left as is
OI-21	Mil Scab	N/A	2.00	13	19	6	1562	1571	9	N/A	N/A	8.28	No	Removed by grinding (Grind Depth 0.48)
OI-22	Mil Scab	N/A	2.00	18	85	67	320	349	29	N/A	N/A	7.80	No	Removed by grinding (Grind Depth 0.2)
OI-23	Mil Scab	N/A	2.00	100	148	48	380	411	31	N/A	N/A	7.80	No	left as is
OI-24	Arc Strike	N/A	2.00	12976	12981	5	320	335	15	N/A	N/A	7.90	Yes	Removed by grinding (Grind Depth 0.7)
OI-25	Arc Strike	N/A	2.00	12945	12960	15	720	730	10	N/A	N/A	8.50	Yes	Removed by grinding (Grind Depth 0.48)
OI-26	Arc strike	N/A	2.00	12995	13005	10	705	715	10	N/A	N/A	7.70	Yes	Removed by grinding (Grind Depth 0.6)
OI-27	Arc Strike	N/A	2.00	13005	13015	10	715	725	10	N/A	N/A	7.90	Yes	left as is
OI-28	Arc Strike	N/A	2.00	13065	13080	15	700	710	10	N/A	N/A	7.90	Yes	Removed by grinding (Grind Depth 0.68)
OI-29	Arc Strike	N/A	2.00	12950	12965	15	965	980	15	N/A	N/A	8.00	Yes	Removed by grinding (Grind Depth 0.7)
OI-30	Arc Strike	N/A	2.00	12955	12960	5	1360	1375	15	N/A	N/A	9.10	Yes	left as is
OI-31	Arc Strike	N/A	2.00	12985	12996	11	1590	1600	10	N/A	N/A	7.90	Yes	Removed by grinding (Grind Depth 0.9)
OI-32	Mill scab	N/A	2.00	2586	2603	17	290	355	65	N/A	N/A	7.80	No	Removed by grinding (Grind Depth 0.2)
OI-33	Mill scab	N/A	2.00	2631	2639	8	350	375	25	N/A	N/A	7.70	No	Removed by grinding (Grind Depth 0.2)
OI-34	Mill scab	N/A	2.00	4635	4755	120	445	455	10	N/A	N/A	8.30	No	oved by grinding (Grind Depth 0.6)
OI-35	Mill scab	N/A	2.00	10746	10849	103	1535	1550	15	N/A	N/A	8.04	No	Removed by grinding (Grind Depth 0.54)
OI-36	Mill scab	N/A	2.00	10126	10194	68	1325	1332	7	N/A	N/A	8.18	No	Removed by grinding (Grind Depth 0.58)
OI-37	Mill scab	N/A	2.00	13595	13815	220	515	530	15	N/A	N/A	7.74	No	Removed by grinding (Grind Depth 0.34)
COR1	External Corrosion	N/A	2.00	-134	-123	11	1266	1325	59	1.56	7.25	7.25	No	left as is
COR2	External Corrosion	N/A	2.00	355	427	72	1518	1567	49	1.63	6.50	8.28	No	left as is
COR3	External Corrosion	N/A	2.00	1155	1270	115	1250	1350	100	1.38	6.20	7.70	No	left as is
COR4	External Corrosion	N/A	2.00	775	790	15	690	700	10	0.95	7.10	8.00	No	left as is
COR5	External Corrosion	N/A	2.00	1215	1250	35	625	690	65	0.95	6.80	7.80	No	left as is

Comments

Upon initial inspection of the pipe at this site numerous abnormalities were noticed.

First off the pipe is not exposed 360° around the pipe at the upstream end of the excavation. The pipe is laid on a concreate pad that actually encapsulates a portion of the pipe approximately from 5:00 to 7:00. This concrete extends from the upstream wall of the trench box to approximately 0.32m past the first exposed girth weld (labeled GW #2 in reports as GW #1 is not excavated). This obviously limits the amount of inspection that is able to be done on the upstream girthweld.

When the exposed section of piping was inspected using magnetic particle a large number of mill scabs were located. The abnormality with the mill scabs on this section of pipe was not the amount, but rather the orientation of the scabbing. Historically Mill scabs generally follow the direction of extrusion of seamless pipe, however these mill scabs do not have any specific orientation.

As per your (Michael Tai) request we selected ten of the most severe mill scabs and marked them up, assessed them and removed them to gain a sample of the scabbing on the pipe. The ten chosen were an attempt to appropriately represent the different orientations of the features. Part of the assessment process is to quickly perform shear wave ultrasonic inspection of the indications to be removed to confirm that no internal or subsurface indications lay under the feature to be removed. Most of these features were not deep, and removed before 10% wall loss.

Upon inspection of Feature labeled "OI: 23" sub surface indications were located with shear wave. Due to this this feature has not been removed and further investigation needs to be performed, however at this moment it seems that there are indications 2.4mm deep and 4.7mm deep that run parallel to the external indication, but not quite for the whole length of the indication.

OI:23
AS:100
AE:148
CS:380
CE:411
AW:7.8mm
When this indication was inspected with A 45° and 70° shear wave inspection the sub surface indications were not prevalent, and likely the shape of the mill scab was causing mode conversion in the 60° angle. Technicians still did not feel comfortable grinding into this feature. A soap test was performed on this indication and proved that no leakage was present.
The upstream girth weld is also not a very clean weld including porosity throughout the weld. This porosity is acceptable, but should be noted.

Issues regarding feature OI:23 is its proximity to the upstream girthweld that is not fully exposed. If it is decided that this feature is required to be repaired then sleeving seems to be the most practical solution, however this cannot be done until the concrete surrounding the bottom of the pipe needs to be removed.

NDE Information

NDE Vendor: Acuren group Inc
Technician 1: Kurt Arnold
Assessment Start Date: Thurs. May 24 2018
Technician 2: Nick Weber
Assessment End Date: Tuesday May 29 2019
Technician 3: Sean Peltie

CS 515

CE 530

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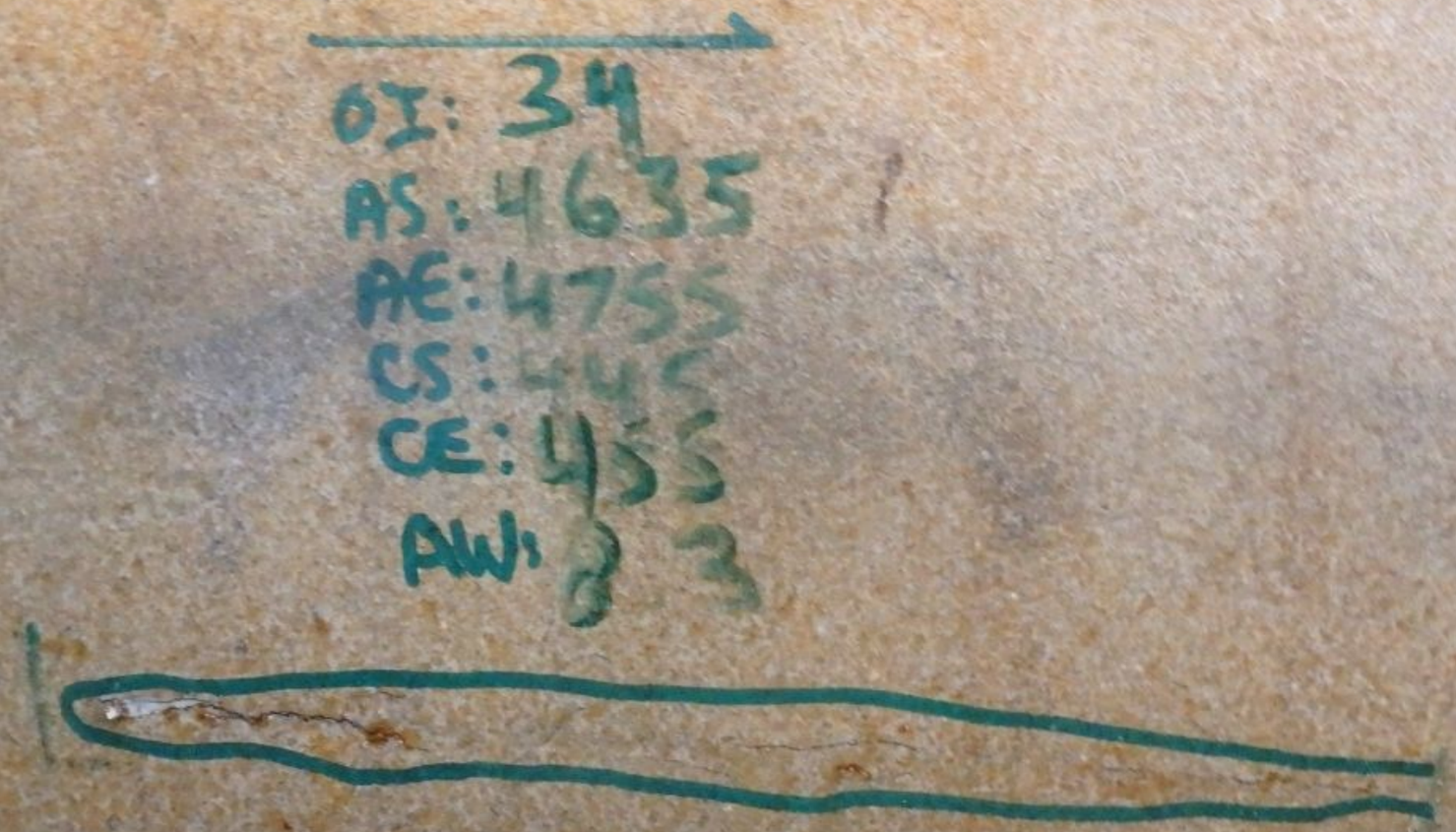

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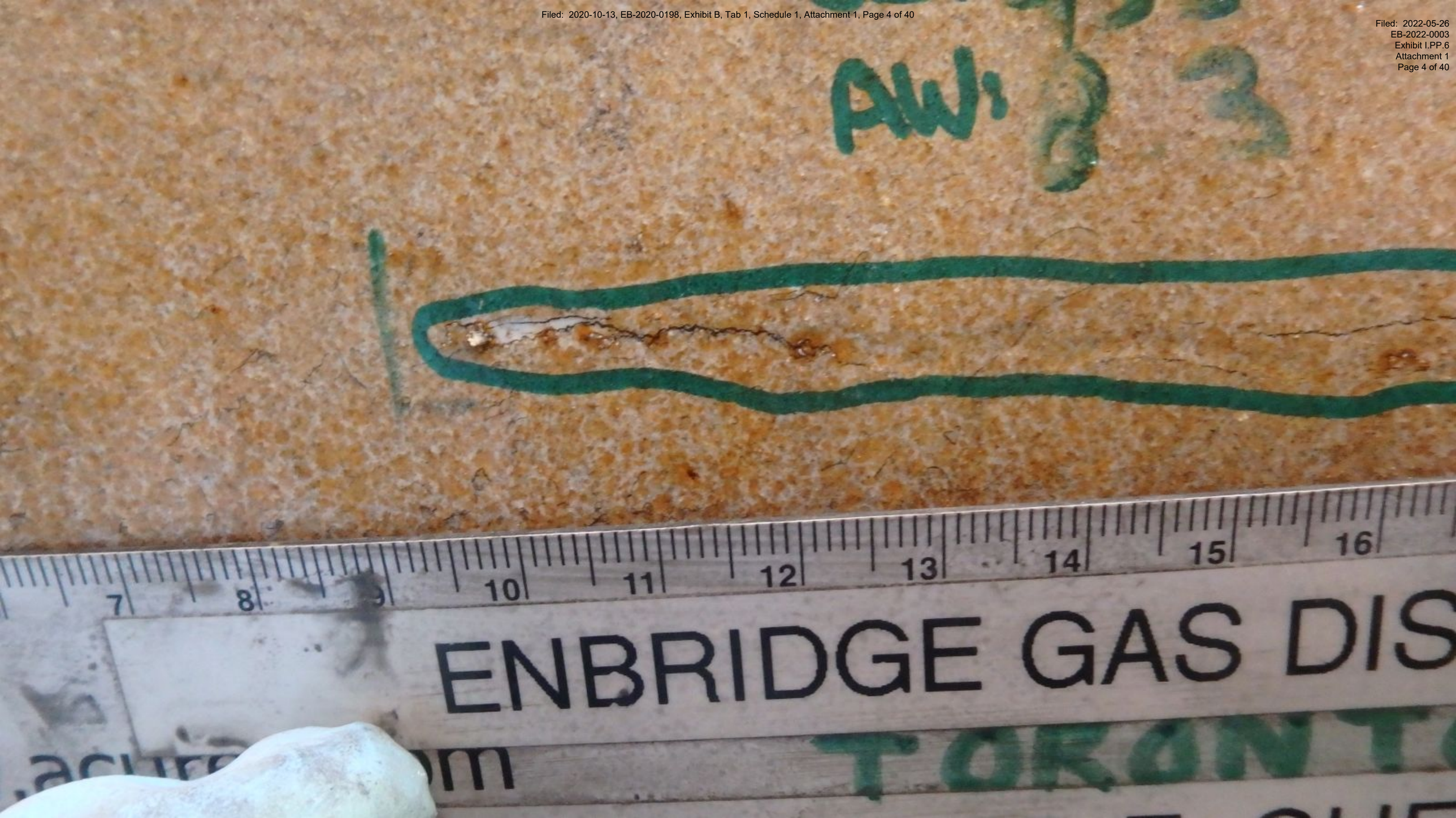
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MILL SCAB
OI: 35
AS: 10746
AE: 10849
CS: 1535
CE: 1550
AW: 8.04


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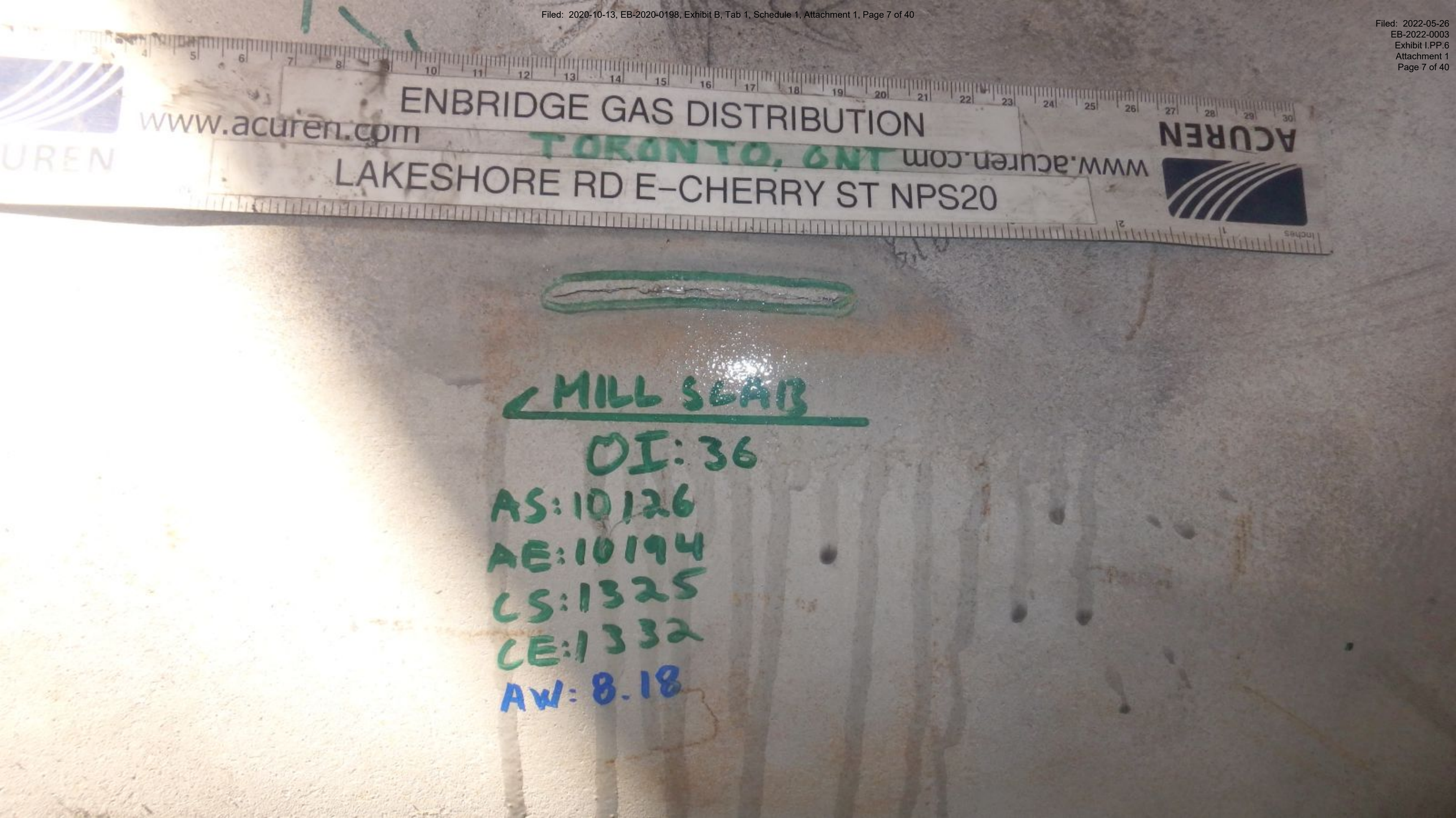
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MILL SCAB
OI: 36
AS: 10126
AE: 10194
CS: 1325
CE: 1332
AW: 8.18


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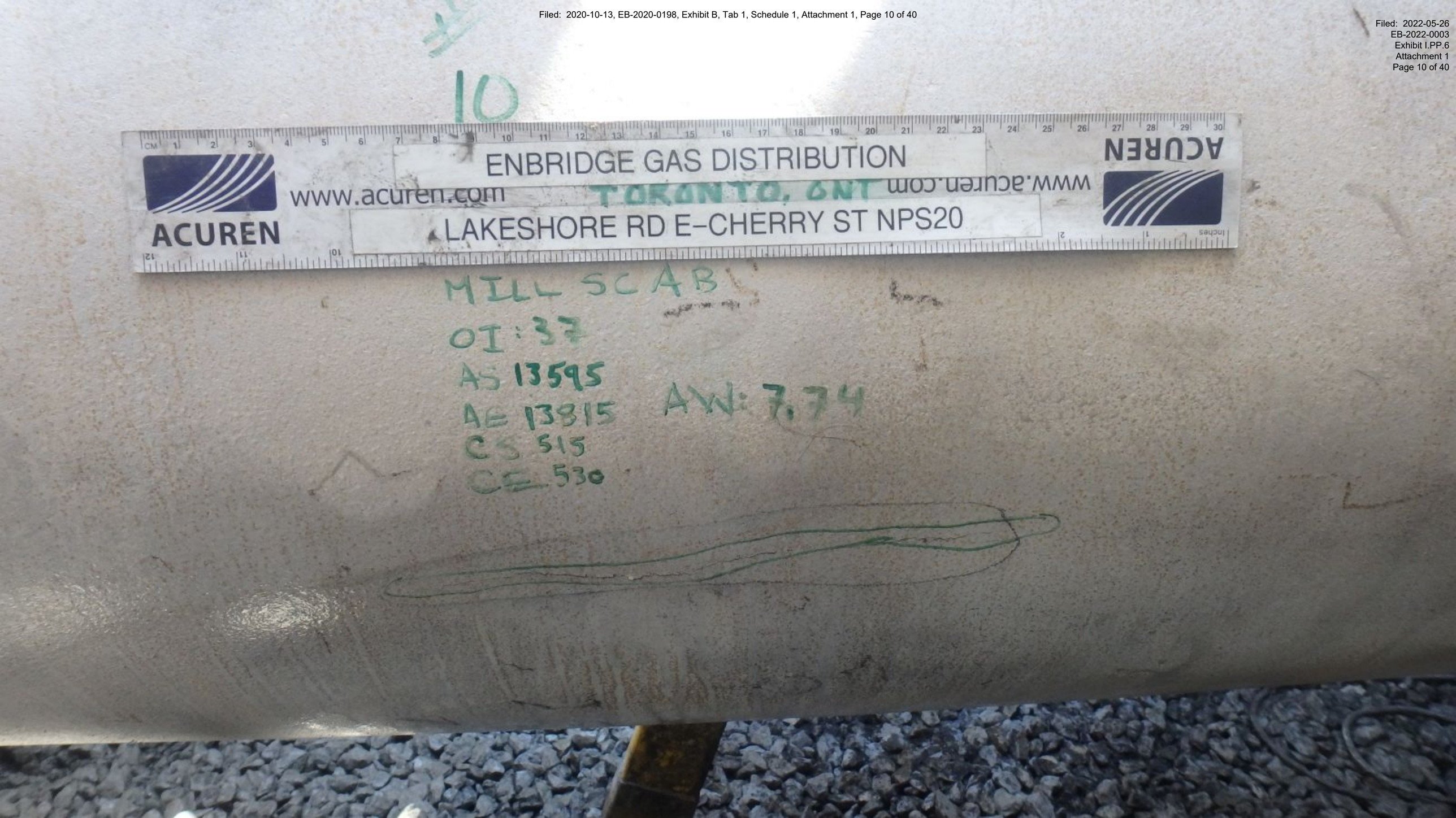
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MILL SCAB
OI: 37
AS 13595
AE 13315
AW: 7.74
CS 515
CE 530


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REF GW 02 -
Mill scAR
OI 03
AS: -1838mm
AE: 1808 mm
CS: 0mm
CE: 30mm
AW: 7.85mm

(OI:05)

GF:01
AS: -1766
AE: -1594
CS: 36
CE: 187
AW: 7.95
RW: 7.2

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#1
CF: 02 → (OI: 07)
AS: -1194
AE: -943
CS: 32
CE: 166
AW: 8.0
RW: 7.2
REF GW 02
MILL SCAB →
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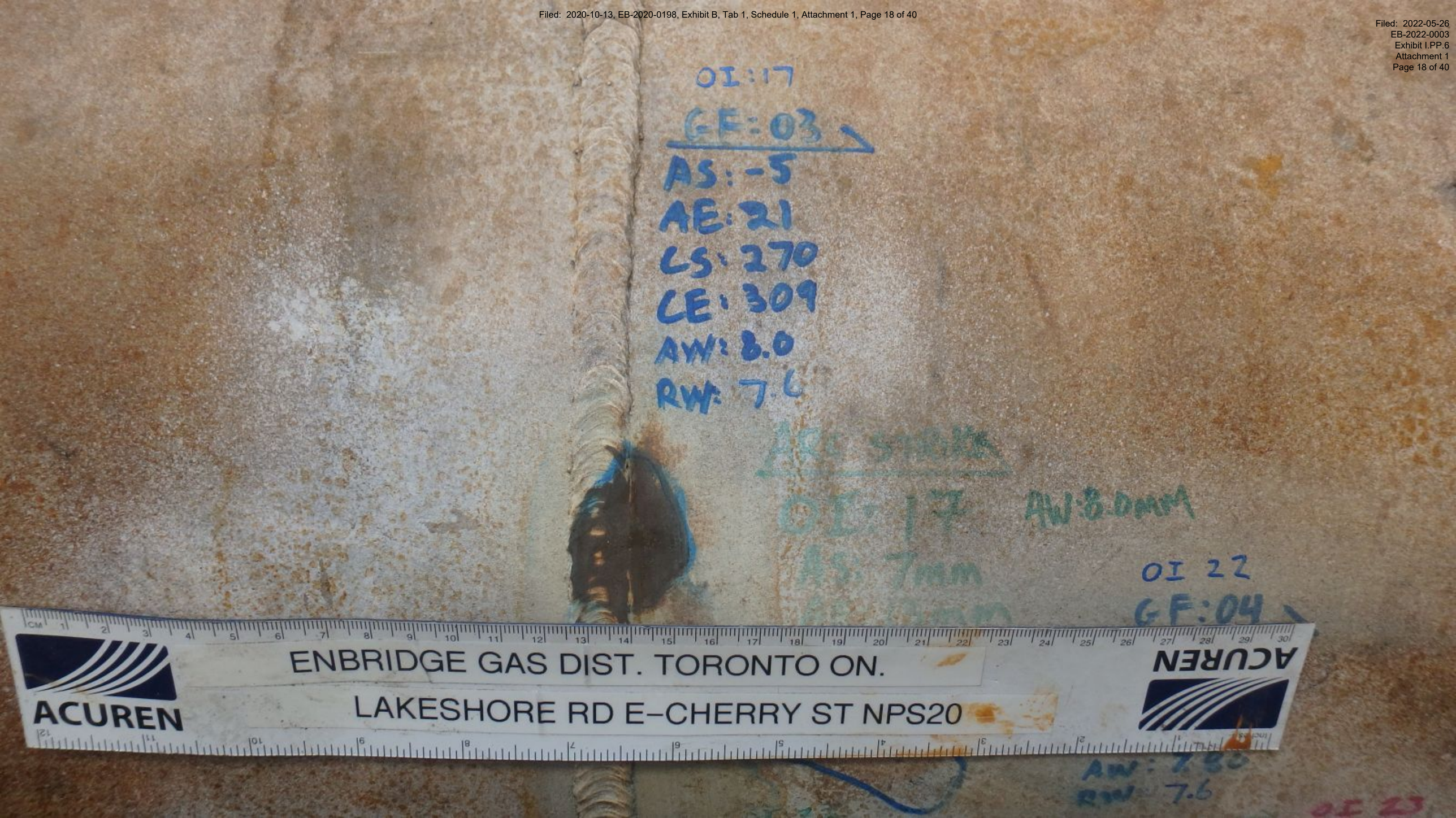
LAKESHORE RD E-CHERRY ST NPS20
ACUREN


OI:17
GF:03
AS:-5
AE:21
CS:270
CE:309
AW:8.0
RW:7.6
OI:17
AS:7mm
AW:8.0mm
OI 22
GF:04
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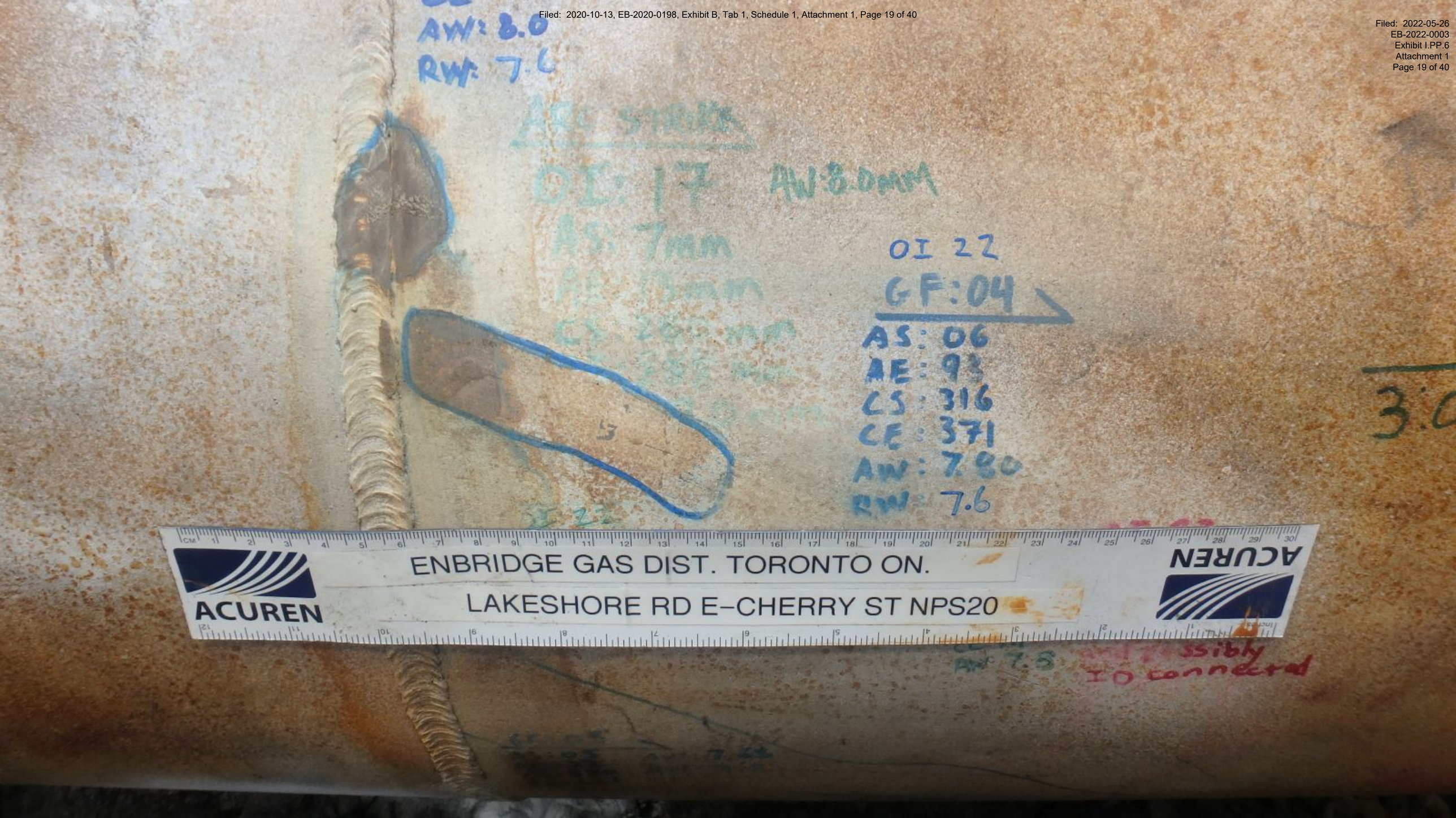
ACUREN
AW:7.8
RW:7.6


AW: 8.0
RW: 7.6
OI: 17
AW: 8.0mm
AS: 7mm
OI 22
GF: 04
AS: 06
AE: 93
CS: 316
CE: 371
AW: 7.80
RW: 7.6
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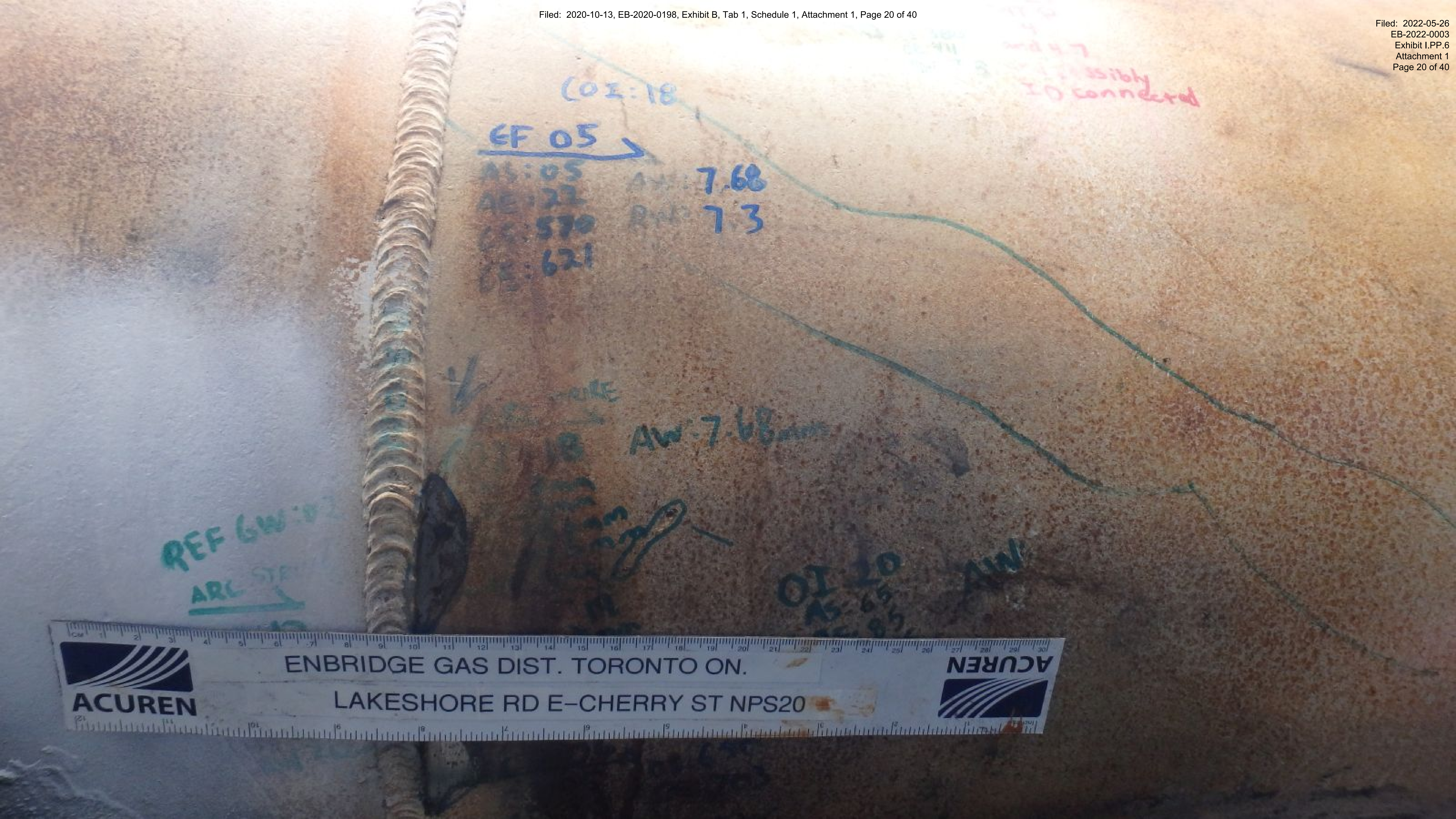
RW 7.5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EF 05
7.68
7.3
REF GW
AW: 7.68mm
OI 20


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GF: 08
AS: 7 OI 21
AE: 33
CS: 1550
CE: 1585
AW: 8.28
RW: 7.8

ARC STE
OI: 21
AS: 13mm
AE: 19mm
CS: 1562mm
CE: 1571mm
AW: 8.28mm

GF 07
AS: -30 OI: 12
AE: -8
CS: 1545
CE: 1580
AW: 8.98
RW: 7.8

OI 12
AS: -24mm
AE: -9mm
CS: 1558mm
CE: 1571mm
AW: 8.98mm

ENBRIDGE GAS DIST. TORONTO ON.
LAKESHORE RD E–CHERRY ST NPS20
ACUREN

GF 09 01 15/14

AS-30
AE:04
CS:1305
CE:1370

AW:8.45
RV:7.7

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LAKESHORE RD E-CHERRY ST NPS20
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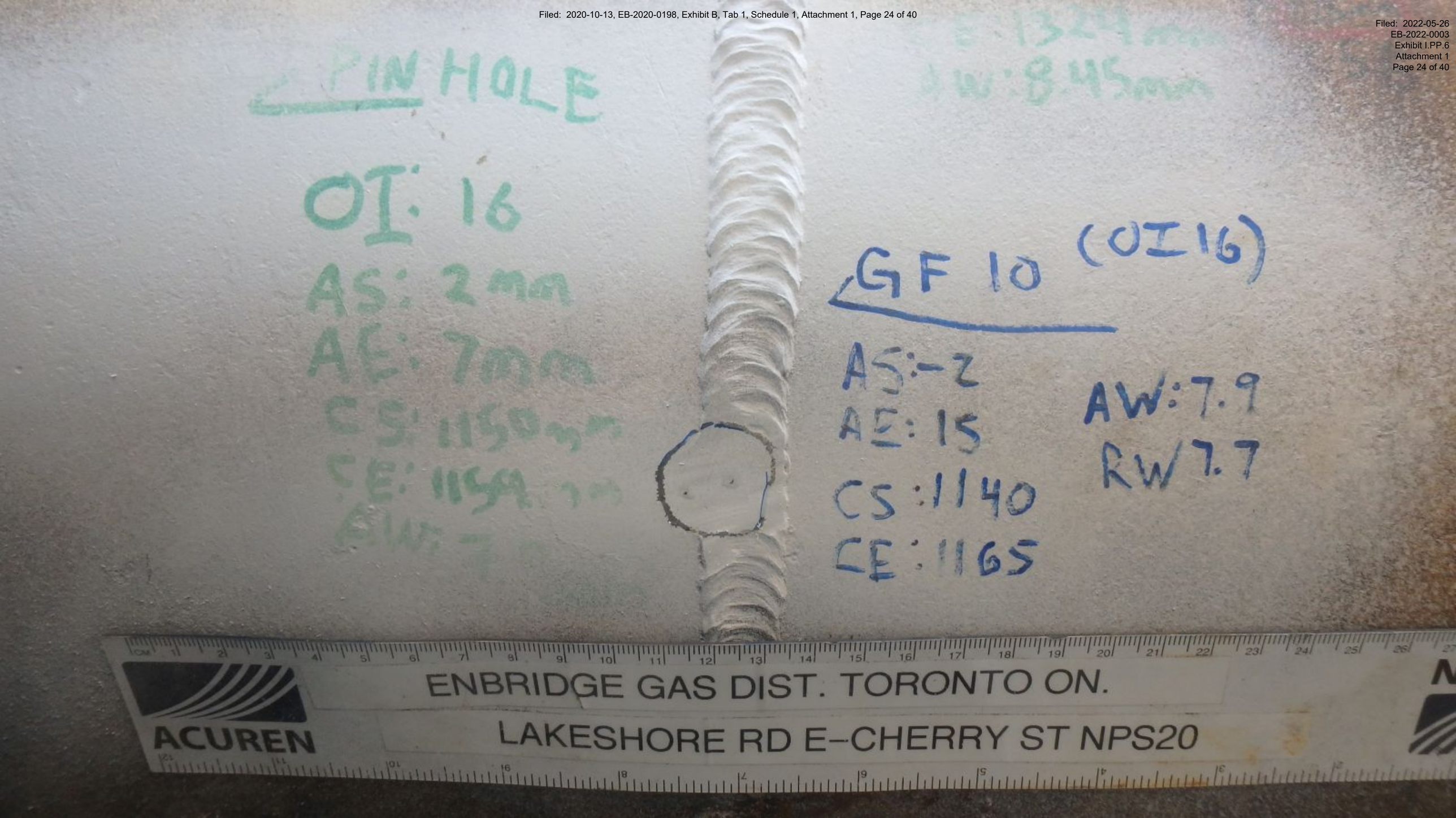
PIN HOLE
OI: 16
AS: 2 mm
AE: 7mm
CS: 1150
CE: 1154
GF 10 (OI 16)
AS: -2
AE: 15
CS: 1140
CE: 1165
AW: 7.9
RW 7.7
ENBRIDGE GAS DIST. TORONTO ON.
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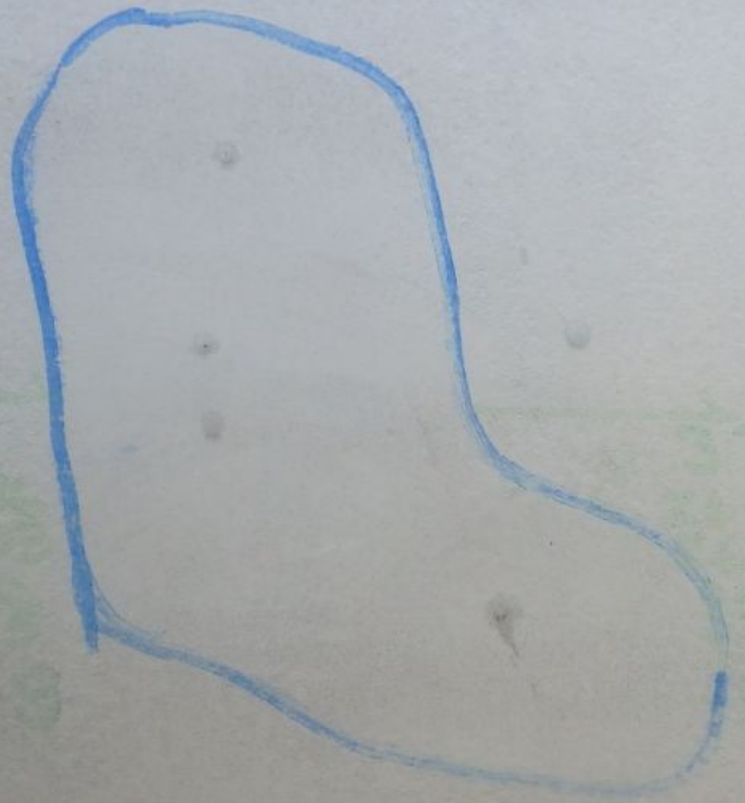

OI 32/33

GF: 11

AS: 2570
AE 2665
CS: 283
CE 388
AW: 7.70
RW: 7.5

7.80

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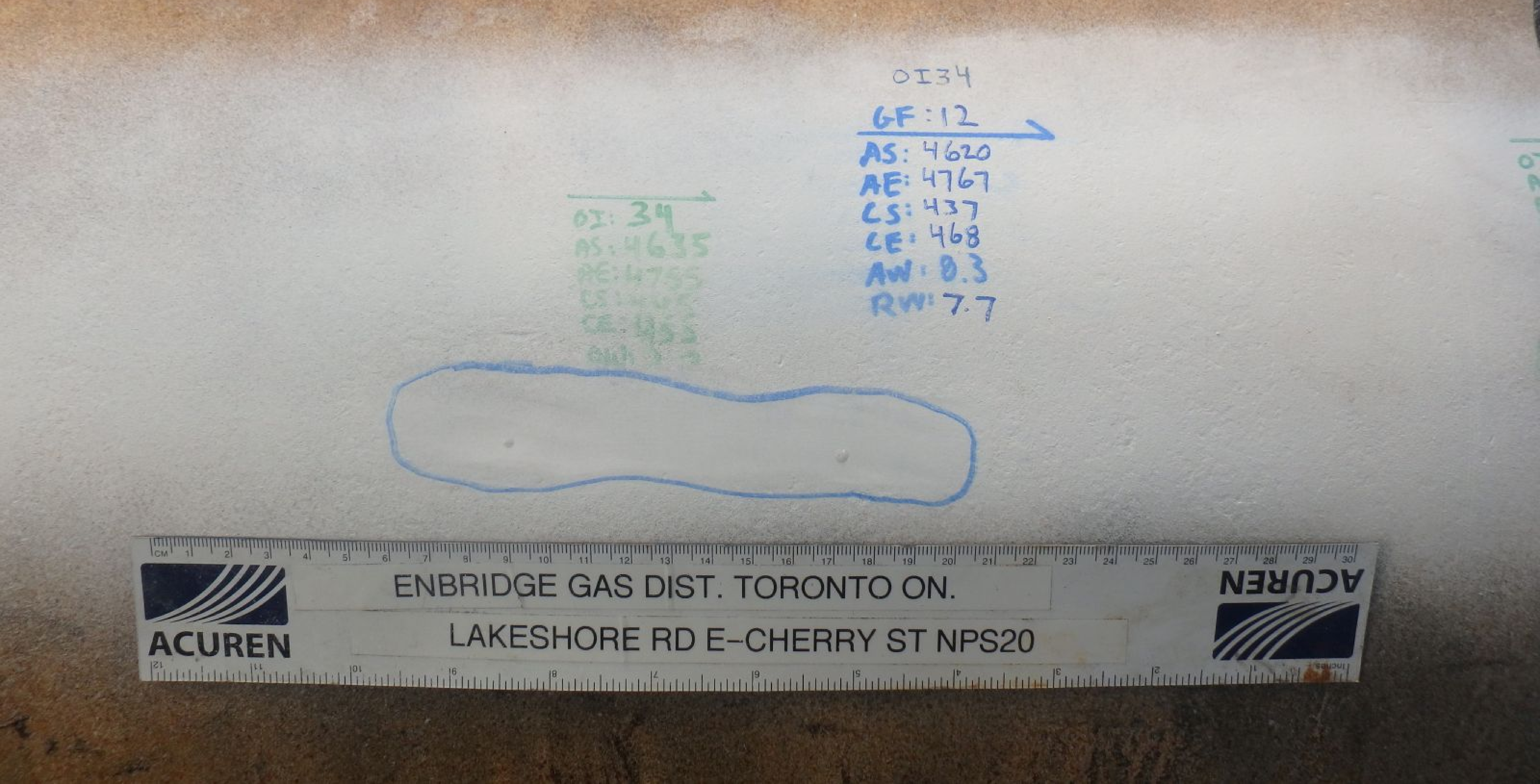
OI34
GF:12
AS: 4620
AE: 4767
CS: 437
CE: 468
AW: 8.3
RW: 7.7
OI: 34
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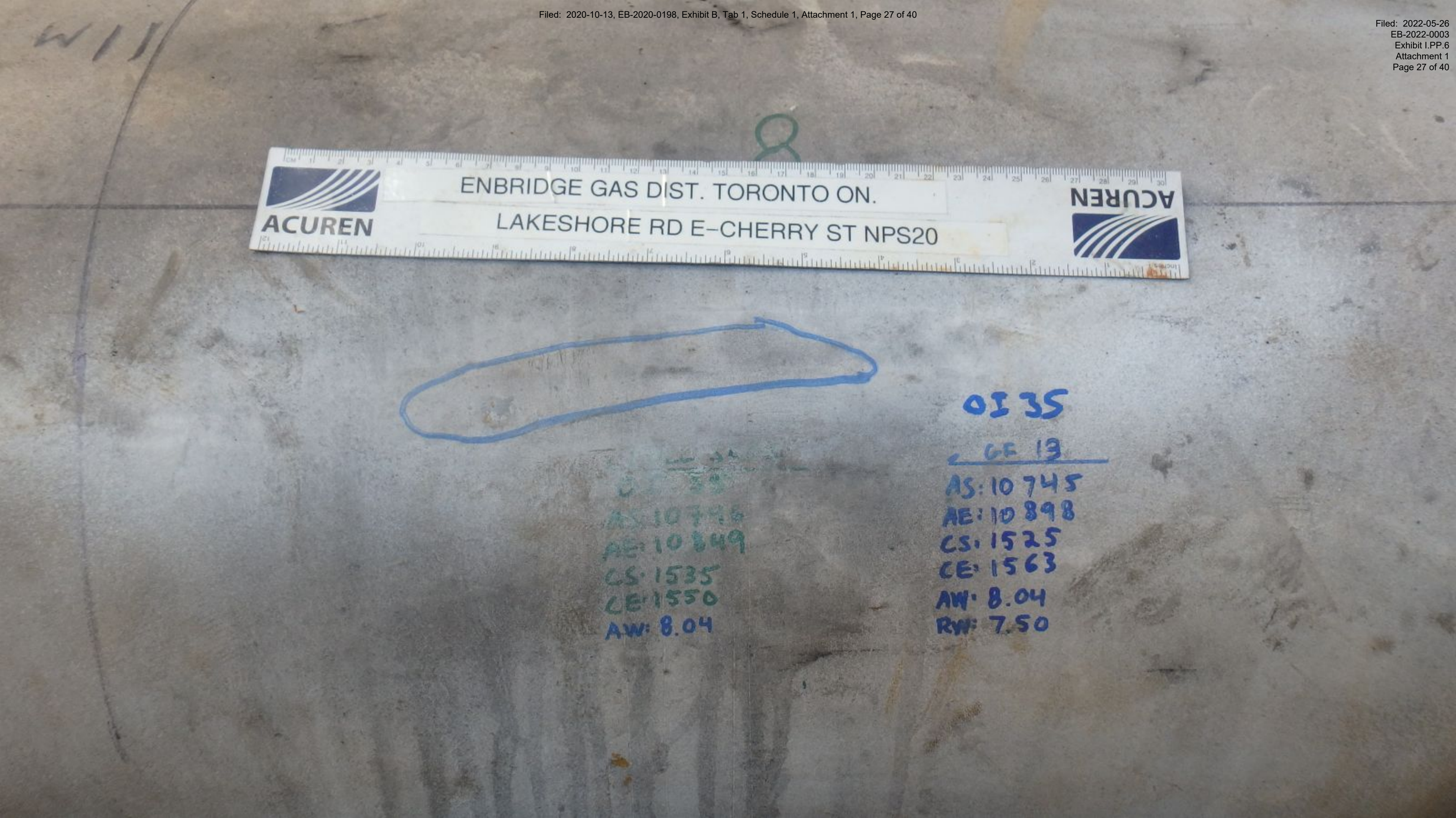
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LAKESHORE RD E–CHERRY ST NPS20
ACUREN
ACUREN
OI 35
CE 13
AS: 10745
AE: 10898
CS: 1525
CE: 1563
AW: 8.04
RW: 7.50
AS: 10746
AE: 10849
CS: 1535
CE: 1550
AW: 8.04

OI 36

14

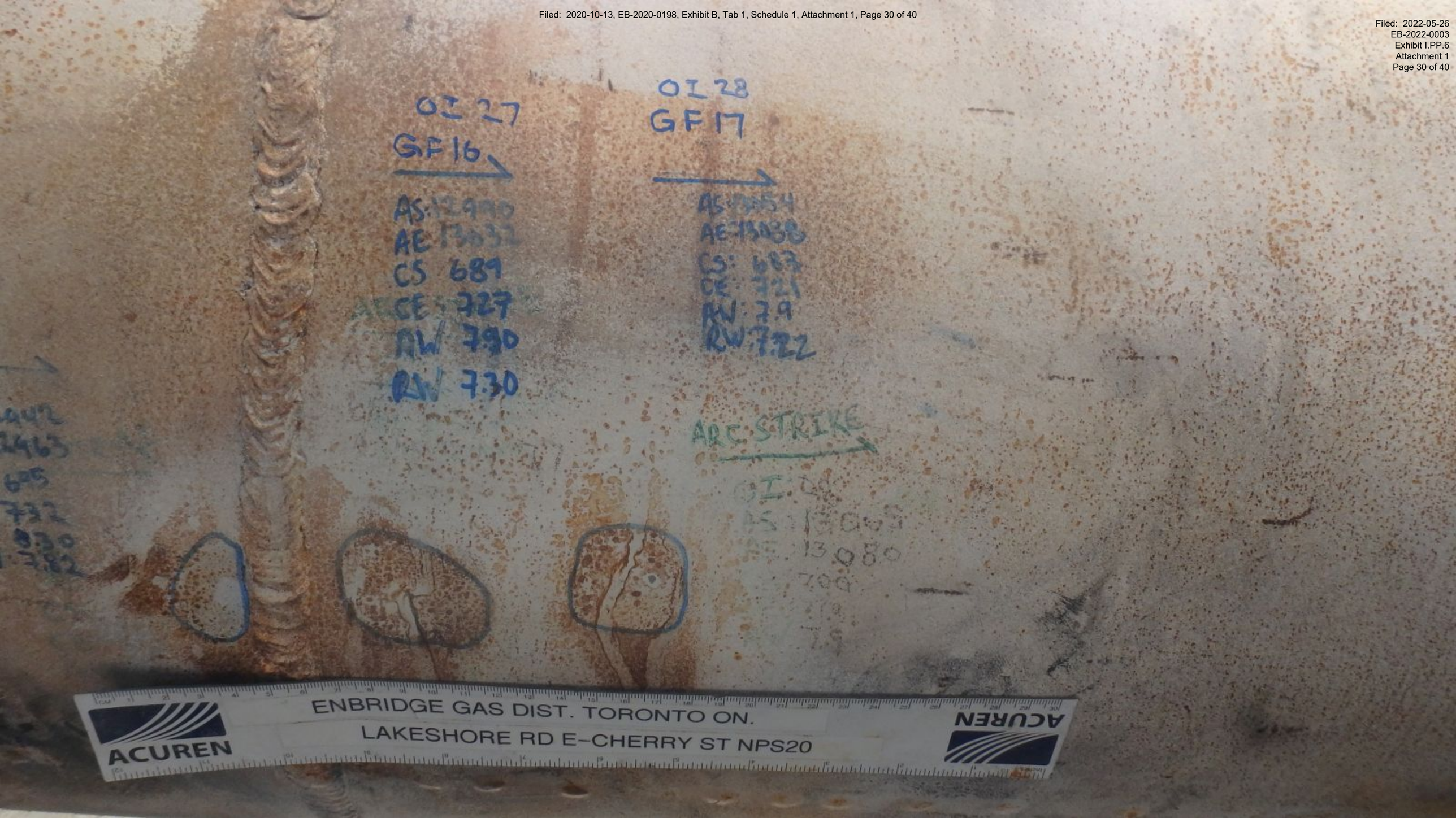
AS: 10070
AE: 10215
CS: 1310
CE: 1345
AW: 8.18
RW: 760

AS: 10136
AE: 10194
CS: 1325
CE: 1332
AW: 8.18

STRIKE

GF - 15

AS: 12977
AE: 12990
CS: 302
CE: 320
AW: 7.9
RW: 7.20


OI 27
GF16
AS:12980
AE 13632
CS 689
CE 727
AW 790
RW 730
OI 28
GF17
AS 13854
AE 13838
CS: 687
CE: 721
AW 79
RW 722
ARC STRIKE
ENBRIDGE GAS DIST. TORONTO ON.
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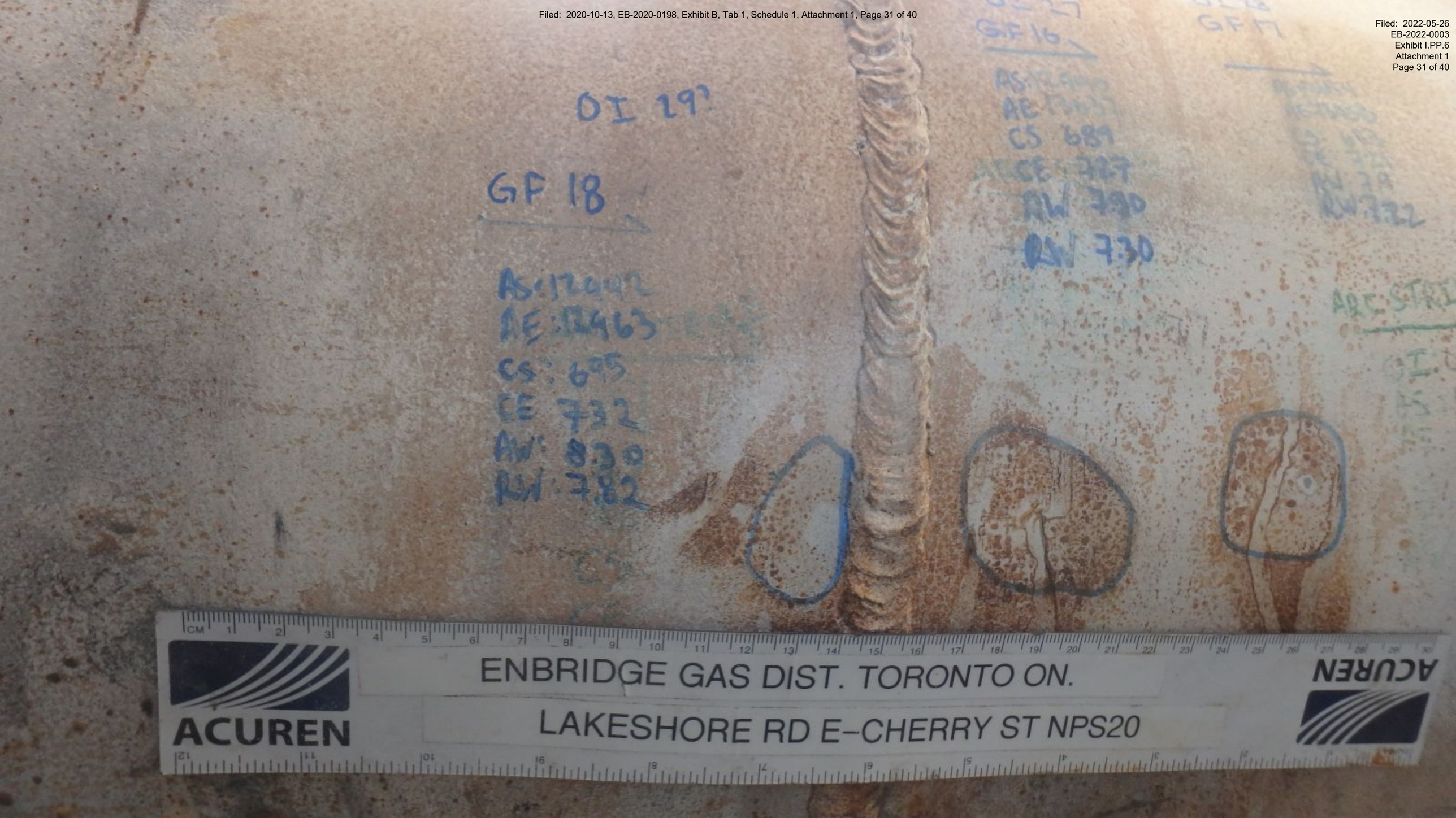
DI 19
GF 18
AS:12492
AE:12463
CS: 695
CE 732
AW: 830
RW: 782
GF 16
CS 689
RW 730
RW 722
ENBRIDGE GAS DIST. TORONTO ON.
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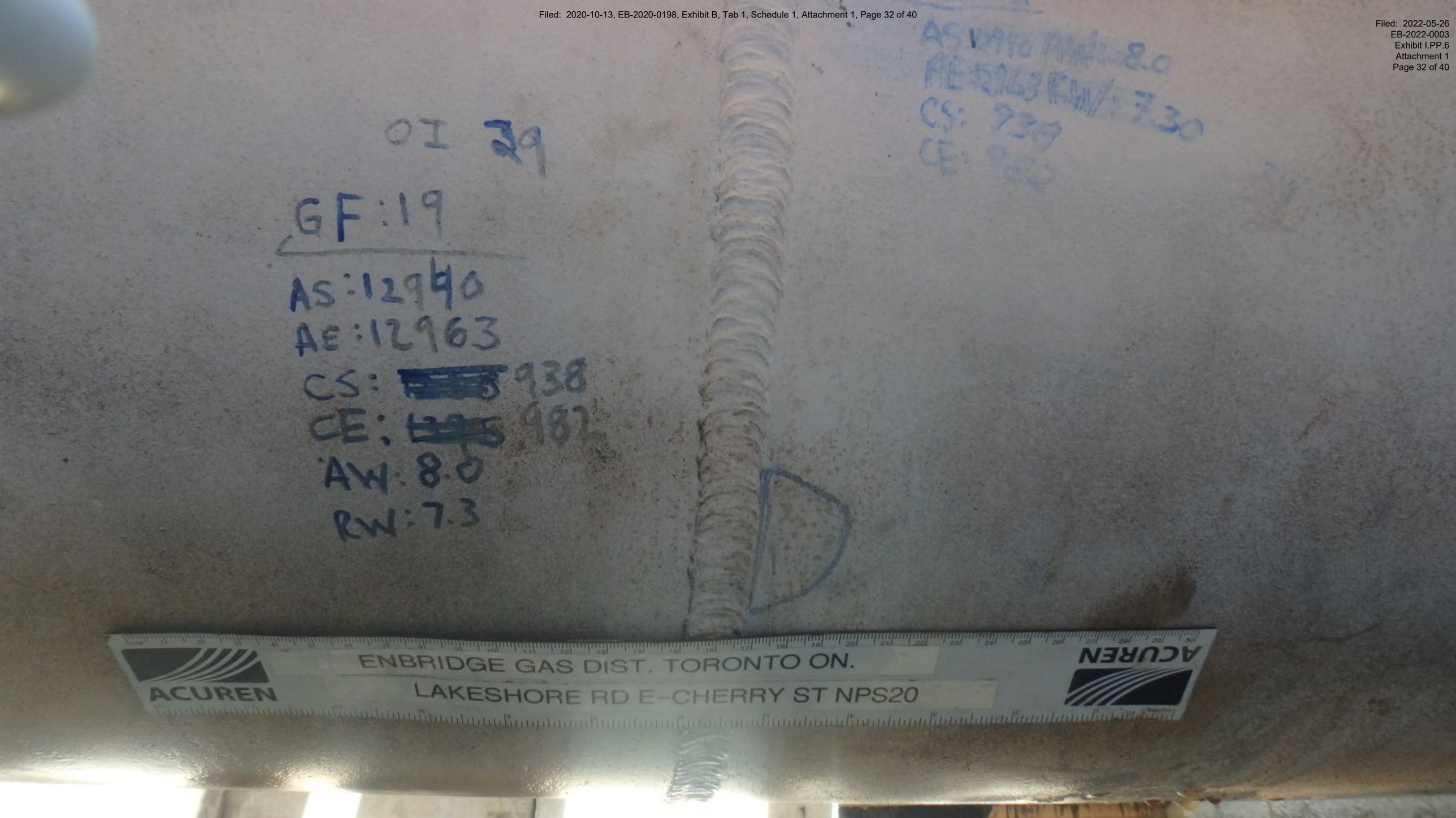
ACUREN


OI 29
GF:19
AS:12940
AE:12963
CS: 938
CE: 982
AW: 8.0
RW: 7.3
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LAKESHORE RD E-CHERRY ST NPS20
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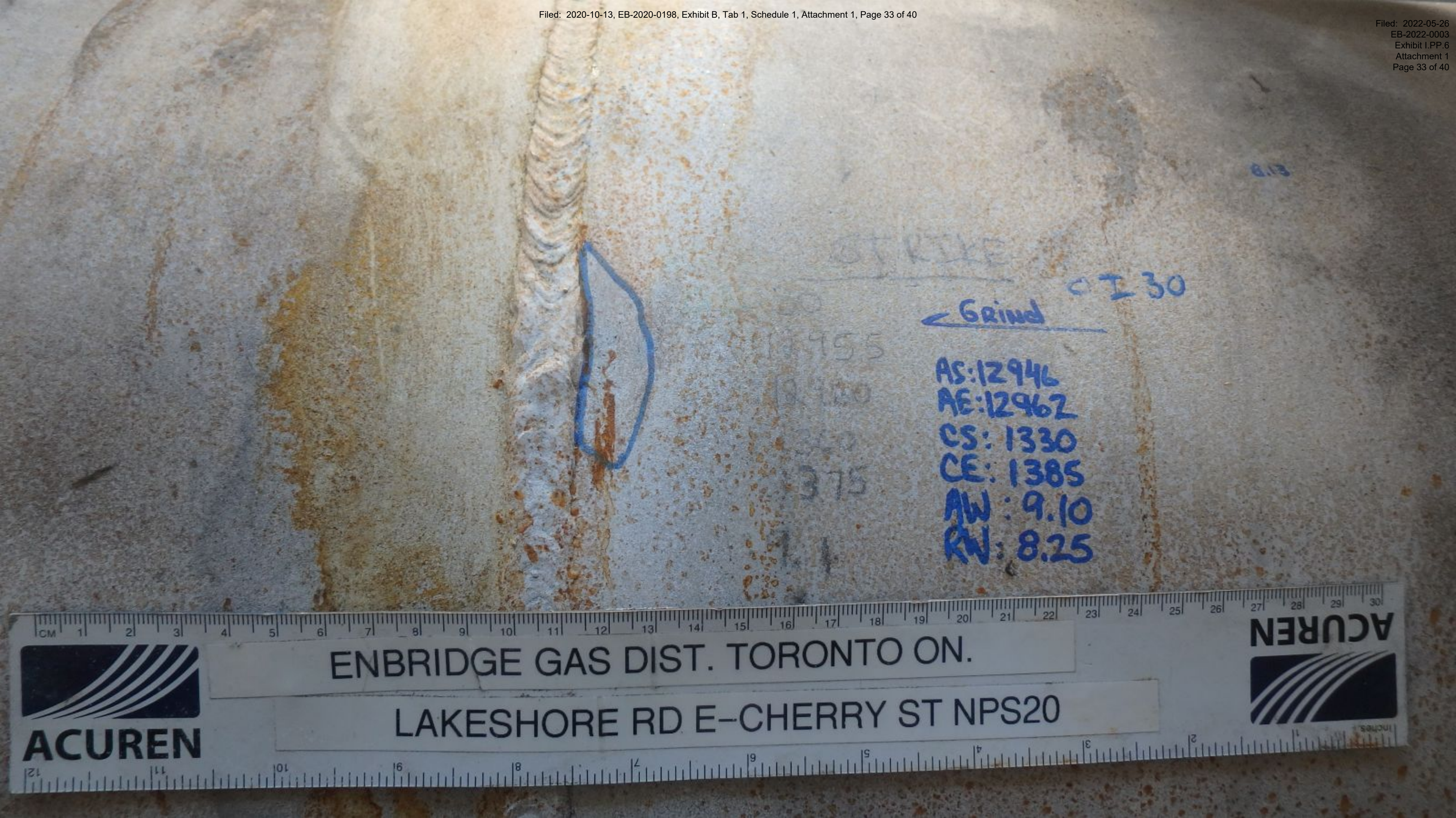
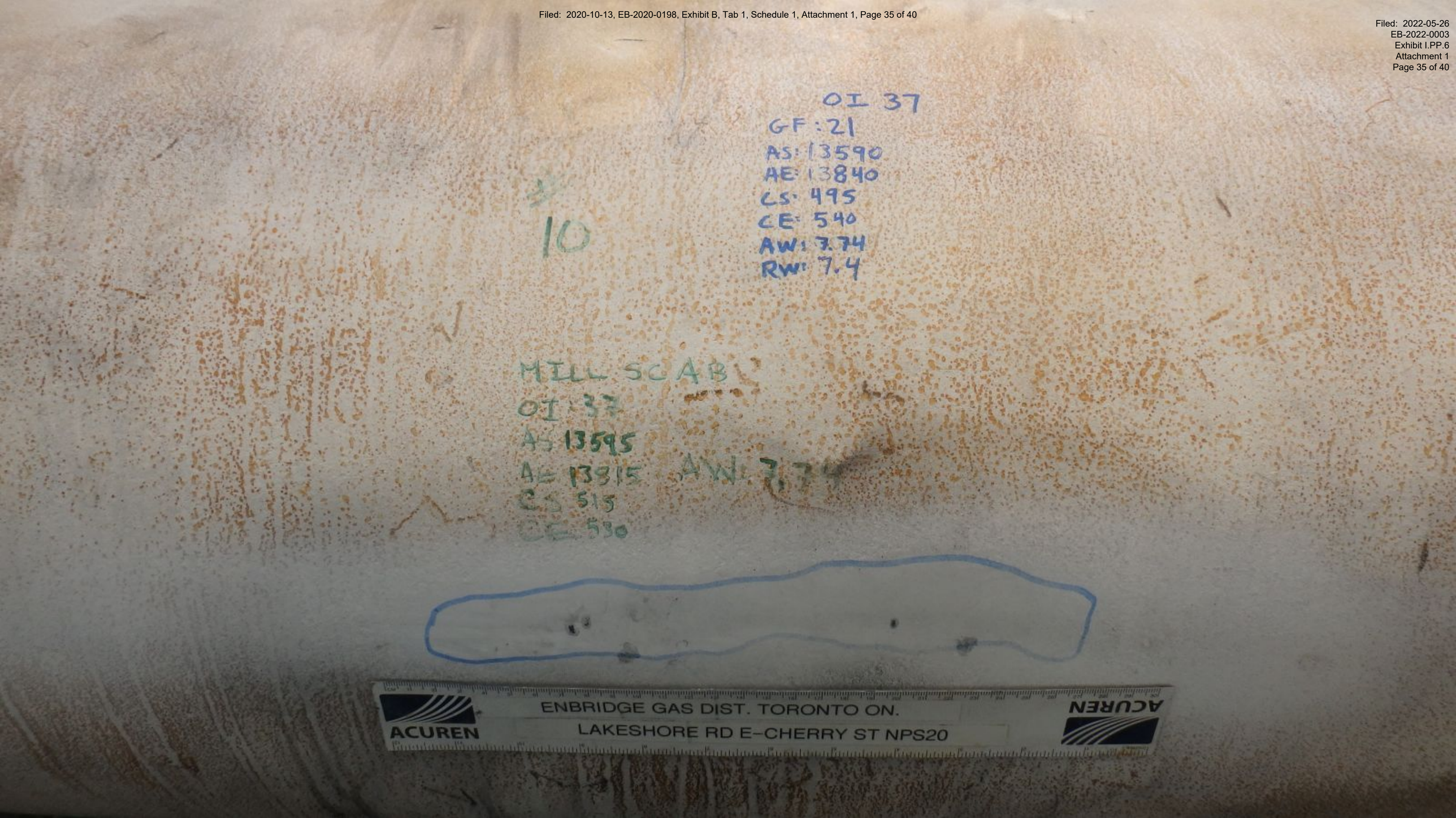

8.13
STRIKE
CI 30
Grind
AS:12946
AE:12962
CS: 1330
CE: 1385
AW : 9.10
RW: 8.25
ENBRIDGE GAS DIST. TORONTO ON.
LAKESHORE RD E-CHERRY ST NPS20
ACUREN
ACUREN


AS:
AE:
CS:
CE:
AW:
RW:
OI31
GR 20
AS: 12980
AE 13005
CS: 1569
CE: 3
AW: 7.9
RW: 7.0
ENBRIDGE GAS DIST. TORONTO ON.
LAKESHORE RD E-CHERRY ST NPS2
ACUREN
ACUREN


OI 37
GF: 21
AS: 13590
AE: 13840
CS: 495
CE: 540
AW: 7.74
RW: 7.4
10
MILL SCAB
OI: 37
AS: 13595
AE: 13915
CS 515
CE 530
AW: 7.74
ENBRIDGE GAS DIST. TORONTO ON.
LAKESHORE RD E-CHERRY ST NPS20
ACUREN
ACUREN

END of NDE

14.70m

From GW #2

ENBRIDGE GAS DIST. TORONTO ON.

LAKESHORE RD E–CHERRY ST NPS20

ACUREN

ACUREN

AS:
AE:
CS:
CE:
AW:
RW:

GWD #3
@ 12970

ACUREN

ENBRIDGE GAS DIST. TORONTO ON.

LAKESHORE RD E–CHERRY ST NPS20

REF GW:02

9:00

COR:01

AS:- 134mm AW:8.60mm
AE:- 123mm RW 7.25
CS: 1266mm
CE: 1325mm

ENBRIDGE GAS DIST. TORONTO ON.

LAKESHORE RD E–CHERRY ST NPS20

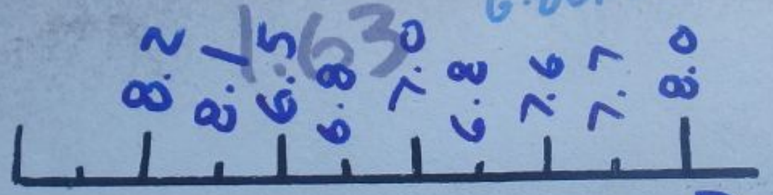
ACUREN

AS:-2
AE: 15
CS:1140
CE:1165
AW:7.9
RW7.7

MILL SCAB

O.I:
AS: 610 mm
AE: 667 mm
CS: 1553 mm
CE: 1561 mm
AW: 7.9 mm

COR: 02
AS: 355mm
AE: 427 mm
CS: 1518mm
CE: 1567mm
AW: 8.28 mm
RW: 6.50mm



COR 02
WT PROFILE

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LAKESHORE RD E–CHERRY ST NPS20

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7.5 6.55 7.3 7.4 7.1 7.0 6.7 6.25 6.7 6.6 6.2 7.2 7.7

COR 3
UT PROFILE

1.30mm

START
@1155

COR:03

6.25mm

6.56mm

1.1mm

6.20

1.38mm

AS:1155
AE:1270
CS:1250
CE:1350
AW:7.7
RW:6.2

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PIPELINE INTEGRITY REPORT

NPS 20 IN KOL LINE

EXPLORATORY EXCAVATION

APRIL 2011

ACUREN

NPS 20 in KOL - Dig #4

Dig ID: Exploratory Excavation

Date: April 6, 2011

This inspection took place at a site located west of the intersection of Lake Shore and Don Valley Parkway in Toronto ON.

The location for this excavation was selected by EGD, at the approximate GPS coordinates shown in the diagram. The scope of work included external manual corrosion mapping, magnetic particle inspection and ultrasonic inspection of exposed areas as per SCHULE C dated Nov 5, 2010 to the Acuren agreement.

A total of 900 mm of pipe were exposed and sandblasted, no girth weld was noted. No long seam weld was noted.
Water was constantly flowing onto the excavation. Per environmental requirements this water had to be extracted and disposed of at a separate facility which limited the amount of time available for any activity once in the excavation. The time limit being that required to fill the hydro vacuum truck.

Findings:

- Per visual observations of the Enbridge Gas crew the pipe coating showed evidence of a few small holidays, with buildup of a white powdery substance that resembled calcium carbonate.

-The exposed pipe did not show any evidence of external corrosion. As shown in the photographs, the surface of the pipe appeared in very good condition. The pipe wall thickness was found to range from 7.7 mm to 8.3 mm. We were unable to locate the long seam weld, this coupled with the smooth variation in WT could indicate that the pipe is seamless.

- Ultrasonic inspection of all the cleaned areas did not show any evidence of laminations, inclusions or internal metal loss.

-Magnetic particle inspection of the top half of the pipe did not show any OD connected indications. There were no indications of cracking at the surface of the pipe or SCC.

- Visual inspection did not revealed any external features.

At this point no further inspection or action is required at this site.

ACUREN

Pipeline Integrity Field Inspection Report
NPS 20 in KOL - Dig #4
Exploratory Excavation

Client: Enbridge Gas Distribut
Date: April 6, 2011
Ref Girth Weld: Unknown

Work Request # _____ **PO #** _____

Basic Information

Reference Girth Weld #: N/A
Reference Girth Weld ODO: N/A

Pipe Information

Line #: NPS 20 in KOL
Line Diameter (mm): 508.0
Weld Seam Type: Unknown
Nominal Pipewall Thickness (mm): 7.92
Actual Pipewall Thickness (mm): 7.80
Dig # 4

ILI Dig Information

Type of ILI Tool: No ILI info
ILI Inspection Date: N/A
Tool Vendor: N/A
Reason for Excavation: N/A

Location Information

Site	Feature	GPS Coordinates		Elevation (Geodetic)
		N	W	
4	Approx site location	43.65309 º	79.34419 º	

Above Ground Marker: N/A
Distance from AGM to GW (m): N/A
GW is U/S or D/S to AGM: N/A

Excavation Information

Start of NDE to Reference Point (m): N/A
End of NDE to Reference Point (m): N/A
Depth of Cover (m): 1.40
Excavation Length (m): 3.50
Excavation Width (m): 2.50

GW Number Exposed	Joint Length (m)	Type of Joint Exposure	Longseam Orientation (Clock Position)	Method of detecting the LS weld
N/A	N/A	Partial	Not Found	UT

Technician 1: Guillermo Solano
GSolano
Signature

Technician 2: _____
Signature

Pipe Pressure at Time of Inspection (PSI): N/A
Structure to electrolyte potential (on) N/A

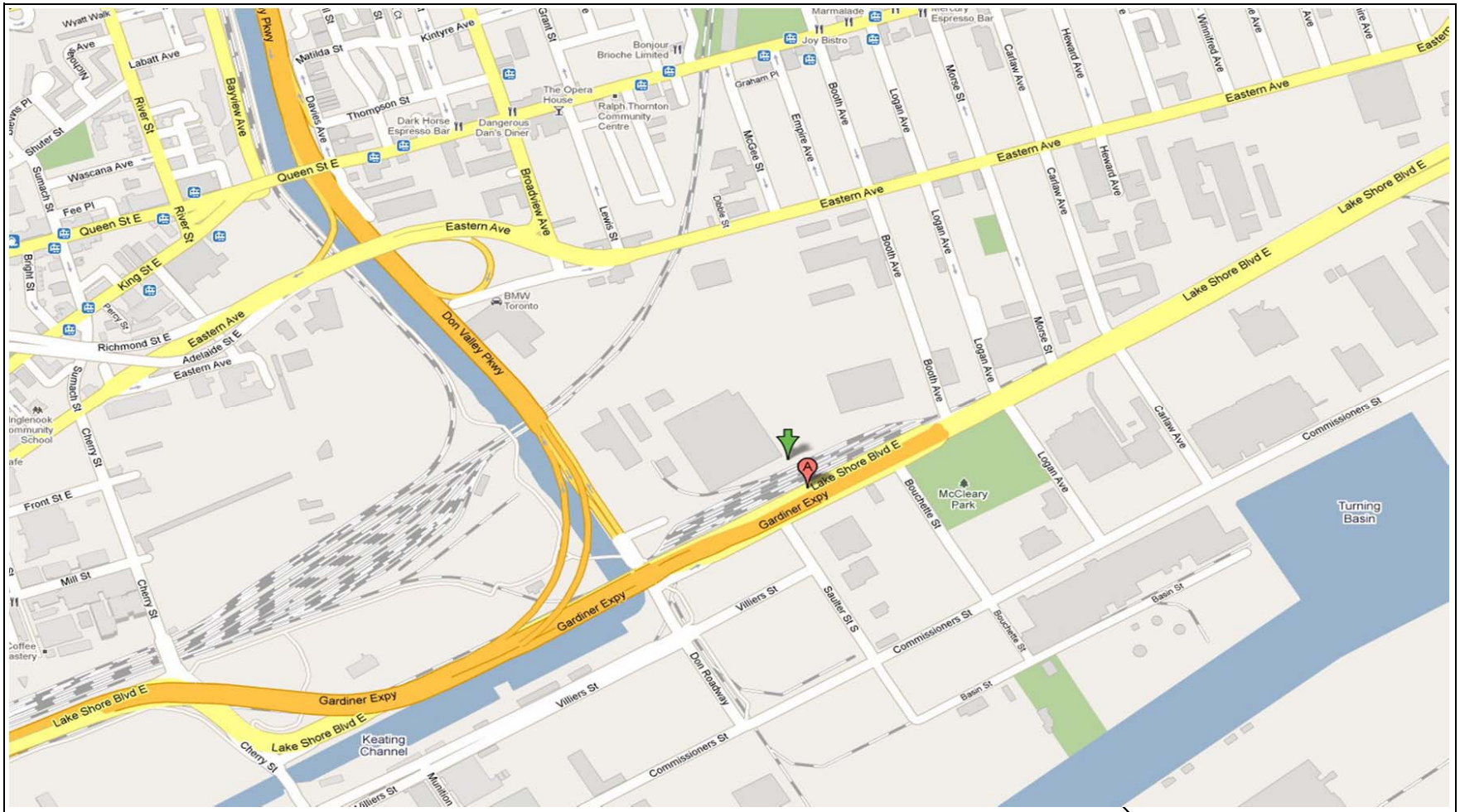
Method of MPI: Color Contrast - Water Based

ACUREN

Site Diagram:

Dig ID: NPS 20 in KOL - Dig #4

Date: April 6, 2011

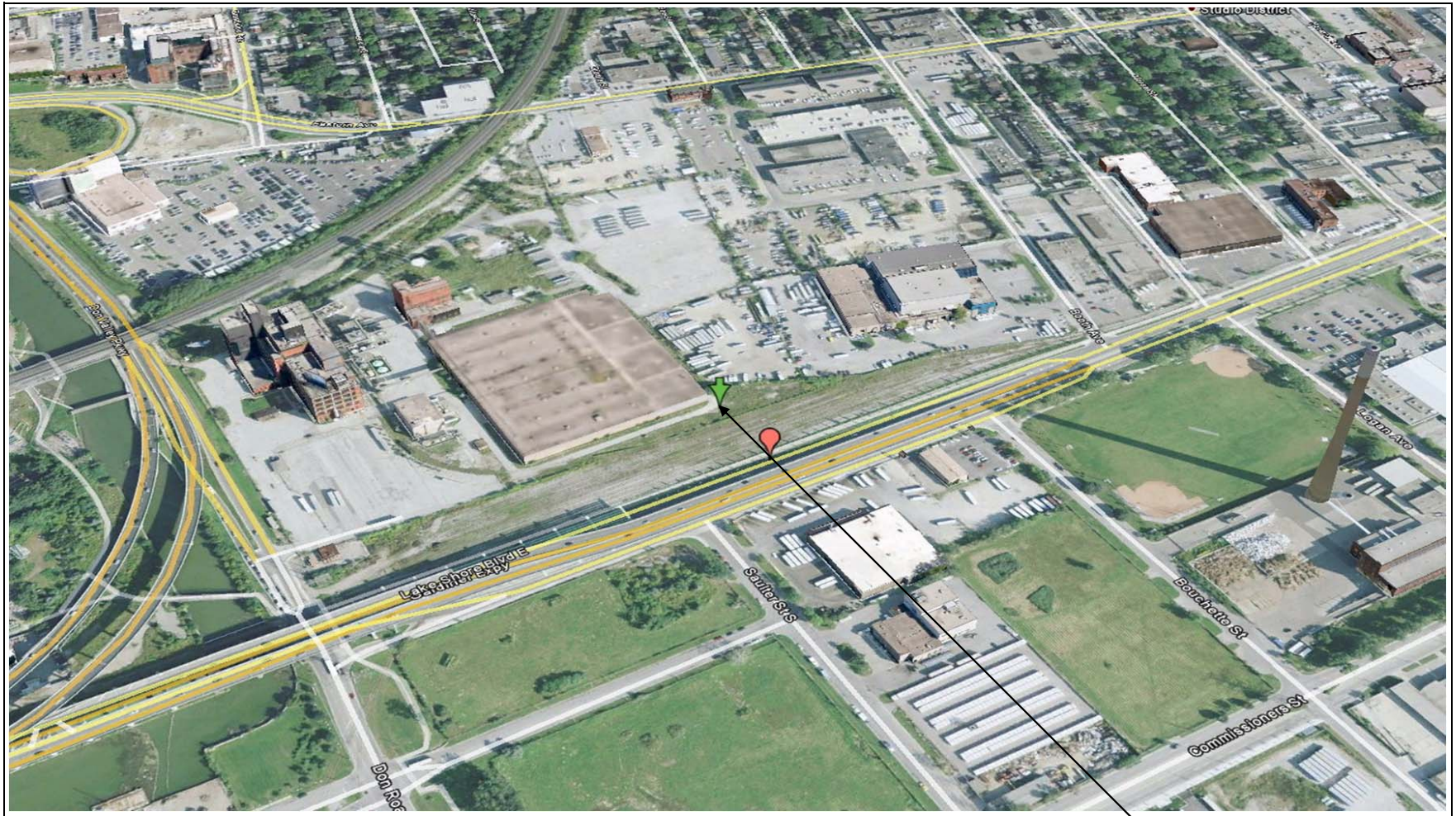


ACUREN

Site Diagram:

Dig ID: NPS 20 in KOL - Dig #4

Date: April 6, 2011



Approximate location of the site

ACUREN

Pipeline Integrity Field Report

NPS 20 in KOL - Dig #4
Exploratory Excavation

Client: Enbridge Gas Distribution
Date: April 6, 2011
Girth Weld: Unknown

Equipment

ULTRASONICS

Scan Type ☑ A ☐ B ☑ Flaw ☑ Thickness ☐ FAST™

Instrument				Type		Frequency (MHz)	Serial #
				Single	*Dual*		
Manufacturer	Krautkramer 52L		0°	☐	☑	7.5 - FH2E	0165H5
Serial #	00R1T8		0°	☑	☐	12 - Pencil	17935
Cal. Due Date	30-Dec-11		60°	☐	☐		
Range	0-12.7 mm thickness		60°	☐	☐		
Transfer Value	0 db			☐	☐		
Cal Block	Step wedge	S/N 08-7966		☐	☐		
Cal Block	Rompas	S/N 2296		☐	☐		
			Other:	☐	☐		
Couplant	Sonoglide Grade 20		Other:	☐	☐		

Scan Type ☐ A ☐ B ☐ Flaw ☐ Thickness ☐ FAST™

Instrument			Transducer	Type		Frequency (MHz)	Serial #
				Single	*Dual*		
Manufacturer				☐	☐		
Serial #				☐	☐		
Cal. Due Date				☐	☐		
Range				☐	☐		
Transfer Value				☐	☐		
Cal Block		S/N		☐	☐		
Cal Block		S/N		☐	☐		
			Other:	☐	☐		
Couplant			Other:	☐	☐		

MAGNETIC PARTICLE

MPI Equipment

Manufacturer	Contour Probe	Type	Yoke B100F	S/N	3085	Cal. Due Date	14-Jun-11
Manufacturer		Type		S/N		Cal. Due Date	
Manufacturer		Type		S/N		Cal. Due Date	
Manufacturer		Type		S/N		Cal. Due Date	
Manufacturer		Type		S/N		Cal. Due Date	
Manufacturer		Type		S/N		Cal. Due Date	

Magnetizing Method ☑ AC or ☐ DC ☑ Continuous or ☐ Residual ☑ Yoke ☐ Coil

	Name	Signature	CGSB Number
Technician	Guillermo Solano	GSolano	11691
Technician			

ENBRIDGE GAS DISTRIBUTION

01 - Site location facing downstream

02 - Exposed areas
NPS 20 in KOL LINE

ENBRIDGE GAS DISTRIBUTION

03 - Pipe found in good condition

TEAM INDUSTRIAL SERVICES PIPELINE INC.

ENBRIDGE GAS DISTRIBUTION INC.

Final Report – NPS 20" Kipling to Oshawa Site #3

TISI DMMS #: DO2297

Pipeline: NPS 20 Kipling to Oshawa
Site: #3
ILI Feature: EML A016, A017, A018, A019
Report Date: December 10th, 2014

Prepared For:

Greg Knopinski, P.Eng
Project Manager, Gas Storage and Transmission System Integrity

Enbridge Gas Distribution Inc.
500 Consumers Road, 5th Floor,
Toronto, ON
M2J 1P8

greg.knopinski@enbridge.com

Prepared By:

Joel Djordjevic
Pipeline Manager – Eastern Canada

781 Westgate Road
Oakville, ON
L6L 6R7

Joel.Djordjevic@TeamInc.com
WO: 50742264
PO: 10931854

TABLE OF CONTENTS

1. INTRODUCTION

TISI (Team Industrial Services Inc.) arrived onsite on December 10th,2014 to perform Assessment of Features EML A016 to A019, Site #2 on the NPS 20" Kipling to Oshawa.

2. SUMMARY OF RESULTS

The ILI corrosion features, A016, 17, 18 and 19, have been combined into one large cluster since they were in close proximity. The cluster measured 350 mm and 254 mm wide. A river bottom grid was used as a guide to measure the remaining wall thicknesses throughout the feature with a UT instrument. The lowest reading for wall thickness was 3.15 mm remaining wall. Magnetic particle inspection was performed on the NDE area, and three manufacturing defects were discovered. The features were removed with light buffing, which did not exceed 10% wall loss. A moldable clock spring was placed on the pipe for preventative measures. The dimensions and location of the clock spring are not present in this report because the information was not provided to us, however picture of the clock spring are present.

2.1 SITE SUMMARY

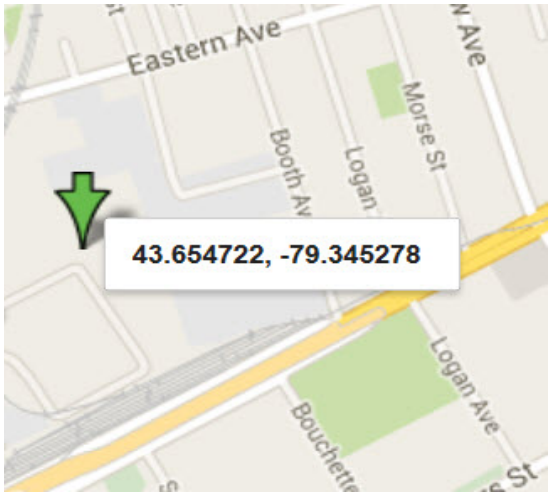


Figure 1: Site Location

Table 1: Site Summary

Type of Excavation:	Validation
Action Item(s):	EML A016, A017, A018, A019
Date of Excavation:	December 5, 2014
Date of Remediation:	December 19, 2014
Type of Remediation:	Moldable clock spring
Total Exposed Pipeline Length (m)	3.75
Depth of Excavation (m)	2.20
Depth from the Surface to T.O.P. (m)	1.2
Total Length of Coating Removed (m)	1.37
Total length of Re-Coat (m)	NP
Total Length of MPI (m)	1.37
Advanced Inspection Method for Feature Identification	UT
Other Inspections/Assessments Performed	MPI
Description of Remediation Activity	Moldable Clockspring

3. PIPELINE DETAILS

Table 2: Pipeline Information

Name	NPS 20 Kipling to Oshawa
Length (km)	NP
Diameter (mm)	508
Nominal Wall Thickness (mm)	7.7
Grade	NP
SMYS %	NP
Longitudinal Seam Type	NA
MAOP (kPa)	NP
MOP (kPa)	NP
Design Factor	N/P
Pipe Manufacturer	N/P
Year of Installation	1962
Date of Last Hydro Test	N/P
Mainline Coating	Coal Tar Enamel
Weld Coating	Coal Tar Enamel
Current Product In the Pipeline	Natural Gas
Past Product	Natural Gas

4. SOIL & LANDSCAPE INFORMATION

Table 3: Site Location

Land Use	R.O.W.
Land Owner	N/P
Legal Description	R.O.W.
Site Position	Level
Topography	Level
Parent Soil	Lacustrine
Soil Texture	Sandy Loam
Soil pH	NA
Soil Temperature (Celsius)	NA
Soil Resistivity (ohms-cm)	957.5
Are Carbonates Present	NA
Field Estimate of CaCO3	NA
Average Pipe to Soil CP (V)	-1.278
Soil Redox Potential (ORP) (mV)	NA
Drainage	Imperfect
Visible Salts	N/A
Gleying	Slightly
Mottling Abundance	Common
Mottling Contrast	Faint
Mottling Size	Fine

5. COATING ASSESSMENT

Coating was removed and the pipe surface was prepared by blasting with a medium to remove all surface features that would have inhibited NDT inspection prior to TISI technicians arriving onsite. Therefore, pipe surface assessment of the coating condition and the pipe surface condition could not be observed.

Table 4: Pipeline Information

Mainline Coating Type	Coal Tar Enamel
Weld Coating Type	Coal Tar Enamel
Weld coating Condition	N/A
Corrosion Deposits	N/A
Dominant Deposit Color	N/A
Dominant Deposit Texture	N/A
Magnetic Reaction	N/A
Carbonate Reaction	N/A
Sample Number	N/A
Associated Feature?	N/A

6. SITE DRAWING AND JOINT DETAILS

Date:	December 10, 2014		Nominal Wall Thickness:	7.92 mm
U/S Compressor Station:	NA		Pipe Diameter:	508 mm
Line:	NPS 20 Kipling to Oshawa			
RGW GPS:	43° 39'17"	North		
	79° 20'43"	West		

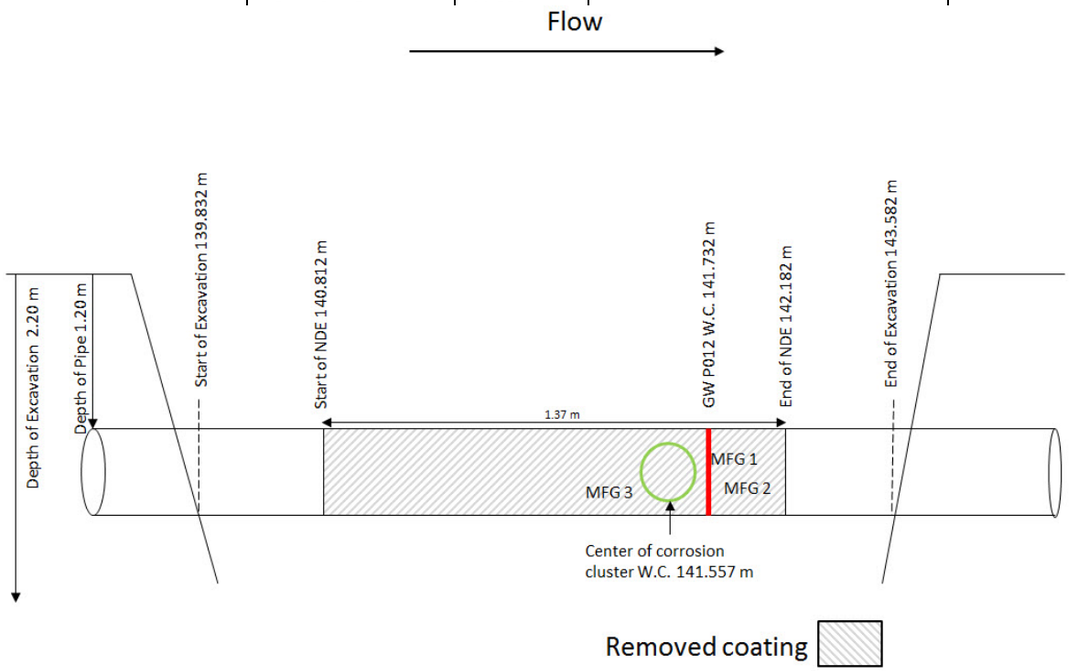


Figure 2: Diagram of the Excavation

Joint ID	ILI Joint Length (m)	ILI Longseam Orientation (0'clock)	ILI Nominal Wall Thickness (mm)	Manufacturer	Grade	Class	GW Type	Measured Wall Thickness (mm)	Exposed Joint Length (m)	Removed Coating and MT Length (m)	L/S Orientation (O'Clock)	Original Coating Type	MPI Performed	Pipe Temp. (°C)
P011	13.289	NA	7.92	NP	NP	NP	Field Weld	7.7	1.90	0.920	NA	Coal Tar	Y	2
P012	NA	NA	7.92	NP	NP	NP	Field Weld	7.7	1.85	0.450	NA	Coal Tar	Y	2

7. REMEDIATION

Table 5: Remediation

Pipeline Data				Repair Type					Coating Information				
Action Item	ILI Weld/Joint ID	Absolute Distance (m0	Repair/ Remediation Date	Recoat	Type Reinforcing Sleeve Type A Sleeve	Composite Sleeve	Pipe Replacement	Buffed	Begin recoat ILI Abs. Distance (m)	End Recoat ILI Abs. Distance (m)	Total Recoated Length (m)	Coating Manufacturer	Coating Product Name/#
A016	P012	141.549	N/P	NO	NO	YES	NO	NO	N/A	N/A	N/A	N/A	N/A
A017	P012	141.580	N/P	NO	NO	YES	NO	NO	N/A	N/A	N/A	N/A	N/A
A018	P012	141.641	N/P	NO	NO	YES	NO	NO	N/A	N/A	N/A	N/A	N/A
A019	P012	141.671	N/P	NO	NO	YES	NO	NO	N/A	N/A	N/A	N/A	N/A

8. EQUIPMENT

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: Team Industrial Services Inc.
Date: Wednesday, December 10, 2014
Line: NPS 20 Kipling to Oshawa
Target Feature: A017 - A019
Girth Weld: PO12

Equipment

ULTRASONICS

Scan Type ☑ A ☐ B ☐ Flaw ☑ Thickness ☐ FAST™

Instrument				Transducer	Type Single	Type Dual	Frequency (MHz)	Serial #
Manufacturer	Olympus Epoch 600			0°	☑	☐	15	916373
Serial #	130593012				☐	☐		
Calibration Date	5-Jan-14				☐	☐		
Range					☐	☐		
Transfer Value					☐	☐		
Cal Block	Step Wedge	S/N	272113		☐	☐		
Cal Block		S/N			☐	☐		
Cal Block		S/N			☐	☐		
Couplant	Sonoglide FE			Other:	☐	☐		

MAGNETIC PARTICLE

MPI Equipment

Manufacturer	Parker	Type	P2	S/N	387	Calibration Date	1-Oct-14
Manufacturer	Magnaflux	Type	Y1	S/N	481	Calibration Date	4-Sep-14
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	

Magnetizing Method ☑ AC or ☐ DC ☑ Continuous or ☐ Residual ☑ Yoke ☐ Coil

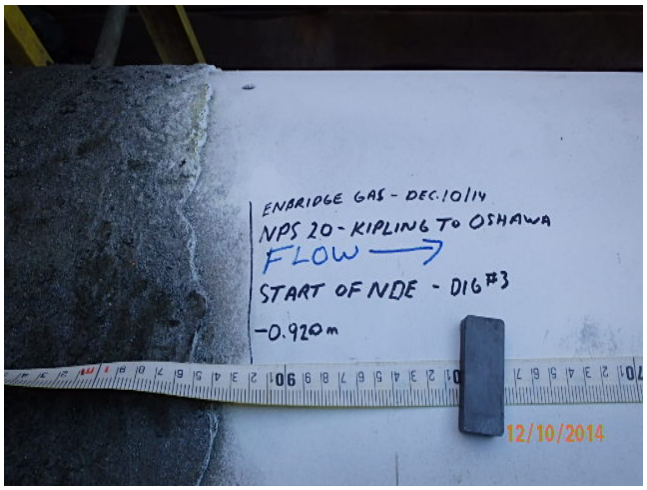
	Name	Signature	ASNT Number
Technician	Jim Francis		11717
Technician	James Pennie		9565

9. SITE PHOTOGRAPHS

Site 3 – Kipling to Oshawa pipeline

Downstream View

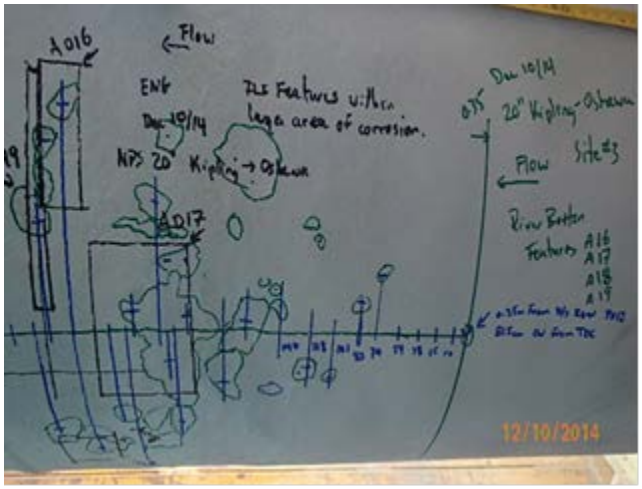
Start of NDE



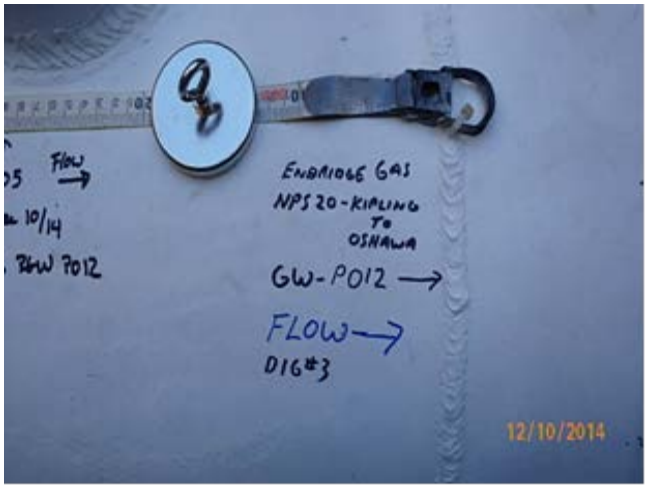
End of NDE

ILI feature cluster

River bottom information – Feature A016-17-18-19

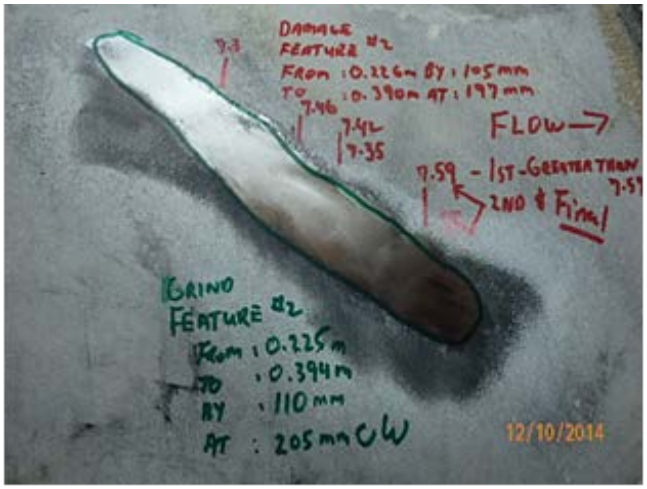


GW P012



MFG feature 1

MFG feature 2



MFG feature 3

Remediation - Clockspring

APPENDIX A: MPI Report

TEAM Industrial Services TISI Canada Inc.

MAGNETIC PARTICLE EXAMINATION REPORT-PORTABLE

Date of Examination: 2014 /12 /10

781 Westgate Road
Oakville, Ontario L6L 6R7
Tel: (905) 845-9542 Fax: (905) 845-9551

Purchase Order No.: n/a | Job No.: 50742264 | Client Job No.: 71596

Client Name: Enbridge Gas Distribution Inc. | Client Project: NPS 20-Kipling to Oshawa Line

Work Location / Address: 21 Don Roadway-Dig #3

Code / Specification / CED: Z662-11 | Acceptance / CED: Z662-11 | Procedure: CSA MT-1 Rev.3 | Technique: AC Continuous

PART DESCRIPTION: | Quantity Inspected: 1 | Quantity Accepted: 1 | Quantity Rejected: 0

Part / Assy No.: Item A016,,A017,A018,A019 *External Metal Loss* | DWG No.: n/a | Material: n/a | Heat No.: n/a | Material Thickness: 7.92 mm

Type of Fabrication: ☒ Piping ☐ Vessel ☐ Tank ☐ Weld ☐ Casting ☐ Forging ☐ Plate ☐ Other | ☒ Surface Acceptable For Inspection

INSPECTION PARAMETERS: Magnetizing Equipment: Parker-Model P2-Yoke | S/N: 387 | Calibration Date: Oct.01/14 | ☒ AC ☐ DC | ☒ Continuous ☐ Residual

Yoke Leg Spacing: 6 inch | Prod Spacing Amps: | Permanent Magnet Leg Spacing: | Amps:

Testing Medium: Magnaflux WCP-2	☐ Fluorescent	☐ Dry Powder	Colour White	☒ Colour Contrast	Batch No.: 13KO1K	Expiry Date: Oct. 2018
Testing Medium: Magnaflux 7C	☐ Fluorescent	☐ Dry Powder	Colour Black	☒ Colour Contrast	Batch No.: 13GO4O	Expiry Date: n/a

Bath Concentration: 2.0 | ☐ Fluorescent ml / 100ml | ☒ Non-fluorescent ml / 100ml | ☐ Aerosol | Part Temperature: 2 | ☐ °F ☒ °C

Demagnetization: n/a ☐ Y ☐ N | No. of Oersteds: n/a

LIGHTING EQUIPMENT:

BLACK LIGHT EQUIPMENT USED: n/a
Black Light Meter S/N: | Cal. Date: | Due Date:
Black Light intensity at time of Inspection: µw /cm²
Min. Black Light Intensity to be ≥1000 µw/cm² ☐ at examination surface
☐ at " from examination surface

WHITE LIGHT EQUIPMENT USED: Spectroline XDS-1000
White Light Meter S/N: 1882858 | Cal. Date: Aug.18/14 | Due Date: Feb.18/15
White Light intensity at time of Inspection: 350 fc fc
Min. White Light intensity to be ≥100 fc ☒ at examination surface
☐ at " from examination surface
☒ Ambient White Light in Darkened Area ≤ 2 fc At Inspection Surface

INSPECTION RESULTS: Black on white Magnetic Particle inspection was performed on Enbridge Gas NPS 20-Kipling to Oshawa Line-Items A0116, A017, A018, A019-External Metal Loss. Area inspected was 0.920 meters D/S of GW P012 to 0.450 meters U/S of GW P012. The pipe diameter was inspected circumferentially (360 degrees) for SCC and the exposed girth weld was inspected both circumferentially and axially.

No relevant SCC indications were found. (See next page for further inspection results)

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

Technician: Jim Francis	J. Francis	2008/12/21	2014/12/31	Assistant:			
Print Name	Signature	Cert Date	Exp. Date	Print Name	Signature	Cert Date	Exp. Date
Certification: Magnetic Particle Level 2			Reg. # 11717	Certification:			Reg. #

Authorized Inspector: (Print Name / Signature / Date) | Client Final Acceptance: (Print Name / Signature / Date)

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Page 1 of 2

TEAM® Industrial Services TISI Canada Inc.

MAGNETIC PARTICLE EXAMINATION REPORT-PORTABLE

Date of Examination: 2014 /12 /10

781 Westgate Road
Oakville, Ontario L6L 6R7
Tel: (905) 845-9542 Fax: (905) 845-9551

Purchase Order No.: n/a | Job No.: 50742264 | Client Job No.: 71596

Client Name: Enbridge Gas Distribution Inc. | Client Project: NPS 20-Kipling to Oshawa Line

Work Location / Address: 21 Don Roadway-Dig #3

Code / Specification / CED: Z662-11 | Acceptance / CED: Z662-11 | Procedure: CSA MT-1 Rev.3 | Technique: AC Continuous

INSPECTION RESULTS: Damage features 1 & 2 (crack-like indications) were found by Magnetic Particle Inspection (see Photograph #1 below) on top section of pipe (U/S of GW P012). These two areas were buffed out (see Photograph #2 below) with less than 10 % wall loss.

Damage feature #3 was found D/S of GW P012. It was also buffed out with less than 10 % wall loss.

PHOTOGRAPHS:

#1

#2

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

Technician: Jim Francis		2008/12/21	2014/12/31	Assistant:			
Print Name	Signature	Cert Date	Exp. Date	Print Name	Signature	Cert Date	Exp. Date
Certification: Magnetic Particle Level 2			Reg. # 11717	Certification:			Reg. #
Authorized Inspector:				Client Final Acceptance:			
Print Name	Signature	Date		Print Name	Signature	Date	

APPENDIX B: UT Report

TEAM® Industrial Services TISI Canada Inc.

ULTRASONIC INSPECTION REPORT

Date of Examination: 2014 /12 /10 (yyyy mm dd)

781 Westgate Road
Oakville,Ontario L6L 6R7
Tel:(905) 845-9542 Fax:(905) 845-9551

Purchase Order No.: n/a | Job No.: 50742264 | Client Job No.: 71596

Client Name: Enbridge Gas Distribution Inc | Client Project: NPS 20 Kipling to Oshawa Line

Work Location / Address : Dig #3-21 Don Roadway

Code / Specification / CED: Z662-11 | Acceptance / CED: Z662-11 | Procedure: CSA UT-1 Rev.2

PART DESCRIPTION:	Quantity Inspected: 1		Quantity Accepted: 1	Quantity Rejected: 0
Part / Assy No: Joint P008/P009	Material: Carbon Steel	Material Thickness:7.92mm	Heat No.: n/a	DWG No.: n/a

INSPECTION PARAMETERS:

Type of Fabrication: ☒ Piping ☐ Vessel ☐ Tank ☐ Weld ☐ Casting ☐ Forging ☐ Plate ☐ Other ☒ Surface Acceptable For Inspection

Ultrasonic Equipment: | Transducer: Panametrics-V-260-Pencil Probe

Make	Model	S/N	Cal. Date 01/05/14	Angle	Size	Freq.	S/N	Reference Level dB	Transfer Level dB	Scanning Sensitivity dB
Olympus	Epoch 600	130593012	Due Date 01/05/15	0	0.125	15 MHz	916373	40 dB		60 dB

Cable Type ☒ BNC ☒ Microdot ☐ Limo ☐ Other Cable Length: 6 ft.

Presentation: ☒ A-Scan ☐ B-Scan ☐ C-Scan

Reject: ☐ Yes ☒ No Damping ☐ Yes ☒ No

Calibration Block: Step Wedge | S/N: 272113 | Reference Reflectors: Backwall | Couplant: Sonotech FE | Batch No.: 13K067

Inspection Method: ☒ Contact ☒ Pulse Echo ☐ Immersion ☐ Resonance ☐ Through Transmission

Post Clean: | Method: n/a | Material: n/a | Batch No.: n/a

INSPECTION RESULTS:

Ultrasonic thickness inspection was performed on NPS 20-Kipling to Oshawa Line-Dig #3. Readings were taken on each quadrant of the pipe at 0.100 meters D/S of from RGW P012 and 0.100 meters U/S of RGW P012.

Ultrasonic Remaining Wall Readings were taken on Grind Features 1, 2 & 3.

1

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

	Print Name	Signature	Cert Date	Exp. Date
Technician: James Pennie			2001/06/14	2016/12/31
Certification:	CGSB UT II		Reg. # 9565	
Assistant:				
Certification			Reg. #	
Authorized Inspector:				
Client Final Acceptance:				

Print Name | Signature | Date

007 UT R2 CSA Supervisors Review_____

Page 1 of 2

TEAM® Industrial Services
TISI Canada Inc.

ULTRASONIC INSPECTION REPORT

Date of Examination: 2014 /12 /10 (yyyy mm dd)

781 Westgate Road
Oakville,Ontario L6L 6R7
Tel:(905) 845-9542 Fax:(905) 845-9551

Purchase Order No.: n/a | Job No.: 50742264 | Client Job No.: 71596

Client Name: Enbridge Gas Distribution Inc | Client Project: NPS 20 Kipling to Oshawa Line

Work Location / Address : Dig #3-21 Don Roadway

Code / Specification / CED: Z662-11 | Acceptance / CED: Z662-11 | Procedure: CSA UT-1 Rev.2

Refer below for further details.

INSPECTION RESULTS:

Ultrasonic Thickness Readings(mm)				
Location	Pipe Clock Position			
	12	3	6	9
0.100 m U/S of RGW P012	8.36	8.47	8.42	7.98
0.100 m D/S of RGW P012	7.50	7.57	8.36	8.18

Ultrasonic Thickness Readings(mm)	
Grind Feature #1-Remaining Wall	7.30
Grind Feature #2-Remaining Wall	7.35
Grind Feature #3-Remaining Wall	8.39

SKETCH:

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

Technician: James Pennie — 2001/06/14 — 2016/12/31 | Assistant:

Print Name | Signature | Cert Date | Exp. Date | Print Name | Signature | Cert Date | Exp. Date

Certification: CGSB UT II — Reg. # 9565 | Certification — Reg. #

Authorized Inspector: | Client Final Acceptance:

Print Name | Signature | Date | Print Name | Signature | Date

007 UT R2 CSA Supervisors Review_____

APPENDIX C: Enbridge Forms

ENBRIDGE

Pipeline Integrity Preliminary Field Report

NDE Vendor: Team Industrial Services Inc.
Date: Dec 10th, 2014

Line: NPS 20 Kipling to Oshawa
Target Feature: AO17
Girth Weld: PO12

Pipe Information

Line Name:	NPS 20 Kipling-Oshawa	**Reference Girth Weld:**	PO12	**Target Feature:**	AO16, 17, 18, 19
Pipe Installation Year:	1962	**Pipe Grade:**	NP	**Long Seam Type:**	NP
Pipe Standard:	NP				
Network:	189	**High node:**	80	**Low node:**	77
Nominal Pipewall Thickness (mm):	7.920	**Actual Pipewall Thickness (mm):**	7.700	**Line Diameter (mm):**	508

Excavation Information

Upstream GW	Exposed Length (m)	Type of Joint Exposure	Longseam Orient.	GPS Latitude (°)	GPS Longitude (°)	GPS Elevation at TDC (m)
P011	1.90	Partial	NA	Not Exposed	Not Exposed	Not Exposed
P012	1.85	Partial	NA	43° 39'17"	79° 20'43"	4

Feature Information

Feature Number	Type of Feature	ILI Feature Number	Reference GW	Feature Start (mm) Relative to GW	Feature End (mm) Relative to GW	Length (mm)	Feature Start (mm) Relative to Circ	Feature End (mm) Relative to Circ	Width (mm)	Max Depth (mm)	Max Depth (%) (of wt for corrosion of diam for dent)	Is Feature On or Near GW or SW	Repair (if grind, state depth)
AO16	EML	AO16	PO12	-183	-157.6	25.4	847	913	66.04	0.95	12	Y	
AO17	EML	AO17	PO12	-152	-85.96	66.04	721.74	818.26	96.52	2.62	33	Y	
AO18	EML	AO18	PO12	-91	-45.28	45.72	659	705	46	2.14	27	Y	
AO19	EML	AO19	PO12	-61	-50.84	10.16	777.6	894.4	116.8	0.79	10	Y	
EML-01	EML	16,17,18 &19	PO12	-350	0	350	659	913	254	Please see river bottom examination sheet			
MFG-01	Cracking	NA	PO12	20	114	94	278	368	90	NA	NA	NO	5.20%
MFG-02	Cracking	NA	PO12	226	390	164	144.5	249.5	105	NA	NA	NO	5.20%
MFG-03	Cracking	NA	PO12	-499	-571	72	538.5 ccw	575.5 ccw	37	NA	NA	NO	2.30%
As Found Features are highlighted in Red													

Comments

UT River Bottom Examination done in areas of metal loss involving Feature AO16,AO17,AO18 and AO19. Information on the distance and remaing wall thickness are attached seperately

Mag particle inspection were performed and three linear indications were found. Measurements are shown above.

CRK-01 and CRK-02 were found on joint PO12 while CRK-03 was on joint PO11. Alll Features were buffed out witth less than 10% wall loss. All Grind features measurement after buffing are shown above.

NDE Information

NDE Vendor:	Team Industrial Services Inc,	**Technician 1:**	James Pennie
Assessment Start Date:	Dec 10th. 2014	**Technician 2:**	Jim Francis
Assessment End Date:	Dec 10th. 2014	**Technician 3:**	

Pipeline Integrity Field Report

Line: NPS 20 Kipling to Oshawa
Target Feature: A017-019
Girth Weld: P012
NDE Vendor: Team Industrial Services Inc.
Date: December 10th, 2014

Pipe Information

Line Name:	NPS 20 Kipling to Oshawa	**Reference Girth Weld:**	PO12	**Target Feature:**	AO17
Pipe Installation Year:	1962	**Pipe Grade:**	NP	**Long Seam Type:**	NA
Pipe Standard:	NP				
Network:	189	**High node:**	80	**Low node:**	77
Nominal Pipewall Thickness (mm):	7.920	**Actual Pipewall Thickness (mm):**	77.000	**Line Diameter (mm):**	508.00

ILI Dig Information

Type of ILI Tool:	MFL	**ILI Inspection Date:**	3-Jul-05	**Tool Vendor:**	NP
Reason for Excavation:	Validation				

Excavation Information

Upstream GW*	Exposed Length (m)	Type of Joint Exposure	Longseam Orient. (°) (at GW if spiral)	GPS Latitude (°)	GPS Longitude (°)	GPS Elevation at TDC (m)
P011	1.90	Partial	NA	Not Exposed	Not Exposed	Not Exposed
P012	1.85	Partial	NA	43° 39'17"	79° 20'43"	4

***Must be filled in for all partial and fully exposed joints.**

NDE Information

NDE Performed:

	Yes	No
Visual Inspection of Pipe Body:	✓	
Visual Inspection of Girth Welds:	✓	
Visual Inspection of Long Seams:		✓
Magnetic Particle of Pipe Body:	✓	
Magnetic Particle of Girth Welds:	✓	
Magnetic Particle of Long Seams:		✓
General photographs taken:	✓	
All features measured/inspected:	✓	
All features photographed:	✓	

	Yes	No
Other _____:		
Other _____:		
Other _____:		
Other _____:		
Other _____:		

Please document additional NDE performed including: coating inspection, pipe-to-soil, soil sampling, additional sampling/testing, hardness testing, carbon equivalency, shear wave ultrasonic (specify body/welds), phased array scanning, automated ultrasonic scanning, laser scanning, radiography.

NDE Vendor:	Team Industrial Services Inc.	**Technician 1:**	Jim Franccis
Assessment Start Date:	12/8/2014	**Technician 2:**	James Pennie
Assessment End Date:	12/10/2014	**Technician 3:**	

Other Information

Method of MPI:	Color Contrast - Water Based	**Cathodic Potential at U/S 90° (DC mV, CSE):**	N/A	**AC Potential (VAC):**	NA
		Cathodic Potential at U/S 270° (DC mV, CSE):	N/A	**Soil Resistivity (ohm-cm):**	957.5
Pipe Temperature (°C):	2	**Cathodic Potential at D/S 90° (DC mV, CSE):**	-1360		
GPS Make/Model:	Garmin Etrex 20	**Cathodic Potential at D/S 270° (DC mV, CSE):**	-1290		

River Bottom thicknesses Site 3	
Distance mm	Remaining Wall mm
0	8.91
10	8.97
25	9.00
38	8.97
54	8.98
70	8.55
83	7.70
101	8.52
118	8.35
128	7.76
140	6.36
155	6.83
165	4.23
173	6.00
180	4.65
190	4.63
200	4.80
205	3.15
210	5.67
224	5.97
240	5.00
250	7.05
260	7.04
270	6.42
280	6.36
292	5.45
300	7.70
320	7.85
335	7.88
345	7.93

Note: Features A016 through 19 have been measured as a cluster.

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: Team Industrial Services Inc.
Date: Wednesday, December 10, 2014

Line: NPS 20 Kipling to Oshawa
Target Feature: A017-019
Girth Weld: P012

Remarks

Sandblasted pipe surface inspected by MPI: Y **All exposed welds inspected by UT:** N

General Site Comments	NA
Soil and Environmental Comments (ie. odor, staining, contamination)	The investigation site was contaminated from the coal tar coating - an odor was associated with the contamination.
Sampling & Analysis Comments	A soil sample was not collected.
Coating Comments	Coating is in good condition - no disbondment. The pipe was sandblasted prior to our arrival, hence a corrosion assessment could not be performed.
Corrosion Deposits Comments	NA
Corrosion Comments	The lowest wall thickness recorded was 3.15mm NOTE*** Features 16, 17, 18, and 19 were measured as a cluster - See "River Bottom Thickness" page for grind measurements.
Linear Indication Comments	NA
Circumferential Linear Comments	NA
Other Defects Comments	depth of indications not available before grind -
Stress Corrosion Cracking Comments	NA
Dent Comments	NA
Grind Feature Comments	NA
Sleeve Information Comments	NA
Other Comments	A moldable clockspring was used for remediation.

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Pipeline Integrity Field Report

Line: NPS 20 Kipling to Oshawa

NDE Vendor: Team Industrial Services Inc.

Target Feature: A017 - A019

Date: Wednesday, December 10, 2014

Girth Weld: PO12

Equipment

ULTRASONICS

Scan Type ☑ A ☐ B ☐ Flaw ☑ Thickness ☐ FAST™

Instrument				Transducer	Type		Frequency (MHz)	Serial #
					Single	*Dual*		
Manufacturer	Olympus Epoch 600			0°	☑	☐	15	916373
Serial #	130593012				☐	☐		
Calibration Date	5-Jan-14				☐	☐		
Range					☐	☐		
Transfer Value					☐	☐		
Cal Block	Step Wedge	S/N	272113		☐	☐		
Cal Block		S/N			☐	☐		
Cal Block		S/N			☐	☐		
Couplant	Sonoglide FE			Other:	☐	☐		

MAGNETIC PARTICLE

MPI Equipment

Manufacturer	Parker	Type	P2	S/N	387	Calibration Date	1-Oct-14
Manufacturer	Magnaflux	Type	Y1	S/N	481	Calibration Date	4-Sep-14
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	

Magnetizing Method ☑ AC or ☐ DC ☑ Continuous or ☐ Residual ☑ Yoke ☐ Coil

	Name	Signature	ASNT Number
Technician	Jim Francis		11717
Technician	James Pennie		9565

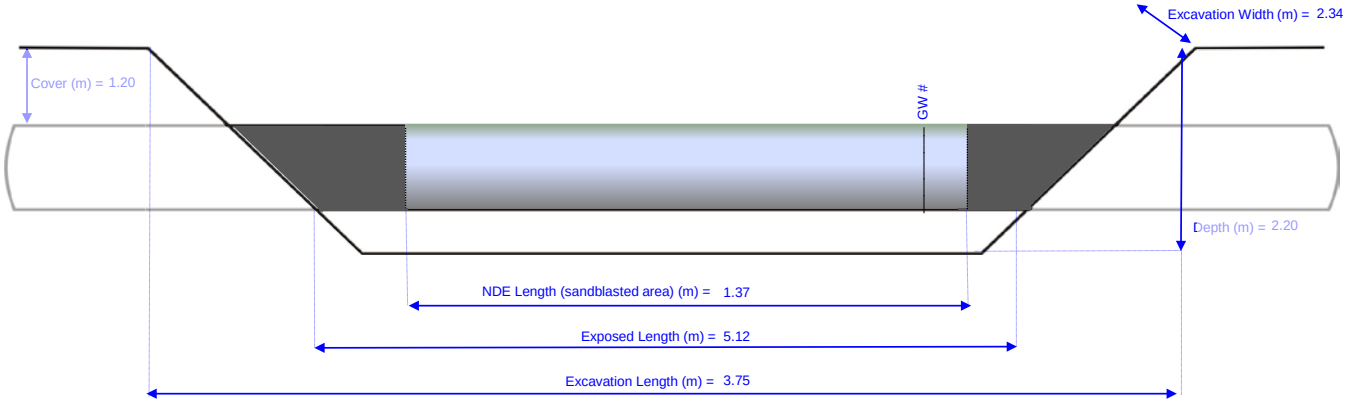
Pipeline Integrity Field Report

NDE Vendor: Team Industrial Services Inc.
Date: December 10, 2014

Line: NPS 20 Kipling
Target Feature: AO17
Girth Weld: PO11

Site Information

Direction of Flow



Reference girthweld:	P012	Slope of Pipe (rise/run)	None
Downstream girthweld:	P012	Excavation Length (m)	3.75
Depth of Ditch (m)	2.20	Depth of Cover (m)	1.20
Excavation width (m)	2.34	Number of girthwelds in excavation:	1
Length of upstream exposed coating (m)	1.90	Length of downstream exposed coating (m)	1.85
Start of NDE to reference girthweld (m)	0.92	End of NDE to reference girthweld (m)	0.45
Total Length of Exposed Pipe (m)	5.12	Total Length of NDE (m)	1.37
Does section have sag? ☐ Yes ☐ No **If Yes,**		Location from girthweld (m):	1.55
Does section have an overbend? ☐ Yes ☑ No **If Yes,**		Location from girthweld: (m)	NA
Does section have a sidebend? ☐ Yes ☑ No **If Yes,**		Location from girthweld: (m)	NA
Coating Type upstream of NDE Area	Coal Tar Enamel	Coating Type downstream of NDE area	Coal Tar Enamel

Site Excavation Comments

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: Team Industrial Services Inc.

Date: December 10th, 2014

Line: NPS 20 Kipling to Oshawa

Target Feature: A017-019

Girth Weld: P012

Soil and Landscape Information

Land Use	Other
Slope Position	Level
Topography	Level
Vegetation	Grasses
Soil Resistivity	957.5
Parent Material	Lacustrine
Soil Texture	Sandy Loam
Coarse Fragments	Estimated % By Volume: None

- ☐ Boulders (> 600mm)
- ☐ Small Stones (25mm<= X<100mm)
- ☐ Large Stones (100mm<= X<600mm)
- ☐ Gravel (<25mm)

Drainage	Imperfect
Gleying	Slightly Gleyed (Patches of Light Greyish Brown)
Mottling	Abundance: Common
	Size: Fine
	Contrast: Faint

Visible Salts

(Check All That Apply)

- ☐ Surface Salt Crusts (White and Powdery)
- ☐ White/Grey Salts at Pipe Depth That Don't React With Acid
- ☐ Gypsum (Clear to Brown) Salt Crystals At Pipe Depth-Don't React With Acid
- ☐ Other (Explain in Comments)

Soil and Environmental Comments (ie. odor, staining, contamination)

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: Team Industrial Services Inc.
Date: December 10th, 2014

Line: NPS 20 Kipling to Oshawa
Target Feature: A017-019
Girth Weld: P012

Coating Condition

Pipe Coating Type: Coal Tar Enamel
Girth Weld Coating Type: Coal Tar Enamel
Repair Coating Type:

Coating Comments (description)

Coating is in good condition - no disbondment. The pipe was sandblasted prior to our arrival, hence a corrosion assessment could not be performed.

Corrosion Deposits

Corrosion Present ☑ Yes ☐ No

Colour	Texture	Carbonate Reaction (10% HCl Reaction)
☐ White	☐ Film	☐ Bubbles Strongly
☐ Brown	☐ Pasty	☐ Bubbles Weakly
☐ Black	☐ Scaly	☐ Does not Bubble
☐ Green	☐ Powdery	☐ Rotten Egg Smell
☐ Olive/ Beige	☐ Metallic	☐ Turns Yellowish
☐ Orange	☐ Waxy	☐ Turns Clear
☐ Blue		
☐ Grey		
☐ Red		
☐ Clear		

Samples Collected

Sample Number	Associated Feature / Location

Corrosion Product Comments

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Pipeline Integrity Field Report

NDE Vendor: Team Industrial Services Inc.

Date: December 10th, 2014

Line: NPS 20 Kipling to Osh

Target Feature: A017-019

Girth Weld: P012

Sampling and Analysis

SOIL

Sample No.	Location	pH	Salinity	Conductivity	ORP (mV, Platinum Electrode)	10% HCl Reaction

WATER

Sample No.	Location	pH	Salinity	Conductivity
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Sampling and Analysis Comments

A soil sample was not collected.

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: Team Industrial Services Inc.

Date: December 10th, 2014

Line: NPS 20 Kipling to Oshawa

Target Feature: A016-19

Girth Weld: P012

Corrosion Assessment

RSTRENG Completed by _____ **Assessment Method** _____

Corrosion Feature Number	ILI Feature Number	Reference GW	Type of Corrosion ID/OD	Relative to Girth Weld Start of Cluster (m)	Relative to Girth Weld End of Cluster (m)	Total Length of Cluster (mm)	Circ Start of Cluster (mm)	Circ End of Cluster (mm)	Circ Width of Cluster (mm)	Degrees From	Degrees To	Wall thickness (mm)	Max Depth based on AWT (mm)	Max Depth (%)	Actual Wall Thickness next to Ind (mm)	KAPA Required	RSTRENG Results (RPR) (Case 1: Effective Area)	RSTRENG Results (RPR) (Case 2 0.85 DL)	On or Near SW/GW*	Reason for Repair	Type of repair	Outlier** (Y/N)
COR1	A016-19	P012	External	-0.350	0	350.00	659.00	913.00	254.00	149	206	3.150	4.550	59%	7.700	NA	NA	NA	AGW	Clients Request	Clock spring	N
COR2																						
COR3																						
COR4																						
COR5																						
COR6																						
COR7																						
COR8																						
COR9																						
COR10																						
COR11																						
COR12																						
COR13																						
COR14																						
COR15																						
COR16																						
COR17																						
COR18																						
COR19																						
COR20																						
COR21																						
COR22																						
COR23																						
COR24																						
COR25																						

* **BW** - In or at both Seamweld and Girthweld, **IGW** - In Girthweld, **AGW** - At Girthweld, **ISW** - In Seamweld, **ASW** - At Seamweld (From toe of weld to 10 mm, **BM** - Base Metal (From 10 mm past toe of weld)

Corrosion Comments

The lowest wall thickness recorded was 3.15mm NOTE*** Features 16, 17, 18, and 19 were measured as a cluster - **See "River Bottom Thickness" page for grind measurements.**

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Pipeline Integrity Field Report

NDE Vendor: Team Industrial Services Inc.

Date: December 10th, 2014

Line: NPS 20 Kirkland Lake Lateral

Target Feature: A017-019

Girth Weld: P012

Other Features Assessment

NDT Inspector Jim Francis / James Pennie

Other Indication Feature Number	ILI Feature Number	Reference GW	Type of Indication	Indication Relative Positon*	Indication Radial Position	Axial Start of Indication (m)	Axial End of Indication (m)	Axial Length of Indication (mm)	Circ Start of Linear Indication (mm)	Circ End of Linear Indication (mm)	Circ Start Degree Position	Circ End Degree Position	Associated Corrosion Feature # (if any)	Measured Wall Thickness Adjacent to Indication (mm)	Indication Depth (mm)	Indication Depth (%)	Reason for Repair	Type of Repair	NDT Analysis Method Used to Size Feature	Outlier** (Y/N)
OI1	NA	P012	Manufacturing Defect	BM	External	0.02	0.11	94.00	278.00	368.00	63	83	NA	7.700	NA	NA	Clients Request	Removed and Sleeved	UT	N
OI2	NA	P012	Manufacturing Defect	BM	External	0.23	0.39	164.00	145.00	250.00	33	56	NA	7.700	NA	NA	Clients Request	Removed and Sleeved	UT	N
OI3	NA	P012	Manufacturing Defect	BM	External	-0.50	-0.57	-72.00	1019.62	1056.62	230	238	NA	7.700	NA	NA	Clients Request	Removed and Sleeved	UT	N
OI4																				
OI5																				
OI6																				
OI7																				
OI8																				
OI9																				
OI10																				
OI11																				
OI12																				
OI13																				
OI14																				
OI15																				
OI16																				
OI17																				
OI18																				
OI19																				
OI20																				
OI21																				
OI22																				
OI23																				
OI24																				
OI25																				

* **BW -** In or at both Girthweld and Seamweld, **IGW -** In Girthweld, **AGW -** At Girthweld, **ISW -** In Seamweld, **ASW -** At Seamweld (From toe of weld to 0.5 in, **BM** - Base Metal (From 10 mm past toe of weld)

** If indication is an Outlier, client must be contacted

Other Defects Comments depth of indications not available before grind -

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: Team Industrial Services Inc.

Date: Wednesday, December 10, 2014

Line: NPS 20 Kipling to Ottawa

Target Feature: A017-019

Girth Weld: P012

Grind Assessment

Grind Feature Number	Corresponding Features Within Grind Area	Measured Wall Thickness Before Grinding (mm)	Measured Wall Thickness After Grinding (mm)	Calculated Grind Depth as Compared to NWT (mm)	Percent Wall Loss (%)	Relative to Girth Weld Start of Grind Repair (m)	Relative to Girth Weld End of Grind Repair (m)	Circ Start of Grind Repair (mm)	Circ End of Grind Repair (mm)	Circ Start of Grind Repair (°)	Circ End of Grind Repair (°)	Grind Length (mm)	Grind Width (mm)	KAPA Required (Y/N)	RSTRENG Results (RPR) (Case 2: 0.85 DL)	RSTRENG Results (RPR) (Case 1: Effective Area)	Type of Repair
GR1	MFG-01	7.70	7.300	0.400	5.2%	0.015	0.150	273.00	388.00	61.58	87.52	135.00	115.00	NA	NA	NA	Removed and Recoated
GR2	MFG-02	7.70	7.300	0.400	5.2%	0.225	0.394	150.00	260.00	33.84	58.65	169.00	110.00	NA	NA	NA	Removed and Recoated
GR3	MFG-03	8.59	8.39	>NWT	2.3%	-0.494	-0.575	1017.12	1062.12	229.44	239.59	-81.00	45.00	NA	NA	NA	Removed and Recoated
GR4																	
GR5																	
GR6																	
GR7																	
GR8																	
GR9																	
GR10																	
GR11																	
GR12																	
GR13																	
GR14																	
GR15																	
GR16																	
GR17																	
GR18																	
GR19																	
GR20																	
GR21																	
GR22																	
GR23																	
GR24																	
GR25																	

Grind Area Comments

TEAM INDUSTRIAL SERVICES PIPELINE INC.

ENBRIDGE GAS DISTRIBUTION INC.

Final Report

Pipeline: NPS 20 Kipling to Oshawa
Site: #1
ILI Feature: A003
Report Date: Dec 15th, 2014

Prepared For:

Greg Knopinski, P.Eng
Project Manager, Gas Storage and Transmission System Integrity

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TABLE OF CONTENTS

1. INTRODUCTION

TISI (Team Industrial Services Inc.) arrived onsite on December 8th, 2014 to perform Assessment of Feature # A003 Site # 1 on the NPS 20 Kipling to Oshawa Pipeline.

2. SUMMARY OF RESULTS

Two External Corrosion features, one linear indication and three arc strike were located on the exposed and blasted section of pipe. Feature EML-001 corresponded to ILI feature A003 with a length of 268 mm, width of 353 mm and a maximum depth of 5.1 mm (65%) while as found feature EML-002 is 60 mm long, 227 mm wide and 0.93 mm deep (11.8%). 100% magnetic particle inspection was performed on the entire section of exposed pipe. The MPI detected a small linear indication that had a maximum depth of 0.2 mm. Three arc strike indications were found beside Girth weld P008. A composite sleeve (clock spring) was installed over top of the anomalies that were detected for remediation purposes.

2.1 SITE SUMMARY

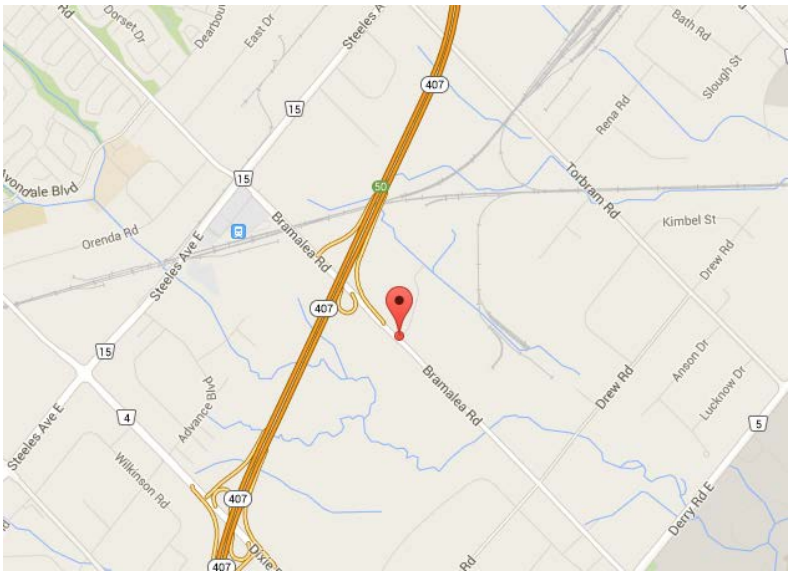


Figure 1: Site Location

Table 1: Site Summary

Type of Excavation:	Validation
Action Item(s):	A003
Date of Excavation:	December 5, 2014
Date of Remediation:	December 17, 2014
Type of Remediation:	Clock Spring
Total Exposed Pipeline Length (m)	3.36
Depth of Excavation (m)	2.1
Depth from the Surface to T.O.P. (m)	1.2
Total Length of Coating Removed (m)	1.92
Total length of Re-Coat (m)	1.92
Total Length of MPI (m)	1.92
Other Inspections/Assessments Performed	Coating/Soil (Resistivity, Redox, pH) /MT, UT
Description of Remediation Activity	Clock Spring and Recoat

3. PIPELINE DETAILS

Table 2: Pipeline Information

Name	NPS 20 Kipling to Oshawa
Length (km)	NP
Diameter (mm)	305
Nominal Wall Thickness (mm)	6.35
Grade	290
SMYS %	NP
Longitudinal Seam Type	NP
MAOP (kPa)	NP
MOP (kPa)	NP
Design Factor	NP
Pipe Manufacturer	NP
Year of Installation	NP
Date of Last Hydro Test	NP
Mainline Coating	Coal Tar
Weld Coating	Shrink Sleeves
Current Product In the Pipeline	Natural Gas
Past Product	Natural Gas

4. SOIL & LANDSCAPE INFORMATION

The ability to perform any detailed soils analysis was limited as the dig was encased with trench boxes. Technicians performed assessment the best they could with limited access to the natural soil.

Table 3: Site Location

Land Use	ROW
Land Owner	NP
Legal Description	NP
Site Position	Level
Topography	Level
Parent Soil	Lacustrine
Soil Texture	Sandy Loam
Soil pH	6.2
Soil Temperature (Celsius)	1
Soil Resistivity (ohms-cm)	957.5
Are Carbonates Present	NA
Field Estimate of CaCO3	NA
Average Pipe to Soil CP (mV)	1930
Soil Redox Potential (ORP) (mV)	240
Drainage	Imperfect
Visible Salts	NA
Gleying	Slightly Gleyed
Mottling Abundance	Common
Mottling Contrast	Faint
Mottling Size	Fine

5. COATING ASSESSMENT

Coating was removed and the pipe surface was prepared by blasting with a medium to remove all surface features that would have inhibited NDT inspection prior to TISI technicians arriving onsite. Therefore no coating or pipe surface assessment or observations of the coating condition or the pipe surface condition prior to these actions was possible.

Table 4: Pipeline Information

Mainline Coating Type	Coal Tar
Weld Coating Type	NP
Weld coating Condition	NP
Corrosion Deposits	NP
Dominant Deposit Color	NP
Dominant Deposit Texture	NP
Magnetic Reaction	NP
Carbonate Reaction	NP
Sample Number	NP
Associated Feature?	NP

6. SITE DRAWING AND JOINT DETAILS

Date: Dec 8th ,2014
U/S Compressor Station: NA :
Line: NPS 20 Kipling to Oshawa
RGW GPS: 43.65555° North
79.34581° West

Nominal Wall Thickness: 7.9 mm
Pipe Diameter: 508 mm

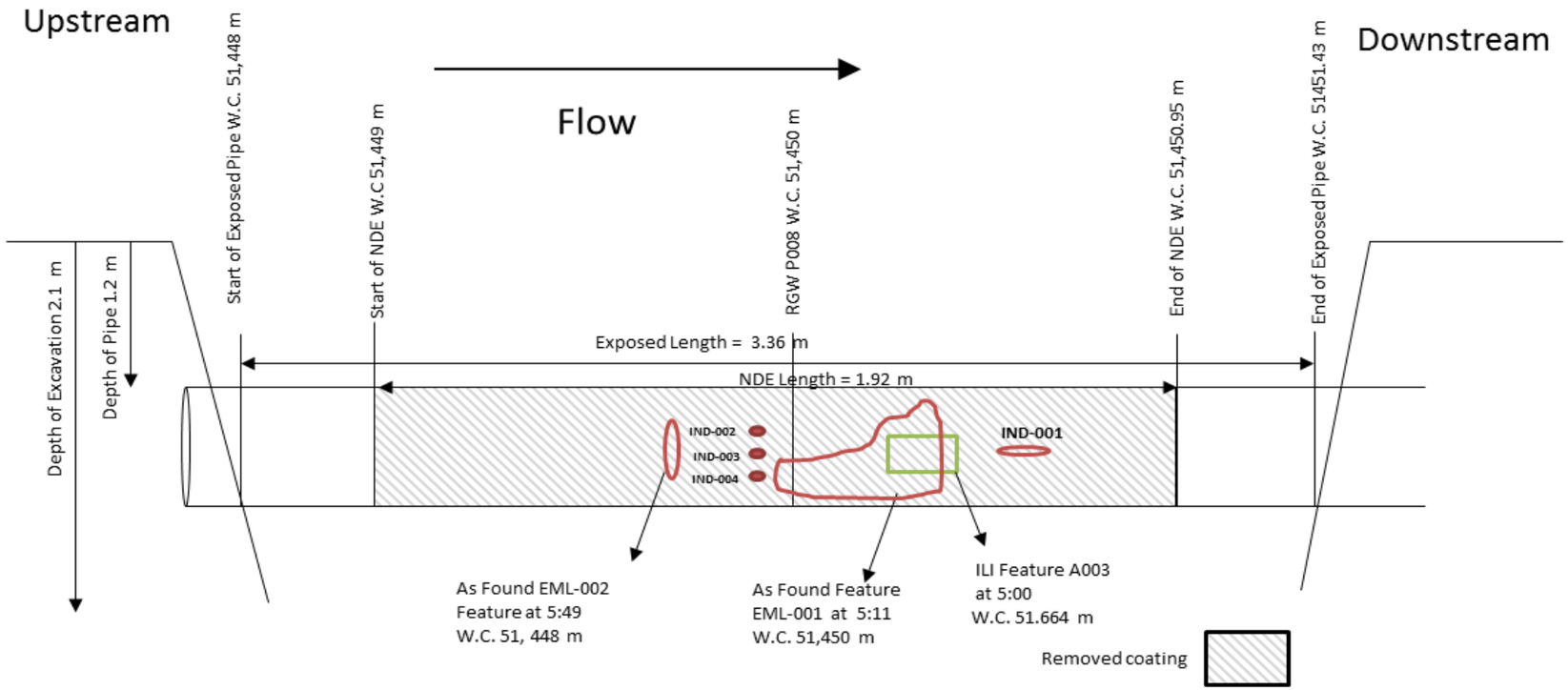


Figure 2: Diagram of the Excavation

Joint ID	ILI Joint Length (m)	ILI Longseam Orientation (0'clock)	ILI Nominal Wall Thickness (mm)	Manufacturer	Grade	Class	GW Type	Measured Wall Thickness (mm)	Exposed Joint Length (m)	Removed Coating and MT Length (m)	L/S Orientation (O'Clock)	Original Coating Type	MPI Performed	Pipe Temp. (°C)
P007	11.857	NP	7.92	NP	NP	NP	FIELD	7.9	1.93	0.97	NA	Coal Tar	YES	1
P008	12.649	NP	7.92	NP	NP	NP	FIELD	7.9	1.43	0.95	NA	Coal Tar	YES	1

7. REMEDIATION

At dig site #1 on Enbridge NPS 20'' Kipling to Oshawa Pipeline, a composite sleeve was installed on A003 as identified with the ILI tool.

Table 5: Remediation

Pipeline Data				Repair Type					Coating Information					Sleeve Repair Information		
Action Item	ILI Weld/Joint ID	Absolute Distance (m0	Repair/ Remediation Date	Recoat	Type Reinforcing Sleeve) Type A Sleeve	Composite Sleeve	Pipe Replacement	Buffed	Begin recoat ILI Abs. Distance (m)	End Recoat ILI Abs. Distance (m)	Total Recoated Length (m)	Coating Manufacturer	Coating Product Name/#	Begin Sleeve ILI Abs. Distance (m)	End sleeve ILI Abs. Distance (m)	Sleeve Length (m)
A003	P008	51,450	Dec 17, 2014	NA	NO	YES	NO	NP	NP	NP	NP	NP	NP	NP	NP	NP

Photograph 1: Composite Sleeve

8. EQUIPMENT

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling-Oshawa
Target Feature: A003
Girth Weld: P008

Equipment

ULTRASONICS

Scan Type ☑ A ☐ B ☐ Flaw ☑ Thickness ☐ FAST™

Instrument				Transducer	Type Single	Type Dual	Frequency (MHz)	Serial #
Manufacturer	Olympus-Epoch 600			0°	☑	☐	15 mHz	916376
Serial #	130593112			45°	☐	☐		
Calibration Date	1212412014			60°	☐	☐		
Range				70°	☐	☐		
Transfer Value					☐	☐		
Cal Block	1018 Steel-Thickness	S/N	A11953		☐	☐		
Cal Block		S/N			☐	☐		
Cal Block		S/N		FAST Model 1	☐	☐		
Couplant				Other:	☐	☐		

MAGNETIC PARTICLE

MPI Equipment

Manufacturer	Parker	Type	Model P-2	S/N	387	Calibration Date March 26/15
Manufacturer	MagnaFlux	Type	Model Y-1	S/N	481	Calibration Date Apr.4/15
Manufacturer		Type		S/N		Calibration Date
Manufacturer		Type		S/N		Calibration Date
Manufacturer		Type		S/N		Calibration Date
Manufacturer		Type		S/N		Calibration Date

Magnetizing Method ☑ AC or ☐ DC ☑ Continuous or ☐ Residual ☑ Yoke ☐ Coil

	Name	Signature	CGSB Number
Technician	Jim Francis		11717

	Name	Signature	ASNT Number
Technician			

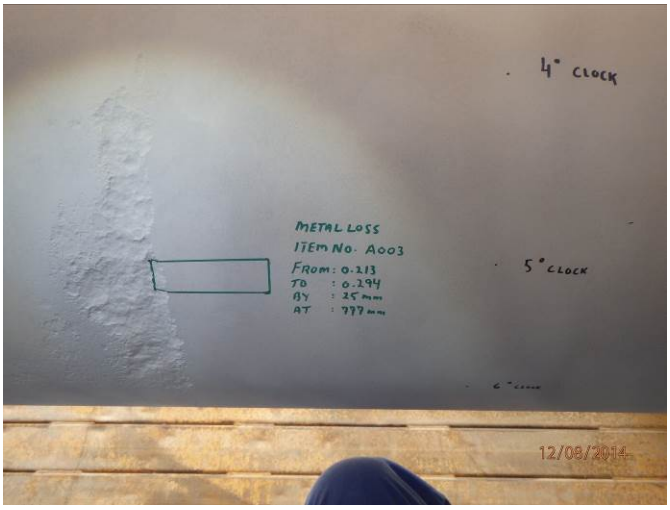
9. SITE PHOTOGRAP

U/S View

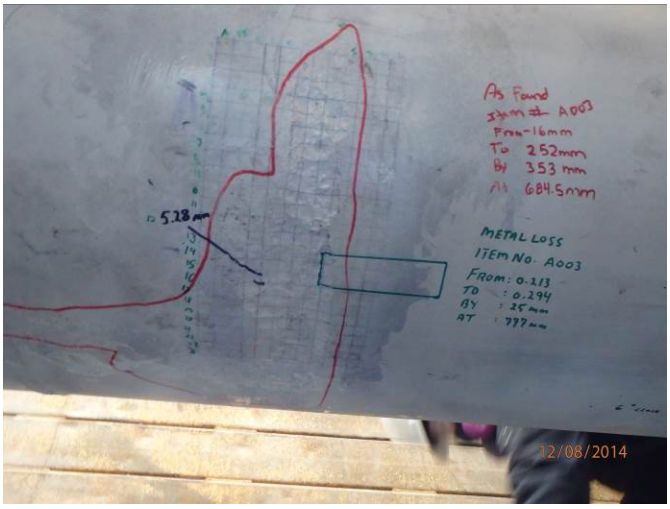
D/S View

Site Overview

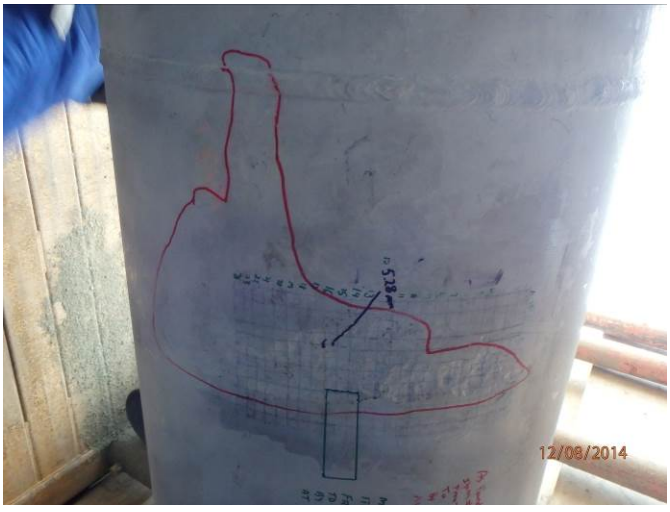
ILI A003



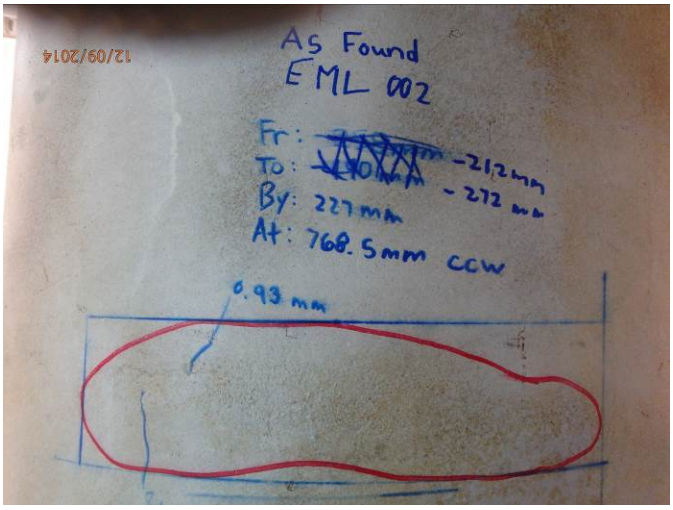
ILI & As Found



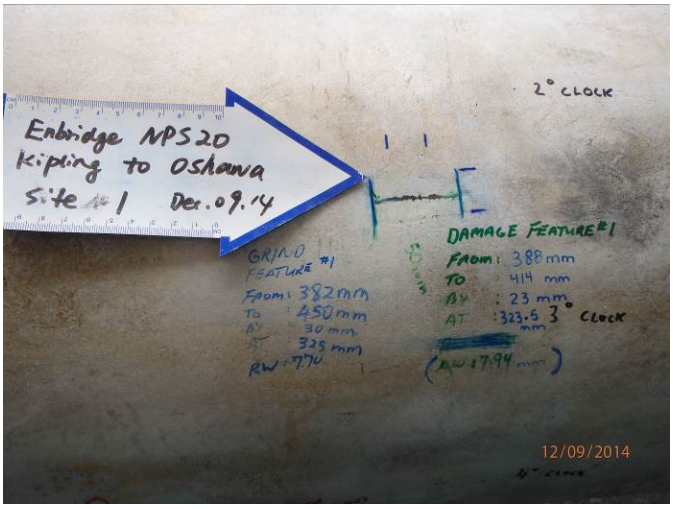
ILI & As Found



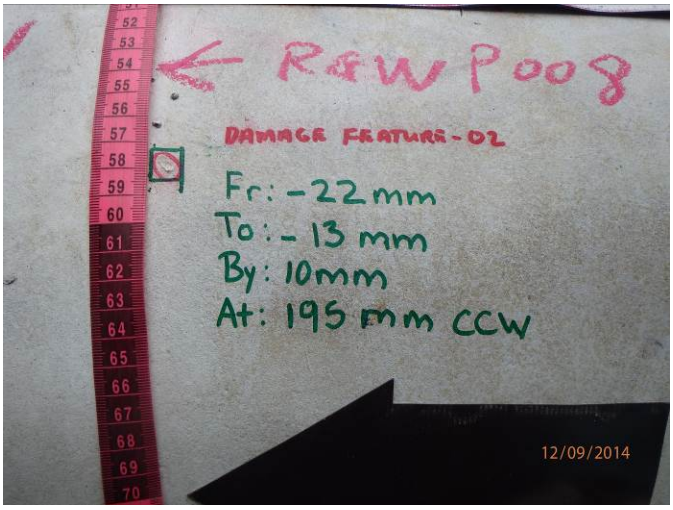
As Found EML-002



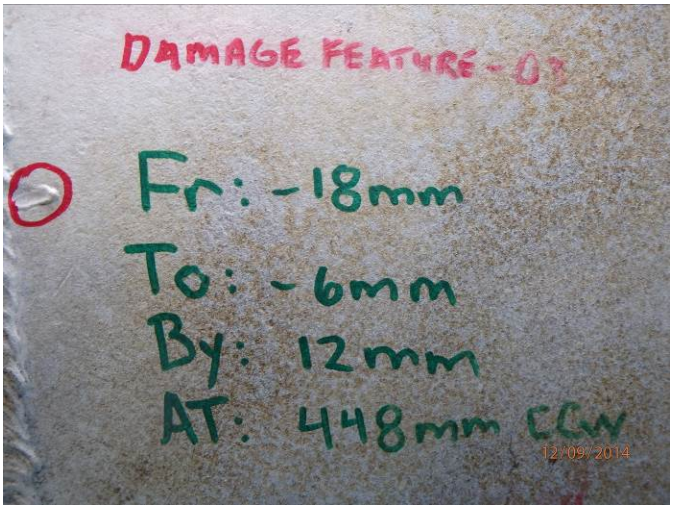
Damage Grind Feature-01



Damage Feature-02



Damage Feature -03



Upstream Coating Conditions

Clock Spring- Remediation

APPENDIX A: MPI Report

TEAM® Industrial Services TISI Canada Inc.

MAGNETIC PARTICLE EXAMINATION REPORT-PORTABLE

Date of Examination: 2014 /12 /08

781 Westgate Road
Oakville, Ontario L6L 6R7
Tel: (905) 845-9542 Fax: (905) 845-9551

Purchase Order No.: 10921208 Job No.: 50742262 Client Job No.: 71594

Client Name: Enbridge Gas Distribution Inc. Client Project: NPS 20-Kipling to Oshawa Line

Work Location / Address: 21 Don Roadway-Dig #1

Code / Specification / CED: Z662-11 Acceptance / CED: Z662-11 Procedure: CSA MT-1 Rev.3 Technique: AC Continuous

PART DESCRIPTION: Quantity Inspected: 1 | Quantity Accepted: 1 | Quantity Rejected: 0

Part / Assy No.: Item A003-External Metal Loss | DWG No.: n/a | Material: n/a | Heat No.: n/a | Material Thickness: 7.92 mm

Type of Fabrication: ☒ Piping ☐ Vessel ☐ Tank ☐ Weld ☐ Casting ☐ Forging ☐ Plate ☐ Other ☒ Surface Acceptable For Inspection

INSPECTION PARAMETERS: Magnetizing Equipment: Parker-Model P2-Yoke | S/N: 387 | Calibration Date: Oct.01/14 | ☒ AC ☐ DC ☒ Continuous ☐ Residual

Yoke Leg Spacing: 6 inch Prod Spacing Amps: Permanent Magnet Leg Spacing: Amps:

Testing Medium: Magnaflux WCP-2	☐ Fluorescent	☐ Dry Powder	Colour White	☒ Colour Contrast	Batch No.: 13KO1K	Expiry Date: Oct. 2018
Testing Medium: Magnaflux 7C	☐ Fluorescent	☐ Dry Powder	Colour Black	☒ Colour Contrast	Batch No.: 13GO4O	Expiry Date: n/a

Bath Concentration: 2.0 ☐ Fluorescent ml / 100ml ☒ Non-fluorescent ml / 100ml ☐ Aerosol Part Temperature: 1 C ☐ °F ☒ °C

Demagnetization: n/a ☐ Y ☐ N No. of Oersteds: n/a

LIGHTING EQUIPMENT:

BLACK LIGHT EQUIPMENT USED: n/a
Black Light Meter S/N: Cal. Date: Due Date:
Black Light intensity at time of Inspection: µw /cm²
Min. Black Light Intensity to be ≥1000 µw/cm² ☐ at examination surface
☐ at " from examination surface

WHITE LIGHT EQUIPMENT USED: Spectroline XDS-1000
White Light Meter S/N: 1882658 Cal. Date: Aug.18/14 Due Date: Feb.18/15
White Light Intensity at time of Inspection: 340 fc fc
Min. White Light intensity to be ≥100 fc ☒ at examination surface
☐ at " from examination surface
☒ Ambient White Light in Darkened Area ≤ 2 fc At Inspection Surface

INSPECTION RESULTS: Black on white Magnetic Particle inspection was performed on Enbridge Gas NPS 20-Kipling to Oshawa Line-Items A003-External Metal Loss. Area inspected was 0.972 meters D/S of GW P008 to 0.950 meters U/S of GW P008. The pipe diameter was inspected circumferentially (360 degrees) for SCC and the exposed girth weld was inspected both circumferentially and axially.

No relevant SCC indications were found.

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

Technician: Jim Francis (Print Name)	Signature	Cert Date: 2008/12/21	Exp. Date: 2014/12/31	Assistant: (Print Name)	Signature	Cert Date	Exp. Date
Certification: Magnetic Particle Level 2			Reg. # 11717	Certification:			Reg. #

Authorized Inspector: (Print Name)	Signature	Date	Client Final Acceptance: (Print Name)	Signature	Date

TEAM® Industrial Services
TISI Canada Inc.

MAGNETIC PARTICLE EXAMINATION REPORT-PORTABLE

Date of Examination: 2014 /12 /08

781 Westgate Road
Oakville, Ontario L6L 6R7
Tel: (905) 845-9542 Fax: (905) 845-9551

Purchase Order No.: 10921208 Job No.: 50742262 Client Job No.: 71594

Client Name: Enbridge Gas Distribution Inc. Client Project: NPS 20-Kipling to Oshawa Line

Work Location / Address: 21 Don Roadway-Dig #1

Code / Specification / CED: Z662-11 Acceptance / CED: Z662-11 Procedure: CSA MT-1 Rev.3 Technique: AC Continuous

INSPECTION RESULTS:

PHOTOGRAPHS:

SIGNATURE AND CERTIFICATION:

All date are formatted to: yyyy /mm /dd

Technician: Jim Francis				Assistant:			
Print Name	Signature	Cert Date	Exp. Date	Print Name	Signature	Cert Date	Exp. Date
Certification: Magnetic Particle Level 2			Reg. # 11717	Certification:			Reg. #
		2008/12/21	2014/12/31				
Authorized Inspector:				Client Final Acceptance:			
Print Name	Signature	Date		Print Name	Signature	Date	

APPENDIX B: UT Report

TEAM® Industrial Services
TISI Canada Inc.

ULTRASONIC INSPECTION REPORT

Date of Examination: 2014 /12 /08 (yyyy mm dd)

781 Westgate Road
Oakville,Ontario L6L 6R7
Tel:(905) 845-9542 Fax:(905) 845-9551

Purchase Order No.: 10921203 Job No.: 50742262 Client Job No.: 71596

Client Name: Enbridge Gas Distribution Inc Client Project: NPS 20 Kipling to Oshawa Line

Work Location / Address : Dig #1-21 Don Roadway

Code / Specification / CED: Z662-11 Acceptance / CED: Z662-11 Procedure: CSA UT-1 Rev.2

PART DESCRIPTION:	Quantity Inspected: 1		Quantity Accepted: 1	Quantity Rejected: 0
Part / Assy No: Target Feature: A003	Material: Carbon Steel	Material Thickness:7.92mm	Heat No.: n/a	DWG No.: n/a

INSPECTION PARAMETERS:

Type of Fabrication: ☒ Piping ☐ Vessel ☐ Tank ☐ Weld ☐ Casting ☐ Forging ☐ Plate ☐ Other ☒ Surface Acceptable For Inspection

Ultrasonic Equipment: Transducer: Panametrics-V-260-Pencil Probe

Make	Model	S/N	Cal. Date 12/24/13	Angle	Size	Freq.	S/N	Reference Level dB	Transfer Level dB	Scanning Sensitivity dB
Olympus	Epoch 600	130593112	Due Date 12/24/14	0	0.125	15 MHz	916373	40 dB		60 dB

Cable Type ☒ BNC ☒ Microdot ☐ Limo ☐ Other Cable Length: 6 ft.

Presentation: ☒ A-Scan ☐ B-Scan ☐ C-Scan

Reject: ☐ Yes ☒ No Damping ☐ Yes ☒ No

Calibration Block: Step Wedge S/N: 272113 Reference Reflectors: Backwall Couplant: Sonotech FE Batch No.: 13K067

Inspection Method: ☒ Contact ☒ Pulse Echo ☐ Immersion ☐ Resonance ☐ Through Transmission

Post Clean: Method: n/a Material: n/a Batch No.: n/a

INSPECTION RESULTS:

Ultrasonic wall thinning assessment was performed on NPS 20-Kipling to Oshawa Line-Dig #1-Item # A003. Readings were taken in each box(1cm x 1cm) of a grid drawn over Item # A003.

Refer below for further details.

1

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

Technician: Bill Andrews	Print Name	Signature	Cert Date	Exp. Date
Certification: CGSB UT II			2012/05/30 Reg. # 12518	2017/12/31

Assistant: Print Name / Signature / Cert Date / Exp. Date — Certification / Reg. #

Authorized Inspector: Print Name / Signature / Date

Client Final Acceptance: Print Name / Signature / Date

007 UT R2 CSA Supervisors Review_____

Page 1 of 2

ULTRASONIC INSPECTION REPORT

Date of Examination: 2014 /12 /10 (yyyy mm dd)

781 Westgate Road
Oakville,Ontario L6L 6R7
Tel:(905) 845-9542 Fax:(905) 845-9551

Purchase Order No.: n/a Job No.: 50742264 Client Job No.: 71596

Client Name: Enbridge Gas Distribution Inc Client Project: NPS 20 Kipling to Oshawa Line

Work Location / Addr TEAM® Industrial Services TISI Canada Inc. ess : Dig #3-21 Don Roadway

Code / Specification / CED: Z662-11 Acceptance / CED: Z662-11 Procedure: CSA UT-1 Rev.2

INSPECTION RESULTS: Wall Thinning Assessment Lowest grid value D-16(in red)

Ultrasonic Thickness Readings(mm)

	A	B	C	D	E	F	G	H	I	J	K	L
1	8.29	8.23	8.23	8.26	8.20	8.29	8.52	7.38	8.26	8.23	8.23	8.30
2	8.32	8.26	8.26	8.29	8.20	8.26	7.30	7.78	7.68	8.20	8.38	8.05
3	8.29	8.32	8.29	8.32	8.35	6.10	5.77	6.00	8.26	8.26	8.38	8.38
4	8.32	8.26	8.29	7.32	7.67	4.80	4.90	4.87	5.00	8.26	8.38	8.30
5	8.29	8.29	8.29	8.32	8.32	6.10	4.12	4.94	6.25	8.38	8.30	8.30
6	8.26	8.32	8.29	8.29	8.29	5.80	4.57	5.69	6.30	8.35	8.38	8.38
7	8.26	8.39	8.32	8.32	8.35	6.11	3.65	4.20	8.32	8.38	8.38	8.29
8	8.23	8.35	8.38	8.32	8.35	4.45	4.60	7.80	8.38	8.38	8.58	8.38
9	8.32	8.38	8.35	8.38	8.38	4.54	3.79	5.75	7.00	8.38	8.38	8.38
10	8.32	8.38	8.32	7.75	5.55	5.23	4.40	4.49	6.10	8.38	8.41	8.38
11	8.35	8.41	7.90	7.90	7.11	6.40	5.10	5.95	7.35	8.45	8.40	8.40
12	8.32	8.11	6.86	6.32	6.73	5.50	6.35	6.13	7.88	8.45	8.48	8.48
13	8.35	8.30	6.74	7.20	6.05	4.10	5.50	7.41	7.41	8.48	8.48	8.48
14	8.37	8.40	6.69	6.90	7.10	5.05	4.65	5.27	6.40	8.49	8.49	8.49
15	8.43	8.04	7.00	4.66	4.64	3.30	4.54	3.81	5.48	8.52	8.52	8.49
16	8.46	6.10	4.49	2.81	4.20	3.50	3.48	3.94	5.20	8.49	8.49	8.51
17	8.40	8.49	5.70	3.60	4.11	4.13	3.84	4.18	5.70	8.55	8.61	8.61
18	8.34	8.43	8.34	4.97	4.10	4.30	4.23	3.94	5.55	8.55	8.50	8.52
19	8.30	8.45	8.49	4.40	4.25	3.84	3.87	4.29	4.80	8.55	8.53	8.53
20	8.40	8.49	8.62	8.58	5.12	5.05	5.93	3.70	6.28	8.52	8.55	8.55
21	8.55	8.64	8.64	8.49	8.52	5.85	6.28	4.54	4.61	8.28	8.31	8.57
22	8.46	8.49	8.52	8.28	8.45	5.23	5.17	4.74	6.28	8.40	8.45	8.52
23	8.64	8.49	8.64	8.31	8.10	5.43	4.85	5.18	6.62	8.67	8.67	8.67
24	8.34	8.42	8.48	8.49	8.51	5.75	5.32	6.25	6.56	8.49	8.31	8.55

APPENDIX C: Soil Report

ALS ENVIRONMENTAL ANALYTICAL REPORT

31-DEC-14 06:38 (MT)
Version: FINAL

	Sample ID	L1559821-1	L1559821-2			
	Description	SOIL	SOIL			
	Sampled Date	08-DEC-14	08-DEC-14			
	Sampled Time	15:10	11:55			
	Client ID	ENBRIDGE NPS 20 KIPLING TO OSHAWA SITE 1	ENBRIDGE NPS 20 KIPLING TO OSHAWA SITE 2			
Grouping	Analyte					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.82	6.96			
Saturated Paste Extractables	Bicarbonate (as CaCO3) (mg/kg)	25.6	6.5			
	Carbonate (as CaCO3) (mg/kg)	<3.0	<3.0			
	SAR (SAR)	1.38	5.99			
	Calcium (Ca) (mg/kg)	32.8	70.4			
	Chloride (Cl) (mg/kg)	20.6	51			
	Conductivity (dS/m)	0.601	1.96			
	Magnesium (Mg) (mg/kg)	5.62	4.86			
	Nitrate (as N) (mg/kg)	<0.50	<9.0 DLM			
	Potassium (K) (mg/kg)	<10 DLIV	<9.0 DLIV			
	% Saturation (%)	51.3	47.2			
	Sodium (Na) (mg/kg)	23.3	132			
	Sulfate (SO4) (mg/kg)	89.1	415			
	TGR(sodic) (t/ha)	<0.10	<0.10			
	TGR(brine) (t/ha)	<0.10	<0.10			

APPENDIX D: Enbridge Forms

ENBRIDGE

Pipeline Integrity Preliminary Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line
Target Feature: EML - A003
Girth Weld: P008

Pipe Information

Line Name:	NPS 20 Kippling-Oshawa	**Reference Girth Weld:**	P008	**Target Feature:**	A003
Pipe Installation Year:	1962	**Pipe Grade:**	N/P	**Long Seam Type:**	N/A
Pipe Standard:	N/P				
Network:	189	**High node:**	80	**Low node:**	77
Nominal Pipewall Thickness (mm):	7.920	**Actual Pipewall Thickness (mm):**	7.900	**Line Diameter (mm):**	508

Excavation Information

Upstream GW	Exposed Length (m)	Type of Joint Exposure	Longseam Orient.	GPS Latitude (°)	GPS Longitude (°)	GPS Elevation at TDC (m)
P007	1.93	Partial	N/A	Not Exposed	Not Exposed	Not Exposed
P008	1.43	Partial	N/A	43.65555	-79.34581	3

Feature Information

Feature Number	Type of Feature	ILI Feature Number	Reference GW	Feature Start (mm) Relative to GW	Feature End (mm) Relative to GW	Length (mm)	Feature Start (mm) Relative to Circ	Feature End (mm) Relative to Circ	Width (mm)	Max Depth (mm)	Max Depth (%) (of wt for corrosion of diam for dent)	Is Feature On or Near GW or SW	Repair (if grind, state depth)
A003	**EML**	**A003**	**P008**	**213**	**238**	**25.4**	**623.99**	**705.27**	**81.28**	**4.04**	**51**	**No**	
EML-001	**EML**	**A003**	**P008**	**-16**	**252**	**268**	**508**	**861**	**353**	**5.1**	**65**	**Yes**	**Clock Spring**
EML-002	**EML**	**N/A**	**P008**	**-212**	**-272**	**60**	**655ccw**	**882ccw**	**227**	**0.93**	**11.8**	**No**	**Clock Spring**
IND-001	**Linear Indication**	**N/A**	**P008**	**388**	**414**	**26**	**312**	**335**	**23**	**0.2**	**2.5**	**No**	**Clock Spring**
IND-002	**Damage - Arc Strike**	**N/A**	**P008**	**-22**	**-13**	**9**	**190ccw**	**220ccw**	**10**	**N/A**	**N/A**	**Yes**	**Clock Spring**
IND-003	**Damage - Arc Strike**	**N/A**	**P008**	**-18**	**-6**	**12**	**442ccw**	**454ccw**	**12**	**N/A**	**N/A**	**Yes**	**Clock Spring**
IND-004	**Damage - Arc Strike**	**N/A**	**P008**	**-25**	**-6**	**19**	**543ccw**	**560ccw**	**17**	**N/A**	**N/A**	**Yes**	**Clock Spring**
Note: ILI in Yellow, Red As Found													

Comments

Magnetic Particle Inspection was performed 360 degrees around all exposed pipe. MPI detected a linear indication that's 26 mm long, 23 mm wide and 0.2 mm deep. The indication was buffed out and UT readings were taken in the area, remaining wall thickness is 7.7 mm. UT thickness readings were performed on EML-001 and EML-002, the lowest remaining wall reading is 2.81 mm (Depth 5.1 mm).

There were three arc strike indications detected next to girthweld P008.

NDE Information

NDE Vendor:	TEAM Industrial Services Inc.	**Technician 1:**	Jim Francis
Assessment Start Date:	Monday, December 8, 2014	**Technician 2:**	James Pennie
Assessment End Date:	Tuesday, December 9, 2014	**Technician 3:**	Roxanne P. and Kelly K.

Pipeline Integrity Field Report

TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line
Target Feature: EML - A003
Girth Weld: P008

Pipe Information

Line Name:	NPS 20 Kippling-Oshawa	**Reference Girth Weld:**	P008	**Target Feature:**	A003
Pipe Installation Year:	1962	**Pipe Grade:**	N/P	**Long Seam Type:**	N/A
Pipe Standard:	N/P				
Network:	189	**High node:**	80	**Low node:**	77
Nominal Pipewall Thickness (mm):	7.920	**Actual Pipewall Thickness (mm):**	7.900	**Line Diameter (mm):**	508.00

ILI Dig Information

Type of ILI Tool:	Other	**ILI Inspection Date:**	N/P	**Tool Vendor:**	N/P
Reason for Excavation:	Corrosion				

Excavation Information

Upstream GW*	Exposed Length (m)	Type of Joint Exposure	Longseam Orient. (°) (at GW if spiral)	GPS Latitude (°)	GPS Longitude (°)	GPS Elevation at TDC (m)
P007	1.93	Partial	N/A	Not Exposed	Not Exposed	Not Exposed
P008	1.43	Partial	N/A	43.65555	-79.34581	3

***Must be filled in for all partial and fully exposed joints.**

NDE Information

NDE Performed:

	Yes	No
Visual Inspection of Pipe Body:	✓	
Visual Inspection of Girth Welds:	✓	
Visual Inspection of Long Seams:		✓
Magnetic Particle of Pipe Body:	✓	
Magnetic Particle of Girth Welds:	✓	
Magnetic Particle of Long Seams:		✓
General photographs taken:	✓	
All features measured/inspected:	✓	
All features photographed:	✓	

	Yes	No
Other _____:		
Other _____:		
Other _____:		
Other _____:		
Other _____:		

Please document additional NDE performed including: coating inspection, pipe-to-soil, soil sampling, additional sampling/testing, hardness testing, carbon equivalency, shear wave ultrasonic (specify body/welds), phased array scanning, automated ultrasonic scanning, laser scanning, radiography.

NDE Vendor:	TEAM Industrial Services Inc.	**Technician 1:**	Jim Francis
Assessment Start Date:	Monday, December 8, 2014	**Technician 2:**	James Pennie
Assessment End Date:	Tuesday, December 9, 2014	**Technician 3:**	Roxanne P. and Kelly K.

Other Information

Method of MPI:	Color Contrast - Water Based	**Cathodic Potential at U/S 90° (DC mV, CSE):**	-1873	**AC Potential (VAC):**	0.762 V
		Cathodic Potential at U/S 270° (DC mV, CSE):	-1828	**Soil Resistivity (ohm-cm):**	957.5
Pipe Temperature (°C):	1	**Cathodic Potential at D/S 90° (DC mV, CSE):**	-2038		
GPS Make/Model:	Garmin etrex 20	**Cathodic Potential at D/S 270° (DC mV, CSE):**	-1980		

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line
Target Feature: EML - A003
Girth Weld: P008

Remarks

Sandblasted pipe surface inspected by MPI: Y **All exposed welds inspected by UT:** Y

General Site Comments	Site is in an old abandoned factory without all back filled soil
Soil and Environmental Comments (ie. odor, staining, contamination)	Soil contamination from the coal tar coating. Masks and protective cloths were worn on site
Sampling & Analysis Comments	One sample was taken at pipe depth
Coating Comments	Coal Tar
Corrosion Deposits Comments	None
Corrosion Comments	None
Linear Indication Comments	One minor linear indication was found and removed.
Circumferential Linear Comments	None
Other Defects Comments	Three Arc Strike indications were found near the girth weld
Stress Corrosion Cracking Comments	None
Dent Comments	None
Grind Feature Comments	None
Sleeve Information Comments	None
Other Comments	

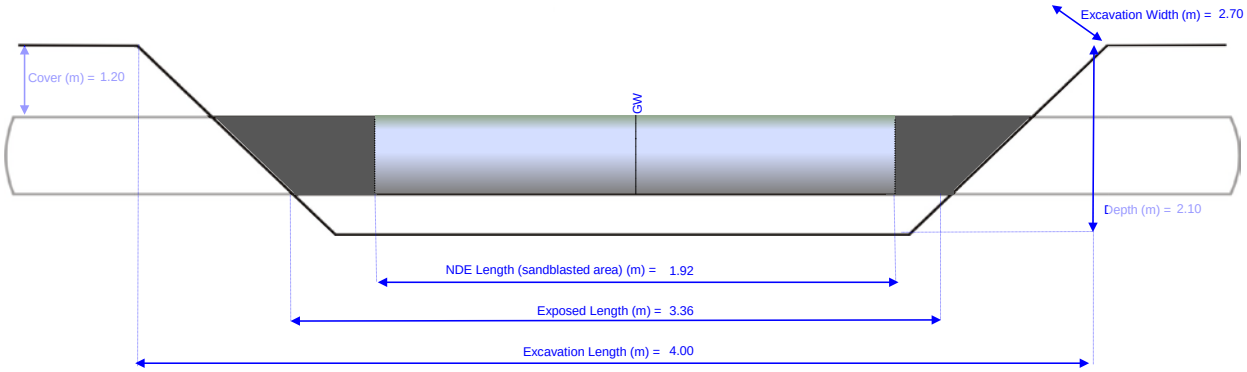
Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipplin
Target Feature: A003
Girth Weld: P008

Site Information

Direction of Flow



Reference girthweld:	P008	Slope of Pipe (rise/run)	N/A
Downstream girthweld:	P008	Excavation Length (m)	4.00
Depth of Ditch (m)	2.10	Depth of Cover (m)	1.20
Excavation width (m)	2.70	Number of girthwelds in excavation:	1
Length of upstream exposed coating (m)	0.96	Length of downstream exposed coating (m)	0.48
Start of NDE to reference girthweld (m)	-0.97	End of NDE to reference girthweld (m)	0.95
Total Length of Exposed Pipe (m)	3.36	Total Length of NDE (m)	1.92
Does section have sag? ☐ Yes ☑ No	**If Yes,**	Location from girthweld (m):	N/A
Does section have an overbend? ☐ Yes ☑ No	**If Yes,**	Location from girthweld: (m)	N/A
Does section have a sidebend? ☐ Yes ☑ No	**If Yes,**	Location from girthweld: (m)	N/A
Coating Type upstream of NDE Area	Coal Tar Enamel	Coating Type downstream of NDE area	Coal Tar Enamel

Site Excavation Comments

ENBRIDGE

Pipeline Integrity Field Report

Line: NPS 20 Kipling-Oshawa

NDE Vendor: TEAM Industrial Services Inc.

Target Feature: A003

Date: Monday, December 8, 2014

Girth Weld: P008

Equipment

ULTRASONICS

Scan Type ☑ A ☐ B ☐ Flaw ☑ Thickness ☐ FAST™

Instrument				Transducer	Type Single	Type Dual	Frequency (MHz)	Serial #
Manufacturer	Olympus-Epoch 600			0°	☑	☐	15 mHz	916376
Serial #	130593112			45°	☐	☐		
Calibration Date	1212412014			60°	☐	☐		
Range				70°	☐	☐		
Transfer Value					☐	☐		
Cal Block	1018 Steel-Thickness	S/N	A11953		☐	☐		
Cal Block		S/N			☐	☐		
Cal Block		S/N		FAST Model 1	☐	☐		
Couplant				Other:	☐	☐		

MAGNETIC PARTICLE

MPI Equipment

Manufacturer	Parker	Type	Model P-2	S/N	387	Calibration Date	March 26/15
Manufacturer	MagnaFlux	Type	Model Y-1	S/N	481	Calibration Date	Apr.4/15
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	

Magnetizing Method ☑ AC or ☐ DC ☑ Continuous or ☐ Residual ☑ Yoke ☐ Coil

	Name	Signature	CGSB Number
Technician	Jim Francis		11717

	Name	Signature	ASNT Number
Technician			

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line

Target Feature: EML - A003

Girth Weld: P008

Soil and Landscape Information

Land Use	Other
Slope Position	Level
Topography	Level
Vegetation	Grasses
Soil Resistivity	957.5 ohms.cm
Parent Material	Lacustrine
Soil Texture	Sandy Lome
Coarse Fragments	Estimated % By Volume: None

- ☐ Boulders (> 600mm)
- ☐ Small Stones (25mm<= X<100mm)
- ☐ Large Stones (100mm<= X<600mm)
- ☐ Gravel (<25mm)

Drainage	Imperfect	
Gleying	Slightly Gleyed (Patches of Light Greyish Brown)	
Mottling	Abundance	Common
	Size	Fine
	Contrast	Faint

Visible Salts (Check All That Apply)

- ☐ Surface Salt Crusts (White and Powdery)
- ☐ White/Grey Salts at Pipe Depth That Don't React With Acid
- ☐ Gypsum (Clear to Brown) Salt Crystals At Pipe Depth-Don't React With Acid
- ☐ Other (Explain in Comments)

Soil and Environmental Comments (ie. odor, staining, contamination)

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kip
Target Feature: EML - A00
Girth Weld: P008

Sampling and Analysis

SOIL

Sample No.	Location	pH	Salinity	Conductivity	ORP (mV, Platinum Electrode)	10% HCl Reaction
1	DS wall underneath pipe	6.2	NA	NA	240.0	Moderate

WATER

Sample No.	Location	pH	Salinity	Conductivity
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Sampling and Analysis Comments

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line
Target Feature: EML - A003
Girth Weld: P008

Corrosion Assessment

RSTRENG Completed by _____ **Assessment Method** UT

Corrosion Feature Number	ILI Feature Number	Reference GW	Type of Corrosion ID/OD	Relative to Girth Weld Start of Cluster (m)	Relative to Girth Weld End of Cluster (m)	Total Length of Cluster (mm)	Circ Start of Cluster (mm)	Circ End of Cluster (mm)	Circ Width of Cluster (mm)	Degrees From	Degrees To	Wall thickness (mm)	Max Depth based on AWT (mm)	Max Depth (%)	Actual Wall Thickness next to Ind (mm)	KAPA Required	RSTRENG Results (RPR) (Case 1: Effective Area)	RSTRENG Results (RPR) (Case 2 0.85	On or Near SW/GW*	Reason for Repair	Type of repair	Outlier** (Y/N)
COR1	A003	P008	External	-0.016	0.252	268.00	508.00	861.00	353.00	30	50	7.900	5.100	65%	7.900	#N/A		#N/A			Clock Spring	
COR2	NA	P008	External	-0.21	0.27	484.00	713.00	940.00	227.00	42	55	7.900	0.930	12%	7.900	#N/A		#N/A			Clock Spring	
COR3																						
COR4																						
COR5																						
COR6																						
COR7																						
COR8																						
COR9																						
COR10																						
COR11																						
COR12																						
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COR15																						
COR16																						
COR17																						
COR18																						
COR19																						
COR20																						
COR21																						
COR22																						
COR23																						
COR24																						
COR25																						

* **BW** - In or at both Seamweld and Girthweld, **IGW** - In Girthweld, **AGW** - At Girthweld, **ISW** - In Seamweld, **ASW** - At Seamweld (From toe of weld to 10 mm, **BM** - Base Metal (From 10 mm past toe of weld)

Corrosion Comments

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line
Target Feature: EML - A003
Girth Weld: P008

Linear Indication Assessment

NDT Inspector _____

Linear Indication Feature Number	ILI Feature Number	Reference GW	Type of Indication	Indication Relative Positon*	Indication Radial Position	Axial Start of Indication (m)	Axial End of Indication (m)	Axial Length of Indication (mm)	Circ Start of Linear Indication (mm)	Measured Width of Indication (mm)	Circ Start Degree Position	Associated Corrosion Feature # (if any)	Measured Wall Thickness Adjacent to Indication (mm)	Indication Depth (mm)	Total Depth (Crack + Corr) (mm)	Indication Depth (%)	Total Depth (Crack + Corr) (%)	Reason for Repair	Type of Repair	NDT Analysis Method Used to Size Feature	Outlier** (Y/N)
LI1	NA	P008	Crack	BM	External	0.39	0.41	26.00	312.00	335.0	18	N/A	7.9	0.200	0.200	3%	3%	Client Request	Removed and Sleeved	UT	Y
LI2																					
LI3																					
LI4																					
LI5																					
LI6																					
LI7																					
LI8																					
LI9																					
LI10																					
LI11																					
LI12																					
LI13																					
LI14																					
LI15																					
LI16																					
LI17																					
LI18																					
LI19																					
LI20																					
LI21																					
LI22																					
LI23																					
LI24																					
LI25																					

* **BW -** In or at both Girthweld and Seamweld**, IGW** - In Girthweld, **AGW** - At Girthweld, **ISW** - In Seamweld, **ASW** - At Seamweld (From toe of weld to 10 mm, **BM** - Base Metal (From 10 mm past toe of weld)

** If indication is an Outlier, client must be contacted

Linear Indication Comments

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa I

Target Feature: EML - A003

Girth Weld: P008

Other Features Assessment

NDT Inspector _____

Other Indication Feature Number	ILI Feature Number	Reference GW	Type of Indication	Indication Relative Positon*	Indication Radial Position	Axial Start of Indication (m)	Axial End of Indication (m)	Axial Length of Indication (mm)	Circ Start of Linear Indication (mm)	Circ End of Linear Indication (mm)	Circ Start Degree Position	Circ End Degree Position	Associated Corrosion Feature # (if any)	Measured Wall Thickness Adjacent to Indication (mm)	Indication Depth (mm)	Indication Depth (%)	Reason for Repair	Type of Repair	NDT Analysis Method Used to Size Feature	Outlier** (Y/N)
OI1		P008	Arc Burn		External	-0.022	-0.013	9.00	1375.00	1405.00	80	82		7.9	na	#VALUE!		Not Removed, But Sleeved		
OI2		P008	Arc Burn		External	-0.018	-0.006	12.00	1141.00	1153.00	67	67		7.900	na	#VALUE!		Not Removed, But Sleeved		
OI3		P008	Arc Burn		External	-0.025	-0.006	19.00	1035.00	1052.00	60	61		7.900	na	#VALUE!		Not Removed, But Sleeved		
OI4																				
OI5																				
OI6																				
OI7																				
OI8																				
OI9																				
OI10																				
OI11																				
OI12																				
OI13																				
OI14																				
OI15																				
OI16																				
OI17																				
OI18																				
OI19																				
OI20																				
OI21																				
OI22																				
OI23																				
OI24																				
OI25																				

* **BW -** In or at both Girthweld and Seamweld, **IGW -** In Girthweld, **AGW -** At Girthweld, **ISW -** In Seamweld, **ASW -** At Seamweld (From toe of weld to 0.5 in, **BM** - Base Metal (From 10 mm past toe of weld)

** If indication is an Outlier, client must be contacted

Other Defects Comments

TEAM INDUSTRIAL SERVICES PIPELINE INC.

ENBRIDGE GAS DISTRIBUTION INC.

Final Report – NPS 20" Kipling to Oshawa Site #2

TISI DMMS #: DO2296

Pipeline: NPS 20 Kipling to Oshawa
Site: #2
ILI Feature: EML A012, A013
Report Date: December 17th, 2014

Prepared For:

Greg Knopinski, P.Eng
Project Manager, Gas Storage and Transmission System Integrity

Enbridge Gas Distribution Inc.
500 Consumers Road, 5th Floor,
Toronto, ON
M2J 1P8

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Prepared By:

Joel Djordjevic
Pipeline Manager – Eastern Canada

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Oakville, ON
L6L 6R7

Joel.djordjevic@TeamInc.com

WO: 50742263
PO: 10921844

TABLE OF CONTENTS

1. INTRODUCTION

TISI (Team Industrial Services Inc.) arrived onsite on December 8th, 16th and 17th 2014 to perform Assessment of Feature EML A012 and A013, as well as the Manufacturing defects of Site #2 on the NPS 20" Kipling to Oshawa pipeline.

2. SUMMARY OF RESULTS

The predicted measurements for the ILI features differ from the as found features. For feature EML-01, the ILI values were 2 mm longer and 26 mm wider than the as found feature. However the depth of the as found feature is 1.31 mm deeper than the ILI value. The as found feature for EML-02 is 9 mm longer and 13 mm wider than the ILI values, and the ILI is 0.8 mm deeper than the as found feature. Crack-like manufacturing defects were located on the original pipe exposure; due to our findings, more of the pipe was exposed for a total length of 13.704 m. A total of 40 crack-like manufacturing defects were found with magnetic particle inspection. These indications were buffed out and removed completely. After the removal of the indications the areas were inspected with ultrasonic inspection for remaining wall thickness. None of the areas that were buffed exceeded 10% wall loss.

2.1 SITE SUMMARY

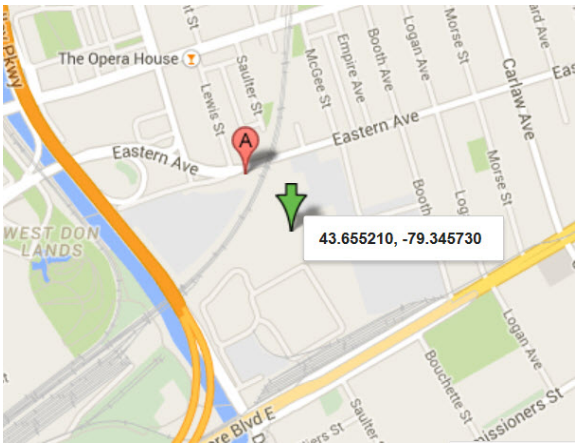


Figure 1: Site Location

Table 1: Site Summary

Type of Excavation:	Validation
Action Item(s):	EML A012, A013
Date of Excavation:	December 5, 2014
Date of Remediation:	December 18, 2014
Type of Remediation:	Blast and recoat
Total Exposed Pipeline Length (m)	14.654
Depth of Excavation (m)	2.40
Depth from the Surface to T.O.P. (m)	1.30
Total Length of Coating Removed (m)	13.704
Total length of Re-Coat (m)	NP
Total Length of MPI (m)	13.704
Advanced Inspection Method for Feature	UT

Identification	
Other Inspections/Assessments Performed	MPI
Description of Remediation Activity	NP

3. PIPELINE DETAILS

Table 2: Pipeline Information

Name	NPS 20 Kipling to Oshawa
Length (km)	NP
Diameter (mm)	508
Nominal Wall Thickness (mm)	7.92
Grade	NP
SMYS %	NP
Longitudinal Seam Type	NA
MAOP (kPa)	NP
MOP (kPa)	NP
Design Factor	NP
Pipe Manufacturer	NP
Year of Installation	1962
Date of Last Hydro Test	NP
Mainline Coating	Coal Tar Enamel
Weld Coating	Coal Tar Enamel
Current Product In the Pipeline	Natural Gas
Past Product	Natural Gas

4. SOIL & LANDSCAPE INFORMATION

Table 3: Site Location

Land Use	R.O.W.
Land Owner	NP
Legal Description	R.O.W.
Site Position	Level
Topography	Level
Parent Soil	Lacustrine
Soil Texture	Sandy Loam
Soil pH	5.9
Soil Temperature (Celsius)	-0.2
Soil Resistivity (ohms-cm)	957.5
Are Carbonates Present	NA
Field Estimate of CaCO3	NA
Average Pipe to Soil CP (mV)	-1560
Soil Redox Potential (ORP) (mV)	NA
Drainage	Imperfect
Visible Salts	N/A
Gleying	Slightly gleyed
Mottling Abundance	Common
Mottling Contrast	Faint
Mottling Size	Fine

5. COATING ASSESSMENT

Coating was removed and the pipe surface was prepared by blasting with a medium to remove all surface features that would have inhibited NDT inspection prior to TISI technicians arriving onsite. Therefore, pipe surface assessment of the coating condition or the pipe surface condition could not be observed.

Table 4: Pipeline Information

Mainline Coating Type	Coal Tar Enamel
Weld Coating Type	Coal Tar Enamel
Weld coating Condition	N/A
Corrosion Deposits	N/A
Dominant Deposit Color	N/A
Dominant Deposit Texture	N/A
Magnetic Reaction	N/A
Carbonate Reaction	N/A
Sample Number	N/A
Associated Feature?	N/A

6. SITE DRAWING AND JOINT DETAILS

Date:	December 17th, 2014	Nominal Wall Thickness:	7.92 mm
U/S Compressor Station:	NA	Pipe Diameter:	508 mm
Line:	NPS 20 Kipling to Oshawa		
RGW GPS:	43.65521 North		
	079.34573 West		

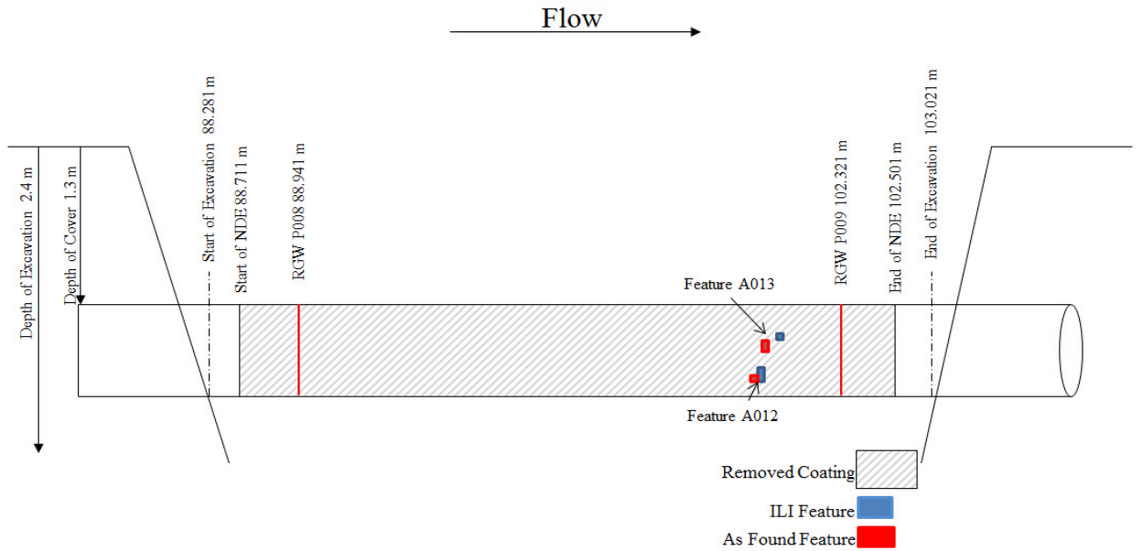


Figure 2: Diagram of the Excavation

Joint ID	ILI Joint Length (m)	ILI Longseam Orientation (0'clock)	ILI Nominal Wall Thickness (mm)	Manufacturer	Grade	Class	GW Type	Measured Wall Thickness (mm)	Exposed Joint Length (m)	Removed Coating and MT Length (m)	L/S Orientation (O'Clock)	Original Coating Type	MPI Performed	Pipe Temp. (°C)
P007	NA	NA	7.92	NP	NP	NA	Field Weld	8.19	0.66	0.23	NA	Coal Tar	Yes	-1.0
P008	NA	NA	7.92	NP	NP	NA	Field Weld	7.90	13.294	13.294	NA	Coal Tar	Yes	-1.0
P009	NA	NA	7.92	NP	NP	NA	Field Weld	7.79	0.7	0.18	NA	Coal Tar	Yes	-1.0

7. REMEDIATION

Table 5: Remediation

Pipeline Data				Repair Type					Coating Information				
Action Item	ILI Weld/Joint ID	Absolute Distance (m0	Repair/ Remediation Date	Recoat	Type Reinforcing Sleeve Type A Sleeve	Composite Sleeve	Pipe Replacement	Buffed	Begin recoat ILI Abs. Distance (m)	End Recoat ILI Abs. Distance (m)	Total Recoated Length (m)	Coating Manufacturer	Coating Product Name/#
EML A012	P008	101.133	N/P	N/P	YES	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
EML A013	P008	101.133	N/P	N/P	YES`	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P

8. EQUIPMENT

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling-Oshawa
Target Feature: A003
Girth Weld: P008

Equipment

ULTRASONICS

Scan Type ☑ A ☐ B ☐ Flaw ☐ Thickness ☐ FAST™

Instrument			Transducer	Type Single	Type Dual	Frequency (MHz)	Serial #
Manufacturer	Olympus- Epoch 600		0°	☑	☐	15	916373
Serial #	130593012			☐	☐		
Calibration Date	5-Jan-15			☐	☐		
Range				☐	☐		
Transfer Value				☐	☐		
Cal Block	Step wedge	S/N A11953		☐	☐		
Cal Block		S/N		☐	☐		
Cal Block		S/N		☐	☐		
Couplant	Sonoglide FE		Other:	☐	☐		

MAGNETIC PARTICLE

MPI Equipment

Manufacturer	Parker	Type P2	S/N 387	Calibration Date	26-Mar-15
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	

Magnetizing Method ☑ AC or ☐ DC ☑ Continuous or ☐ Residual ☑ Yoke ☐ Coil

Technician	Jim Francis		11717
	Name	Signature	ASNT Number
Technician	Bill Andrews		
	Name	Signature	ASNT Number

ENBRIDGE

Pipeline Integrity Field Report

Line: NPS 20 Kipling-Oshawa
NDE Vendor: TEAM Industrial Services Inc.
Target Feature: A003
Date: Monday, December 15, 2014
Girth Weld: P008

Equipment

ULTRASONICS

Scan Type ☑ A ☐ B ☐ Flaw ☑ Thickness ☐ FAST™

Instrument			Transducer	Type Single	Type Dual	Frequency (MHz)	Serial #
Manufacturer	Olympus - Epoch 600		0°	☑	☐	10	912305
Serial #	130593012			☐	☐		
Calibration Date	5-Jan-15			☐	☐		
Range				☐	☐		
Transfer Value				☐	☐		
Cal Block	Step Wedge	S/N A11953		☐	☐		
Cal Block		S/N		☐	☐		
Cal Block		S/N		☐	☐		
Couplant	Sonoglide FE		Other:	☐	☐		

MAGNETIC PARTICLE

MPI Equipment

Manufacturer	Parker	Type P2	S/N 387	Calibration Date	1-Oct-14
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	

Magnetizing Method ☑ AC or ☐ DC ☑ Continuous or ☐ Residual ☑ Yoke ☐ Coil

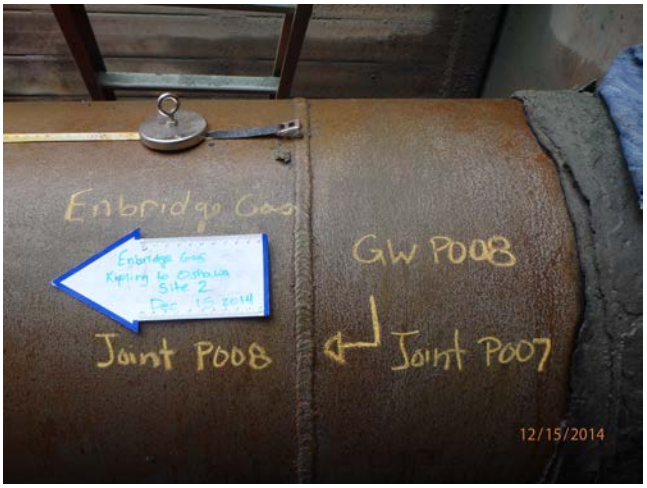
Technician	James Pennie		9565
	Name	Signature	ASNT Number
Technician			
	Name	Signature	ASNT Number

9. SITE PHOTOGRAPHS

Upstream View

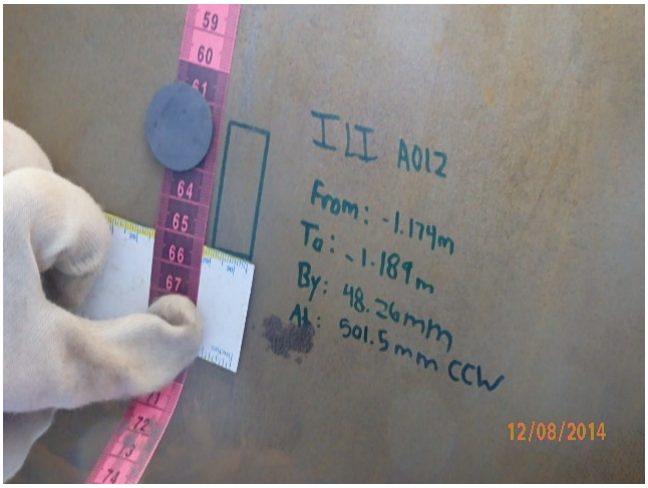
Downstream View

RGW P008

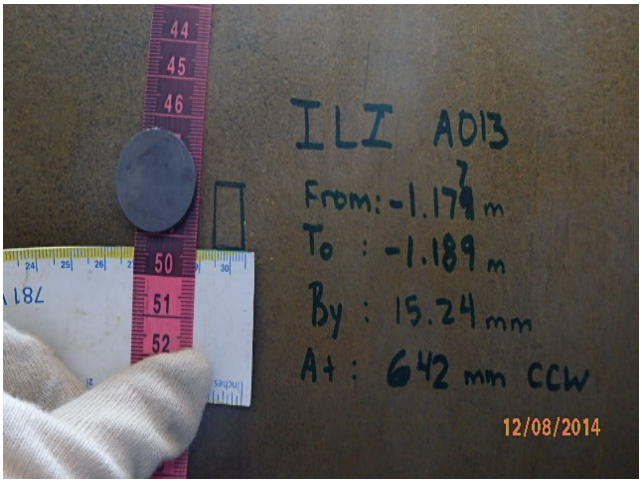


Downstream GW P009

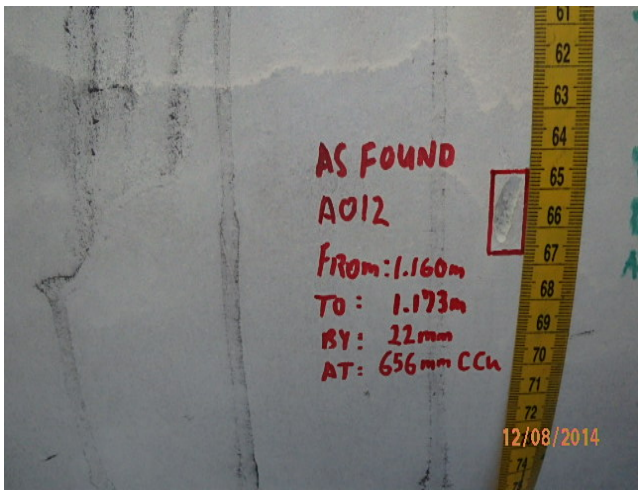
ILI Feature – A012



ILI Feature – A013

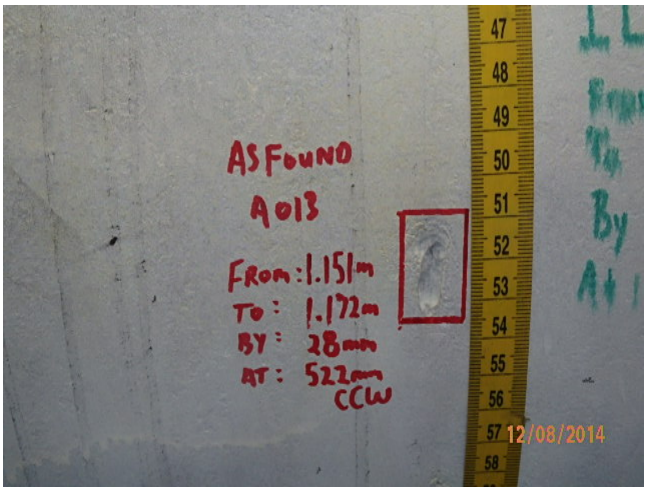


As Found Feature A012



A013 Deepest point – 2.12mm

As Found Feature A013



A013 Deepest point – 3.28mm

Start of NDE

End of NDE

Pipe after MT

Remediation

APPENDIX A: MT Report

TEAM Industrial Services TISI Canada Inc.

MAGNETIC PARTICLE EXAMINATION REPORT-PORTABLE

Date of Examination: 2014 /12 /08

781 Westgate Road
Oakville, Ontario L6L 6R7
Tel: (905) 845-9542 Fax: (905) 845-9551

Purchase Order No.: 10921844 Job No.: 50742263 Client Job No.: 71595

Client Name: Enbridge Gas Distribution Inc. Client Project: NPS 20-Kipling to Oshawa Line

Work Location / Address: 21 Don Roadway-Dig #2

Code / Specification / CED: Z662-11 Acceptance / CED: Z662-11 Procedure: CSA MT-1 Rev.3 Technique: AC Continuous

PART DESCRIPTION:

Quantity Inspected: 1	Quantity Accepted: 1	Quantity Rejected: 0						
Part / Assy No.: Item A012,A013-External Metal Loss	DWG No.: n/a	Material: n/a	Heat No.: n/a	Material Thickness: 7.92 mm				
Type of Fabrication:	☒ Piping	☐ Vessel	☐ Tank	☐ Weld	☐ Casting	☐ Forging	☐ Plate	☐ Other
☒ Surface Acceptable For Inspection								

INSPECTION PARAMETERS:

Magnetizing Equipment: Parker-Model P2-Yoke	S/N: 387	Calibration Date: Oct.01/14	☒ AC	☐ DC	☒ Continuous	☐ Residual	
Yoke Leg Spacing: 6 inch	Prod Spacing Amps:	Permanent Magnet Leg Spacing:	Amps:				
Testing Medium: Magnaflux WCP-2	☐ Fluorescent	☐ Dry Powder	Colour White	☒ Colour Contrast	Batch No.: 13KO1K	Expiry Date: Oct. 2018	
Testing Medium: Magnaflux 7C	☐ Fluorescent	☐ Dry Powder	Colour Black	☒ Colour Contrast	Batch No.: 13GO4O	Expiry Date: n/a	
Bath Concentration: 2.0	☐ Fluorescent ml / 100ml	☒ Non-fluorescent ml / 100ml	☐ Aerosol	Part Temperature: 1 C	☐ °F	☒ °C	
Demagnetization: n/a	☐ Y	☐ N	No. of Oersteds: n/a				

LIGHTING EQUIPMENT:

BLACK LIGHT EQUIPMENT USED: n/a	WHITE LIGHT EQUIPMENT USED: Spectroline XDS-1000
Black Light Meter S/N: Cal. Date: Due Date:	White Light Meter S/N: 1882858 Cal. Date: Aug.18/14 Due Date: Feb.18/15
Black Light Intensity at time of Inspection: µw /cm²	White Light Intensity at time of Inspection: 340 fc fc
Min. Black Light Intensity to be ≥1000 µw/cm² ☐ at examination surface	Min. White Light Intensity to be ≥100 fc ☒ at examination surface
☐ at " from examination surface	☐ at " from examination surface
	☒ Ambient White Light in Darkened Area ≤ 2 fc At Inspection Surface

INSPECTION RESULTS: Black on white Magnetic Particle inspection was performed on Enbridge Gas NPS 20-Kipling to Oshawa Line-Items A012,A013-External Metal Loss. Area inspected was 1.800 meters D/S of GW P009 to 0.180 meters U/S of GW P009. The pipe diameter was inspected circumferentially (360 degrees) for SCC and the exposed girth weld was inspected both circumferentially and axially.

No relevant SCC indications were found. (See next page for further inspection results)

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

Technician: Jim Francis (Print Name)	Signature	2008/12/21 (Cert Date)	2014/12/31 (Exp. Date)	Assistant: (Print Name)	Signature	Cert Date	Exp. Date
Certification: Magnetic Particle Level 2			Reg. # 11717	Certification:			Reg. #
Authorized Inspector: (Print Name)	Signature	Date		Client Final Acceptance: (Print Name)	Signature	Date	

011 MT-Port R0 CSA Supervisors Review

Page 1 of 2

TEAM® Industrial Services TISI Canada Inc.

MAGNETIC PARTICLE EXAMINATION REPORT-PORTABLE

Date of Examination: 2014 /12 /08

781 Westgate Road
Oakville, Ontario L6L 6R7
Tel: (905) 845-9542 Fax: (905) 845-9551

Purchase Order No.: 10921844 Job No.: 50742263 Client Job No.: 71595

Client Name: Enbridge Gas Distribution Inc. Client Project: NPS 20-Kipling to Oshawa Line

Work Location / Address: 21 Don Roadway-Dig #2

Code / Specification / CED: Z662-11 Acceptance / CED: Z662-11 Procedure: CSA MT-1 Rev.3 Technique: AC Continuous

INSPECTION RESULTS: Damage features (crack-like indications) were found by Magnetic Particle Inspection (see Photograph #1 below) on top section of pipe (U/S of GW 009). On December 09,2014 indications were buffed out on two test areas (see Photograph #2 below) with less than 10 % wall loss.

PHOTOGRAPHS:

#1

#2

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

Technician: Jim Francis		2008/12/21	2014/12/31	Assistant:			
Print Name	Signature	Cert Date	Exp. Date	Print Name	Signature	Cert Date	Exp. Date
Certification: Magnetic Particle Level 2			Reg. # 11717	Certification:			Reg. #
Authorized Inspector:				Client Final Acceptance:			
Print Name	Signature	Date		Print Name	Signature	Date	

011 MT-Port R0 CSA Supervisors Review_____

Page 2 of 2

APPENDIX B: UT Report

TEAM® Industrial Services TISI Canada Inc.

ULTRASONIC INSPECTION REPORT

Date of Examination: 2014 /12 /16 (yyyy mm dd)

781 Westgate Road
Oakville,Ontario L6L 6R7
Tel:(905) 845-9542 Fax:(905) 845-9551

Purchase Order No.: 10921844 | Job No.: 50742263 | Client Job No.: 71595

Client Name: Enbridge Gas Distribution Inc | Client Project: NPS 36 Parkway North

Work Location / Address : Dig #2-21 Don Roadway-NPS 20-Kipling to Oshawa: Assessment #2

Code / Specification / CED: Z662-11 | Acceptance / CED: Z662-11 | Procedure: CSA UT-1 Rev.2

PART DESCRIPTION:

Part / Assy No: Joint P007/P008/P009	Quantity Inspected: 1	Quantity Accepted: 1	Quantity Rejected: 0
	Material: Carbon Steel; Material Thickness:7.92mm	Heat No.: n/a	DWG No.: n/a

INSPECTION PARAMETERS:

Type of Fabrication: ☒ Piping ☐ Vessel ☐ Tank ☐ Weld ☐ Casting ☐ Forging ☐ Plate ☐ Other ☒ Surface Acceptable For Inspection

Ultrasonic Equipment: | Transducer: Panametrics-A111S

Make	Model	S/N	Cal. Date 01/05/14 / Due Date 01/05/15	Angle	Size	Freq.	S/N	Reference Level dB	Transfer Level dB	Scanning Sensitivity dB
Olympus	Epoch 600	130593012		0	0.5	10 MHz	912305	25 dB		45 dB

Cable Type ☒ BNC ☒ Microdot ☐ Limo ☐ Other Cable Length: 6 ft.

Presentation: ☒ A-Scan ☐ B-Scan ☐ C-Scan

Reject: ☐ Yes ☒ No Damping ☐ Yes ☒ No

Calibration Block: Step Wedge | S/N: A11953 | Reference Reflectors: Backwall | Couplant: Sonotech FE | Batch No.: 13K067

Inspection Method: ☒ Contact ☒ Pulse Echo ☐ Immersion ☐ Resonance ☐ Through Transmission

Post Clean: Method: n/a | Material: n/a | Batch No.: n/a

INSPECTION RESULTS:

Ultrasonic thickness inspection was performed before and after grinding on all Manufacturing indications found.

Refer below for further details.

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

	Print Name	Signature	Cert Date	Exp. Date
Technician: James Pennie			2001/06/14	2016/12/31
Certification:	CGSB UT II		Reg. # 9565	
Assistant:				
Certification			Reg. #	

Authorized Inspector: (Print Name / Signature / Date)

Client Final Acceptance: (Print Name / Signature / Date)

007 UT R2 CSA Supervisors Review_____

Page 2 of 2

TEAM Industrial Services TISI Canada Inc.

ULTRASONIC INSPECTION REPORT

Date of Examination: 2014 /12 /16 (yyyy mm dd)

781 Westgate Road
Oakville,Ontario L6L 6R7
Tel:(905) 845-9542 Fax:(905) 845-9551

Purchase Order No.: 10921844 Job No.: 50742263 Client Job No.: 71595

Client Name: Enbridge Gas Distribution Inc Client Project: NPS 36 Parkway North

Work Location / Address : Dig #2-21 Don Roadway-NPS 20-Kipling to Oshawa: Assessment #2

Code / Specification / CED: Z662-11 Acceptance / CED: Z662-11 Procedure: CSA UT-1 Rev.2

INSPECTION RESULTS:

Ultrasonic Thickness Readings(mm)

Grind Feature Number	Before Grind	After Grind	Grind Feature Number	Before Grind	After Grind
1	8.15	7.87	21	7.80	7.59
2	8.19	8.07	22	7.93	7.51
3	8.33	7.90	23	8.00	7.67
4	8.30	8.04	24	7.80	7.64
5	8.30	7.81	25	8.10	7.58
6	8.26	8.00	26	8.03	7.70
7	8.16	8.04	27	7.90	7.57
8	8.10	7.80	28	7.80	7.60
9	9.50	7.94	29	7.97	7.50
10	8.29	8.01	30	7.93	7.60
11	8.10	7.75	31	7.91	7.29
12	8.21	7.88	32	7.91	7.35
13	8.10	7.67	33	7.99	7.79
14	8.24	8.07	34	8.20	7.84
15	8.20	7.80	35	7.95	7.67
16	7.97	7.57	36	7.86	7.52
17	8.00	7.49	37	7.90	7.61
18	8.26	7.26	38	8.12	7.93
19	8.19	7.93	39	7.60	7.43
20	7.97	7.68	40	7.91	7.45

SIGNATURE AND CERTIFICATION: All date are formatted to: yyyy /mm /dd

Technician: James Pennie 2001/06/14 2016/12/31

Certification: Print Name: CGSB UT II Signature: Cert Date: Reg. # 9565 Exp. Date:

Authorized Inspector: Print Name Signature Date

Assistant:

Certification Print Name Signature Cert Date Reg. # Exp. Date

Client Final Acceptance: Print Name Signature Date

APPENDIX C: Soil Analysis

L1559821 CONTD....
PAGE 2 of 4
31-DEC-14 06:38 (MT)
Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1559821-1	L1559821-2			
	Description	SOIL	SOIL			
	Sampled Date	08-DEC-14	08-DEC-14			
	Sampled Time	15:10	11:55			
	Client ID	ENBRIDGE NPS 20 KIPLING TO OSHAWA SITE 1	ENBRIDGE NPS 20 KIPLING TO OSHAWA SITE 2			
Grouping	Analyte					
SOIL						
Physical Tests	pH (1:2 soil:water) (pH)	7.82	6.96			
Saturated Paste Extractables	Bicarbonate (as CaCO3) (mg/kg)	25.6	6.5			
	Carbonate (as CaCO3) (mg/kg)	<3.0	<3.0			
	SAR (SAR)	1.38	5.99			
	Calcium (Ca) (mg/kg)	32.8	70.4			
	Chloride (Cl) (mg/kg)	20.6	51			
	Conductivity (dS/m)	0.601	1.96			
	Magnesium (Mg) (mg/kg)	5.62	4.86			
	Nitrate (as N) (mg/kg)	<0.50	<9.0 DLM			
	Potassium (K) (mg/kg)	<10 DLIV	<9.0 DLIV			
	% Saturation (%)	51.3	47.2			
	Sodium (Na) (mg/kg)	23.3	132			
	Sulfate (SO4) (mg/kg)	89.1	415			
	TGR(sodic) (t/ha)	<0.10	<0.10			
	TGR(brine) (t/ha)	<0.10	<0.10			

APPENDIX D: Enbridge Forms

ENBRIDGE

Pipeline Integrity Preliminary Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line
Target Feature: EML - A012 + A013
Girth Weld: P008

Pipe Information

Line Name:	NPS 20 Kippling-Oshawa	**ference Girth Weld:**	P008	**Target Feature:**	A012 + A013
Pipe Installation Year:	1962	**Pipe Grade:**	N/P	**Long Seam Type:**	N/A
Pipe Standard:	N/P				
Network:	189	**High node:**	80	**Low node:**	77
Nominal Pipewall Thickness (mm):	7.920	**Actual Pipewall Thickness (mm):**	7.900	**Line Diameter**	508

Excavation Information

Upstream GW	Exposed Length (m)	Type of Joint Exposure	Longseam Orient.	GPS Latitude (°)	GPS Longitude (°)	GPS Elevation at TDC (m)
P008	13.29	Full	N/A	43.65521	-79.3457	3
P009	0.70	Partial	N/A	43.6551	-79.34567	4

Feature Information

Feature Number	Type of Feature	ILI Feature Number	Reference GW	Feature Start (mm) Relative to GW	Feature End (mm) Relative to GW	Length (mm)	Feature Start (mm) Relative to Circ	Feature End (mm) Relative to Circ	Width (mm)	Max Depth (mm)	Max Depth (%) (of wt for corrosion of diam for dent)	Is Feature On or Near GW or SW	Repair (if grind, state depth)
EML-001	EML	A012	P009	-1189	-1174	15.24	666ccw	618ccw	48.26	0.79	10	No	
EML-002	EML	A013	P009	-1189	-1177	12.7	494ccw	479ccw	15.24	3.65	46	No	
EML-001	EML	A012	P009	-1160	-1173	13	645ccw	667ccw	22	2.1	26.6	No	Recoat
EML-002	EML	A013	P009	-1151	-1172	21	508ccw	536ccw	28	2.85	36	No	Recoat

Note: ILI in Yellow, Red As Found

Comments

Magnetic Particle Inspection - No indications on As Found features (A012 and A013)

Magnetic Particle revealed crack-like indications on top section of pipe. Two areas of indications were chosen and all indications were buffed out.

Minimum remaining wall in these grind features was 7.26mm.

Remaining wall thickness for feature A013 is 5.05mm, and for feature A012 is 5.80mm

See MFG Indications tab, as well as Grind MFG tab for Manufacturing defects - All defects have been removed.

NDE Information

NDE Vendor:	TEAM Industrial Services Inc.	**Technician 1:**	Jim Francis
Assessment Start Date:	Monday, December 8, 2014	**Technician 2:**	James Pennie
Assessment End Date:	Tuesday, December 16, 2014	**Technician 3:**	Roxanne P. and Kelly K.

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line
Target Feature: EML - A012 + A013
Girth Weld: P008

Pipe Information

Line Name:	PS 20 Kippling-Oshaw	**ference Girth Weld:**	P008	**Target Feature:**	A012 + A013
ipe Installation Year:	1962	**Pipe Grade:**	N/P	**Long Seam Type:**	N/P
Pipe Standard:	N/P				
Network:	189	**High node:**	80	**Low node:**	77
Nominal Pipewall Thickness (mm):	7.920	**Actual Pipewall Thickness (mm):**	7.900	**Line Diameter**	508.00

ILI Dig Information

Type of ILI Tool:	MFL	**ILI Inspection Date:**	N/P	**Tool Vendor:**	N/P
Reason for	Corrosion				

Excavation Information

Upstream GW*	Exposed Length	Type of Joint Exposure	Longseam Orient. (°) (at GW if spiral)	GPS Latitude (°)	GPS Longitude (°)	GPS Elevation at TDC (m)
P008	13.29	Full	N/A	43.65521	-79.3457	3
P009	0.70	Partial	N/A	43.6551	-79.34567	4

***Must be filled in for all partial and fully exposed joints.**

NDE Information

NDE Performed:

	Yes	No
Visual Inspection of Pipe Body:	☑	☐
Visual Inspection of Girth	☑	☐
Visual Inspection of Long	☑	☐
Magnetic Particle of Pipe Body:	☑	☐
Magnetic Particle of Girth	☑	☐
Magnetic Particle of Long	☑	☐
General photographs taken:	☑	☐
All features	☑	☐
All features photographed:	☑	☐

	Yes	No
Other	☐	☐
Other	☐	☐
Other	☐	☐
Other	☐	☐
Other	☐	☐

Please document additional NDE performed including: coating inspection, pipe-to-soil, soil sampling, additional sampling/testing, hardness testing, carbon equivalency, shear wave ultrasonic (specify body/welds), phased array

NDE Vendor:	TEAM Industrial Services Inc.	**Technician 1:**	Jim Francis
ssessment Start Date:	Monday, December 8, 2014	**Technician 2:**	James Pennie
ssessment End Date:	Tuesday, December 16, 2014	**Technician 3:**	Roxanne P. and Kelly K.

Other Information

Method of MPI:	Color Contrast - Water Based	**iodic Potential at U/S 90° (DC mV, CSE):**	-1.579	**AC Potential (VAC):**	0.603 V
		dic Potential at U/S 270° (DC mV, CSE):	-1.590	**Soil Resistivity (ohm-cm):**	957.5
Pipe Temperature	-1	**iodic Potential at D/S 90° (DC mV, CSE):**	-1.516		
GPS Make/Model:	Garmin etrex 20	**dic Potential at D/S 270° (DC mV, CSE):**	-1.557		

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line
Target Feature: EML - A012 + A013
Girth Weld: P008

Remarks

Sandblasted pipe surface inspected by MPI: Y **All exposed welds inspected by UT:** Y

General Site Comments	Contaminated soil due to chemical in coal tar enamel.
Soil and Environmental Comments (ie. odor, staining, contamination)	Un-natural soil - backfilled with sand after pipe installation.
Sampling & Analysis Comments	A sample was collected at the downstream wall of pipe.
Coating Comments	Coating was is good condition - no disbondment.
Corrosion Deposits Comments	The pipe was sandblasted prior to our arrival on site, therefore we were not able to assess the corrosion.
Corrosion Comments	NA
Linear Indication Comments	NA
Circumferential Linear Comments	NA
Other Defects Comments	42 manufacturing defects were measured and removed.
Stress Corrosion Cracking Comments	NA
Dent Comments	NA
Grind Feature Comments	All manufacturing defects were succcessfully buffed out.
Sleeve Information Comments	NP
Other Comments	

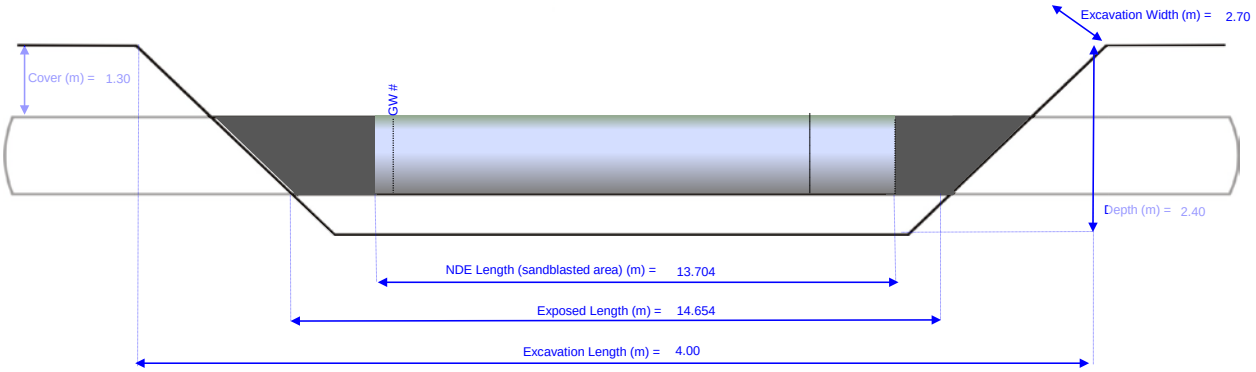
Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 16, 2014

Line: NPS 20 Kipplin
Target Feature: A003
Girth Weld: P008

Site Information

Direction of Flow



Reference girthwel	P008	Slope of Pipe (rise/run)	<2%
Downstream girthweld:	P009	Excavation Length (m)	4.00
Depth of Ditch (m)	2.40	Depth of Cover (m)	1.30
Excavation width (m)	2.70	Number of girthwelds in excavation	1
Length of upstream exposed coating (m)	0.43	Length of downstream exposed coating	0.70
Start of NDE to reference girthweld (m	-0.230	End of NDE to reference girthweld (m)	13.994
Total Length of Exposed Pipe (m)	14.654	Total Length of NDE (m)	13.704
Does section have sag? ☐ Yes ☑ No	**If Yes,**	Location from girthweld (m):	N/A
Does section have an overbend? ☐ Yes ☑ No	**If Yes,**	Location from girthweld: (m)	N/A
Does section have a sidebend? ☐ Yes ☑ No	**If Yes,**	Location from girthweld: (m)	N/A
Coating Type upstream of NDE Ar	Coal Tar Enamel	Coating Type downstream of NDE area	Coal Tar Enamel

Site Excavation Commer

ENBRIDGE

Pipeline Integrity Field Report

Line: NPS 20 Kipling-Oshawa

NDE Vendor: TEAM Industrial Services Inc.

Target Feature: A003

Date: Monday, December 8, 2014

Girth Weld: P008

Equipment

ULTRASONICS

Scan Type ☑ A ☐ B ☐ Flaw ☑ Thickness ☐ FAST™

Instrument				Transducer	Type Single	Type Dual	Frequency (MHz)	Serial #
Manufacturer	Olympus- Epoch 600			0°	☑	☐	15	916373
Serial #	130593012				☐	☐		
Calibration Date	5-Jan-15				☐	☐		
Range					☐	☐		
Transfer Value					☐	☐		
Cal Block	Step wedge	S/N	A11953		☐	☐		
Cal Block		S/N			☐	☐		
Cal Block		S/N			☐	☐		
Couplant	Sonoglide FE			Other:	☐	☐		

MAGNETIC PARTICLE

MPI Equipment

Manufacturer	Parker	Type	P2	S/N	387	Calibration Date	26-Mar-15
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	
Manufacturer		Type		S/N		Calibration Date	

Magnetizing Method ☑ AC or ☐ DC ☑ Continuous or ☐ Residual ☑ Yoke ☐ Coil

Technician	Jim Francis		11717
	Name	Signature	ASNT Number
Technician	Bill Andrews		
	Name	Signature	ASNT Number

ENBRIDGE

Pipeline Integrity Field Report

Line: NPS 20 Kipling-Oshawa

NDE Vendor: TEAM Industrial Services Inc. **Target Feature:** A003

Date: Monday, December 15, 2014 **Girth Weld:** P008

Equipment

ULTRASONICS

Scan Type ☑ A ☐ B ☐ Flaw ☑ Thickness ☐ FAST™

Instrument			Transducer	Type Single	Type Dual	Frequency (MHz)	Serial #
Manufacturer	Olympus - Epoch 600		0°	☑	☐	10	912305
Serial #	130593012			☐	☐		
Calibration Date	5-Jan-15			☐	☐		
Range				☐	☐		
Transfer Value				☐	☐		
Cal Block	Step Wedge	S/N A11953		☐	☐		
Cal Block		S/N		☐	☐		
Cal Block		S/N		☐	☐		
Couplant	Sonoglide FE		Other:	☐	☐		

MAGNETIC PARTICLE

MPI Equipment

Manufacturer	Parker	Type P2	S/N 387	Calibration Date	1-Oct-14
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	
Manufacturer		Type	S/N	Calibration Date	

Magnetizing Method ☑ AC or ☐ DC ☑ Continuous or ☐ Residual ☑ Yoke ☐ Coil

	Name	Signature	ASNT Number
Technician	James Pennie		9565
Technician			

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.
Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line
Target Feature: EML - A012 + A013
Girth Weld: P008

Coating Condition

Pipe Coating Type: Coal Tar Enamel **Girth Weld Coating Type:** Coal Tar Enamel **Repair Coating Type:** NP

Coating Comments (descr Coating was is good condition - no disbondment.

Corrosion Deposits

Corrosion Present ☑ Yes ☐ No

Colour	Texture	Carbonate Reaction (10% HCl Reaction)
☐ White	☐ Film	☐ Bubbles Strongly
☐ Brown	☐ Pasty	☐ Bubbles Weakly
☐ Black	☐ Scaly	☐ Does not Bubble
☐ Green	☐ Powdery	☐ Rotten Egg Smell
☐ Olive/ Beige	☐ Metallic	☐ Turns Yellowish
☐ Orange	☐ Waxy	☐ Turns Clear
☐ Blue		
☐ Grey		
☐ Red		
☐ Clear		

Samples Collected

Sample Number	Associated Feature / Location

Corrosion Product Comments The pipe was sandblasted prior to our arrival on site, therefore we were not able to assess the corrosion.

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line

Target Feature: EML - A012 + A013

Girth Weld: P008

Soil and Landscape Information

Land Use	Other
Slope Position	Level
Topography	Level
Vegetation	Grasses
Soil Resistivity	957.5
Parent Material	Lacustrine
Soil Texture	Sandy Loam
Coarse Fragments	Estimated % By Volume: None
	☐ Boulders (> 600mm) ☐ Small Stones (25mm<= X<100mm)
	☐ Large Stones (100mm<= X<600mm) ☐ Gravel (<25mm)
Drainage	Imperfect
Gleying	Slightly Gleyed (Patches of Light Greyish Brown)
Mottling	Abundance: Common
	Size: Fine
	Contrast: Faint
Visible Salts (Check All That Apply)	☐ Surface Salt Crusts (White and Powdery)
	☐ White/Grey Salts at Pipe Depth That Don't React With Acid
	☐ Gypsum (Clear to Brown) Salt Crystals At Pipe Depth-Don't React With Acid
	☐ Other (Explain in Comments)

Soil and Environmental Comments (ie. odor, staining, contamination)	Un-natural soil - backfilled with sand after pipe installation.

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kip

Target Feature: EML - A01

Girth Weld: P008

Sampling and Analysis

SOIL

Sample No.	Location	pH	Salinity	Conductivity	ORP (mV, Platinum Electrode)	10% HCl Reaction
1	DS wall underneath pipe	5.9	N/A	NA	NA	NA

WATER

Sample No.	Location	pH	Salinity	Conductivity
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Sampling and Analysis Comments

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line

Target Feature: EML - A012 + A013

Girth Weld: P008

Corrosion Assessment

RSTRENG Completed by _____ **Assessment Method** _____

Corrosion Feature Number	ILI Feature Number	Reference GW	Type of Corrosion ID/OD	Relative to Girth Weld Start of Cluster (m)	Relative to Girth Weld End of Cluster (m)	Total Length of Cluster (mm)	Circ Start of Cluster (mm)	Circ End of Cluster (mm)	Circ Width of Cluster (mm)	Degrees From	Degrees To	Wall thickness (mm)	Max Depth based on AWT (mm)	Max Depth (%)	Actual Wall Thickness next to Ind (mm)	KAPA Required	RSTRENG Results (RPR) (Case 1: Effective Area)	RSTRENG Results (RPR) (Case 2 0.85	On or Near SW/GW*	Reason for Repair	Type of repair	Outlier** (Y/N)
COR1	A012	P009	External	-1.16	-1.17	-13.00	666.00	618.00	1547.93	150	139	5.800	2.100	27%	7.900	N/A	N/A	N/A		Clients Request	Sleeve	N
COR2	A013	P009	External	-1.15	-1.17	-21.00	494.00	479.00	1580.93	111	108	5.050	2.850	36%	7.900	N/A	N/A	N/A		Clients Request	Sleeve	N
COR3																						
COR4																						
COR5																						
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COR23																						
COR24																						
COR25																						

* **BW** - In or at both Seamweld and Girthweld, **IGW** - In Girthweld, **AGW** - At Girthweld, **ISW** - In Seamweld, **ASW** - At Seamweld (From toe of weld to 10 mm, **BM** - Base Metal (From 10 mm past toe of weld)

Corrosion Comments

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kipling Loop

Target Feature: EML - A012D A013

Girth Weld: P008

Other Features Assessment

NDT Inspector James Pennie

ID #	ILI Feature Number	Reference GW	Type of Indication	Indication Relative Positon*	Indication Radial Position	Axial Start of Indication (m)	Axial End of Indication (m)	Axial Length of Indication (mm)	Circ Start of Linear Indication (mm)	Circ End of Linear Indication (mm)	Circ Start Degree Position	Circ End Degree Position	Associated Corrosion Feature # (if any)	Measured Wall Thickness Adjacent to Indication (mm)	Indication Depth (mm)	Indication Depth (%)	Reason for Repair	Type of Repair	NDT Analysis Method Used to Size Feature	Outlier** (Y/N)
1	NA	P008	Manufacturing Defect	BM	External	11.422	11.546	124.00	1356.00	1408.00	306	318	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
2	NA	P008	Manufacturing Defect	BM	External	11.466	11.504	38.00	1466.00	1498.00	331	338	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
3	NA	P008	Manufacturing Defect	BM	External	11.570	11.622	52.00	1479.00	1529.00	334	345	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
4	NA	P008	Manufacturing Defect	BM	External	11.388	11.484	96.00	1469.50	1500.50	331	338	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
5	NA	P008	Manufacturing Defect	BM	External	11.190	11.262	72.00	1360.00	1400.00	307	316	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
6	NA	P008	Manufacturing Defect	BM	External	11.399	11.483	84.00	30.50	87.50	7	20	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
7	NA	P008	Manufacturing Defect	BM	External	11.336	11.483	147.00	151.00	181.00	34	41	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
8	NA	P008	Manufacturing Defect	BM	External	10.595	11.231	636.00	93.00	727.00	21	164	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
9	NA	P008	Manufacturing Defect	BM	External	9.785	10.913	1128.00	-199.00	945.00	-45	213	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
10	NA	P008	Manufacturing Defect	BM	External	10.467	10.510	43.00	218.00	266.00	49	60	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
11	NA	P008	Manufacturing Defect	BM	External	10.096	10.429	333.00	-93.50	239.50	-21	54	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
12	NA	P008	Manufacturing Defect	BM	External	9.880	9.910	30.00	1023.00	1061.00	231	239	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
13	NA	P008	Manufacturing Defect	BM	External	9.850	9.878	28.00	1474.00	1500.00	332	338	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
14	NA	P008	Manufacturing Defect	BM	External	9.782	9.842	60.00	1019.50	1054.50	230	238	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
15	NA	P008	Manufacturing Defect	BM	External	9.650	9.712	62.00	1025.00	1065.00	231	240	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
16	NA	P008	Manufacturing Defect	BM	External	9.742	9.784	42.00	458.50	533.50	103	120	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
17	NA	P008	Manufacturing Defect	BM	External	9.221	9.591	526.50	300.00	616.00	68	139	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
18	NA	P008	Manufacturing Defect	BM	External	9.370	9.420	50.00	1349.00	1375.00	304	310	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
19	NA	P008	Manufacturing Defect	BM	External	9.104	9.171	67.00	1260.00	1334.00	284	301	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
20	NA	P008	Manufacturing Defect	BM	External	8.939	9.035	96.00	135.00	225.00	30	51	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
21	NA	P008	Manufacturing Defect	BM	External	8.676	8.810	134.00	526.50	573.50	119	129	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
22	NA	P008	Manufacturing Defect	BM	External	8.686	8.732	46.00	404.00	444.00	91	100	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
23	NA	P008	Manufacturing Defect	BM	External	8.355	8.442	87.00	402.50	497.50	91	112	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
24	NA	P008	Manufacturing Defect	BM	External	7.161	7.466	305.00	61.50	206.50	14	47	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
25	NA	P008	Manufacturing Defect	BM	External	5.909	5.967	58.00	396.50	443.50	89	100	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y

* **BW -** In or at both Girthweld and Seamweld, **IGW -** In Girthweld, **AGW -** At Girthweld, **ISW -** In Seamweld, **ASW -** At Seamweld (From toe of weld to 0.5 in, **BM** - Base Metal (From 10 mm past toe of weld)

** If indication is an Outlier, client must be contacted

Other Defects Comments

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kipling Loop

Target Feature: EML - A012D A013

Girth Weld: P008

Other Features Assessment

NDT Inspector James Pennie

ID #	ILI Feature Number	Reference GW	Type of Indication	Indication Relative Positon*	Indication Radial Position	Axial Start of Indication (m)	Axial End of Indication (m)	Axial Length of Indication (mm)	Circ Start of Linear Indication (mm)	Circ End of Linear Indication (mm)	Circ Start Degree Position	Circ End Degree Position	Associated Corrosion Feature # (if any)	Measured Wall Thickness Adjacent to Indication (mm)	Indication Depth (mm)	Indication Depth (%)	Reason for Repair	Type of Repair	NDT Analysis Method Used to Size Feature	Outlier** (Y/N)
26	NA	P008	Manufacturing Defect	BM	External	4.487	4.564	77.00	443.00	497.00	100	112	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
27	NA	P008	Manufacturing Defect	BM	External	10.000	4.490	-5510.00	-1.50	31.50	0	7	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
28	NA	P008	Manufacturing Defect	BM	External	3.675	4.416	741.00	-110.00	622.00	-25	140	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
29	NA	P008	Manufacturing Defect	BM	External	3.996	4.082	86.00	390.00	400.00	88	90	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
30	NA	P008	Manufacturing Defect	BM	External	3.746	3.806	60.00	387.50	446.50	87	101	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
31	NA	P008	Manufacturing Defect	BM	External	3.010	3.280	270.00	165.00	275.00	37	62	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
32	NA	P008	Manufacturing Defect	BM	External	2.992	3.080	88.00	375.00	425.00	85	96	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
33	NA	P008	Manufacturing Defect	BM	External	2.376	2.515	139.00	1085.00	1195.00	245	270	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
34	NA	P008	Manufacturing Defect	BM	External	2.140	2.180	40.00	905.00	975.00	204	220	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
35	NA	P008	Manufacturing Defect	BM	External	0.670	0.792	122.00	337.50	402.50	76	91	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
36	NA	P008	Manufacturing Defect	BM	External	0.670	0.792	122.00	404.00	482.00	91	109	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
37	NA	P008	Manufacturing Defect	BM	External	0.600	0.686	86.00	1536.00	1574.00	346	355	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
38	NA	P008	Manufacturing Defect	BM	External	0.400	0.500	100.00	445.00	495.00	100	112	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
39	NA	P008	Manufacturing Defect	BM	External	0	0.060	60.00	1354.50	1399.50	306	316	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y
40	NA	P008	Manufacturing Defect	BM	External	0.400	0.472	72.00	1562.00	1592.00	352	359	N/A	N/A	N/A	#VALUE!	Clients Request	Removed and Recoated	N/A	Y

* **BW -** In or at both Girthweld and Seamweld, **IGW -** In Girthweld, **AGW -** At Girthweld, **ISW -** In Seamweld, **ASW -** At Seamweld (From toe of weld to 0.5 in, **BM** - Base Metal (From 10 mm past toe of weld)

** If indication is an Outlier, client must be contacted

Other Defects Comments

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line

Target Feature: EML - A012 + A013

Girth Weld: P008

Grind Assessment

Grind Feature Number	Corresponding Features Within Grind Area	Measured Wall Thickness Before Grinding (mm)	Measured Wall Thickness After Grinding (mm)	Calculated Grind Depth as Compared to NWT (mm)	Percent Wall Loss (%)	Relative to Girth Weld Start of Grind Repair (m)	Relative to Girth Weld End of Grind Repair (m)	Circ Start of Grind Repair (mm)	Circ End of Grind Repair (mm)	Circ Start of Grind Repair (°)	Circ End of Grind Repair (°)	Grind Length (mm)	Grind Width (mm)	KAPA Required (Y/N)	RSTRENG Results (RPR) (Case 2: 0.85 DL)	RSTRENG Results (RPR) (Case 1: Effective Area)	Type of Repair
GR1	1	8.30	7.81	0.110	5.9%	11.570	11.630	1357.50	1392.50	306.22	314.11	60.00	35.00	#REF!	#N/A	N/A	Removed and Recoated
GR2	2	8.19	8.07	>NWT	1.5%	11.450	11.510	1415.00	1445.00	319.19	325.95	60.00	30.00	#REF!	#N/A	N/A	Removed and Recoated
GR3	3	8.15	7.87	0.050	3.4%	11.180	11.260	1465.00	1525.00	330.47	344.00	80.00	60.00	#REF!	#N/A	N/A	Removed and Recoated
GR4	4	8.30	8.04	>NWT	3.1%	11.380	11.49	1445.00	1485.00	325.95	334.98	110.00	40.00	#REF!	#N/A	N/A	Removed and Recoated
GR5	5	8.33	7.90	0.020	5.2%	11.430	11.560	1357.50	1392.50	306.22	314.11	130.00	35.00	#REF!	#N/A	N/A	Removed and Recoated
GR6	6	8.26	8.00	>NWT	3.1%	11.410	11.460	52.50	87.50	11.84	19.74	50.00	35.00	#REF!	#N/A	N/A	Removed and Recoated
GR7	7	8.16	8.04	>NWT	1.5%	11.300	11.600	160.00	200.00	36.09	45.11	300.00	40.00	#REF!	#N/A	N/A	Removed and Recoated
GR8	8	9.50	7.94	>NWT	16.4%	11.020	11.190	0	560.00		126.32	170.00	2155.93	#REF!	#N/A	N/A	Removed and Recoated
GR9	9	8.10	7.80	0.120	3.7%	9.800	10.950	505.00	635.00	113.91	143.24	1150.00	130.00	#REF!	#N/A	N/A	Removed and Recoated
GR10	10	8.25	8.01	>NWT	2.9%	10.520	10.620	212.50	267.50	47.93	60.34	100.00	55.00	#REF!	#N/A	N/A	Removed and Recoated
GR11	11	8.10	7.75	0.170	4.3%	10.080	10.500	0	200.00		45.11	420.00	1795.93	#REF!	#N/A	N/A	Removed and Recoated
GR12	12	8.21	7.88	0.040	4.0%	9.850	9.900	1030.00	1060.00	232.34	239.11	50.00	30.00	#REF!	#N/A	N/A	Removed and Recoated
GR13	13	8.10	7.67	0.250	5.3%	9.860	9.900	1470.00	1510.00	331.59	340.62	40.00	40.00	#REF!	#N/A	N/A	Removed and Recoated
GR14	14	8.24	8.07	>NWT	2.1%	9.800	9.880	1030.00	1060.00	232.34	239.11	80.00	30.00	#REF!	#N/A	N/A	Removed and Recoated
GR15	15	8.20	7.80	0.120	4.9%	9.680	9.740	1030.00	1060.00	232.34	239.11	60.00	30.00	#REF!	#N/A	N/A	Removed and Recoated
GR16	16	7.97	7.57	0.350	5.0%	9.750	9.830	465.00	515.00	104.89	116.17	80.00	50.00	#REF!	#N/A	N/A	Removed and Recoated
GR17	17	8.00	7.49	0.430	6.4%	9.220	9.540	427.50	492.50	96.43	111.10	320.00	65.00	#REF!	#N/A	N/A	Removed and Recoated
GR18	18	8.26	7.26	0.660	12.1%	9.380	9.440	1345.00	1375.00	303.40	310.16	60.00	30.00	#REF!	#N/A	N/A	Removed and Recoated
GR19	19	8.19	7.93	>NWT	3.2%	9.130	9.180	1270.00	1300.00	286.48	293.25	50.00	30.00	#REF!	#N/A	N/A	Removed and Recoated
GR20	20	7.97	7.68	0.240	3.6%	8.950	8.030	180.00	220.00	40.60	49.63	-920.00	40.00	#REF!	#N/A	N/A	Removed and Recoated
GR21	21	7.80	7.59	0.330	2.7%	8.800	8.830	525.00	555.00	118.43	125.19	30.00	30.00	#REF!	#N/A	N/A	Removed and Recoated
GR22	22	7.93	7.51	0.410	5.3%	8.710	8.750	417.50	442.50	94.18	99.82	40.00	25.00	#REF!	#N/A	N/A	Removed and Recoated
GR23	23	8.00	7.67	0.250	4.1%	8.350	8.480	425.00	475.00	95.87	107.15	130.00	50.00	#REF!	#N/A	N/A	Removed and Recoated
GR24	24	7.80	7.64	0.280	2.1%	7.160	7.430	60.00	180.00	13.53	40.60	270.00	120.00	#REF!	#N/A	N/A	Removed and Recoated
GR25	25	8.10	7.58	0.340	6.4%	5.910	5.980	415.00	445.00	93.61	100.38	70.00	30.00	#REF!	#N/A	N/A	Removed and Recoated

Grind Area Comments

Note: Feature #1 Circ start is CW, all other circumferential start and end are CCW. Nominal wall thickness: 7.92

ENBRIDGE

Pipeline Integrity Field Report

NDE Vendor: TEAM Industrial Services Inc.

Date: Monday, December 8, 2014

Line: NPS 20 Kipling- Oshawa Line

Target Feature: EML - A012 + A013

Girth Weld: P008

Grind Assessment

Grind Feature Number	Corresponding Features Within Grind Area	Measured Wall Thickness Before Grinding (mm)	Measured Wall Thickness After Grinding (mm)	Calculated Grind Depth as Compared to NWT (mm)	Percent Wall Loss (%)	Relative to Girth Weld Start of Grind Repair (m)	Relative to Girth Weld End of Grind Repair (m)	Circ Start of Grind Repair (mm)	Circ End of Grind Repair (mm)	Circ Start of Grind Repair (°)	Circ End of Grind Repair (°)	Grind Length (mm)	Grind Width (mm)	KAPA Required (Y/N)	RSTRENG Results (RPR) (Case 2: 0.85 DL)	RSTRENG Results (RPR) (Case 1: Effective Area)	Type of Repair
GRD26	26	8.03	7.70	0.220	4.1%	4.510	4.570	450.00	490.00	101.51	110.53	60.00	40.00	#REF!	#N/A	N/A	Removed and Recoated
GRD27	27	7.90	7.57	0.350	4.2%	4.440	4.500	47.50	72.50	10.71	16.35	60.00	25.00	#REF!	#N/A	N/A	Removed and Recoated
GRD28	28	7.80	7.60	0.320	2.6%	3.700	4.330	0	450.00		101.51	630.00	2045.93	#REF!	#N/A	N/A	Removed and Recoated
GRD29	29	7.97	7.50	0.420	5.9%	4.00	4.04	412.50	447.50	93.05	100.94	40.00	35.00	#REF!	#N/A	N/A	Removed and Recoated
GRD30	30	7.93	7.60	0.320	4.2%	3.75	3.81	410.00	450.00	92.49	101.51	60.00	40.00	#REF!	#N/A	N/A	Removed and Recoated
GRD31	31	7.91	7.29	0.630	7.8%	3.06	3.27	175.00	345.00	39.48	77.82	210.00	170.00	#REF!	#N/A	N/A	Removed and Recoated
GRD32	32	7.91	7.35	0.570	7.1%	2.98	3.05	405.00	455.00	91.36	102.64	70.00	50.00	#REF!	#N/A	N/A	Removed and Recoated
GRD33	33	7.99	7.75	0.170	3.0%	2.40	2.55	1085.00	1205.00	244.75	271.82	150.00	120.00	#REF!	#N/A	N/A	Removed and Recoated
GRD34	34	8.20	7.84	0.080	4.4%	2.15	2.25	900.00	950.00	203.02	214.30	100.00	50.00	#REF!	#N/A	N/A	Removed and Recoated
GRD35	35	7.95	7.67	0.250	3.5%	0.67	0.83	1175.00	1235.00	265.05	278.58	160.00	60.00	#REF!	#N/A	N/A	Removed and Recoated
GRD36	36	7.86	7.52	0.400	4.3%	0.67	0.83	417.50	462.50	94.18	104.33	160.00	45.00	#REF!	#N/A	N/A	Removed and Recoated
GRD37	37	7.90	7.61	0.310	3.7%	0.60	0.69	1545.00	1575.00	348.51	355.28	90.00	30.00	#REF!	#N/A	N/A	Removed and Recoated
GRD38	38	8.12	7.93	>NWT	2.3%	0.34	0.40	467.50	492.50	105.46	111.10	60.00	25.00	#REF!	#N/A	N/A	Removed and Recoated
GRD39	39	7.60	7.43	0.490	2.2%	0.01	0.06	1340.00	1390.00	302.27	313.55	55.00	50.00	#REF!	#N/A	N/A	Removed and Recoated
GRD40	40	7.91	7.45	0.470	5.8%	0.40	0.48	-17.50	17.50	-3.95	3.95	80.00	35.00	#REF!	#N/A	N/A	Removed and Recoated
GRD41	41	7.90	7.45	0.470	0.06	-0.63	-0.93	1440.00	6.00	324.83	1.35	-308.00	161.93	#REF!	#N/A	N/A	Removed and Recoated
GRD42	42	7.90	7.26	0.660	0.08	-0.94	-1.23	1400.00	1568.00	315.80	353.70	-284.00	168.00	#REF!	#N/A	N/A	Removed and Recoated

Grind Area Comments

Note: Feature #1 Circ start is CW, all other circumferential start and end are CCW. Nominal wall thickness: 7.92 NOTE: Feature 41 and 42 were recorded and grinded december 8 from the first exposed pipe section.

Stantec Consulting Ltd.
300 - 675 Cochrane Drive West Tower
Markham ON L3R 0B8
Tel: (905) 944-7777
Fax: (905) 474-9889

March 20, 2017
File: 1609-50966

Attention: Mr. Byron Madrid
Manager, Asset Management
Enbridge Gas Distribution Inc.
101 Honda Blvd.
Markham, ON L6C 0M6

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

Dear Byron,

Stantec Consulting Ltd. (Stantec) was retained by Enbridge Gas Distribution Inc. (EGD) to conduct a structural assessment and probability of failure calculations for a 20-inch Enbridge natural gas pipeline located on the Keating Railway Bridge across the Don River.

1 BACKGROUND

The Keating railway bridge is located at Mile 0.27 of the Toronto Harbour Spur Line. The bridge crosses the Don River immediately north of the Gardiner Expressway and Lake Shore Boulevard (located beneath the Expressway). It is located west of the Don Roadway, just east of the overhead ramp carrying traffic from the Gardiner Expressway eastbound to the Don Valley Parkway northbound, and 20 m downstream (i.e. south) of the pedestrian bridge that carries the Lower Don River Recreational Trail over the river.

A 20-inch steel natural gas pipeline is attached to the north face of the bridge and it continues below ground at both ends of the bridge. A metal utility duct is located between the gas pipe and the bridge (**Figures 1** and **2**). The pipeline is supported by three metal saddle supports. Two saddle supports are attached to the left and right bridge abutment. The middle saddle support is located on the bridge's centre pier and includes a hold down bracket to counter buoyancy.

The Keating Railway bridge is owned by CN, it has a 40 m span and a 7 m wide deck. The bridge has withstood numerous flooding events through its life, including Hurricane Hazel in October 1954. Hurricane Hazel was later defined as the Regulatory (or Regional) flood for the Toronto Region and Southwest Ontario.

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

Figure 1. Keating Railway Bridge (from left bank)

Figure 2. Keating Railway Bridge (from pedestrian bridge looking downstream)

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

Bridge and pipe elevations were estimated based on AECOM preliminary drawings dated November 1, 2016 (**Figure 3**). According to these drawings the pipe invert has an elevation of approximately 78.32 m, the bottom of the hydro utility duct has an elevation of 77.97 m.

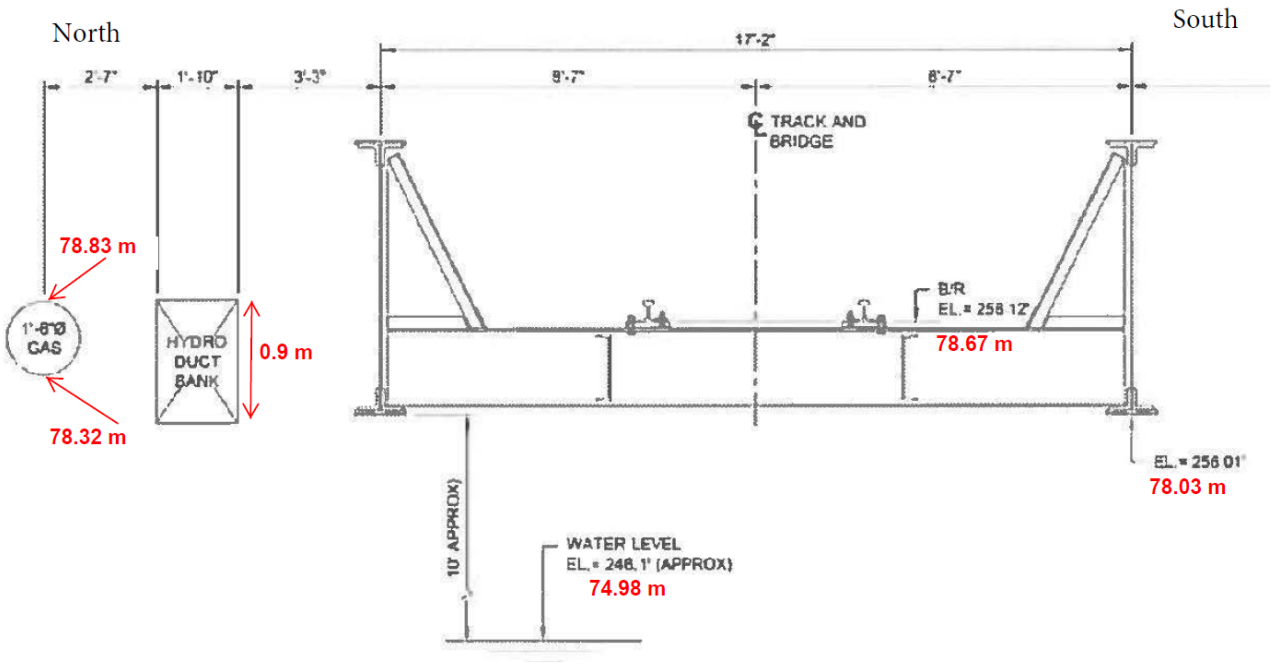

Figure 3. Bridge cross-section (AECOM 2016)

2 HYDRAULIC ASSESSMENT

The hydraulic assessment incorporated the results of hydraulic modeling, stream flow pressure calculations, ice pressure force estimates and probability of selected flood scenarios.

Hydraulic modeling was performed by TRCA using the Delft model for the Lower Don. It is the most up to date hydraulic model for the study area. The model was built as a part of the Environmental Assessment for the Don Mouth Naturalization and Port Lands Flood Protection project. The recent flood relief structures of the Lower Don were incorporated into the model. Modeling results were provided to EGD in a TRCA email of March 13, 2017 and presented in **Table 1**.

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

Table 1. Hydraulic Modeling Results at Keating Railway Bridge (TRCA 2017)

Period	Flood Elevation (masl)	Flow (cms)	Velocity (m/s)
2 Year	75.24	169.60	2.11
5 Year	75.24	241.38	2.94
10 Year	75.48	292.60	3.14
25 Year	75.90	370.50	3.40
50 Year	76.19	428.47	3.57
100 Year	76.48	487.90	3.73
350 Year	76.88	572.73	3.93
Regional	78.40	1,346.46	5.11

Hydraulic modeling results indicate that the bridge bottom chord (elevation 78.03 m) will not be submerged during any design flood event except the Regulatory flood. The pipe will be submerged by 0.08 m during the Regulatory flood.

2.1 STREAM FLOW PRESSURE

Stream currents produce hydraulic forces acting on the pipe located in moving water. These forces produce pressure against the submerged structure and are computed as a function of stream velocity (Equation 1). The stream flow pressure computed by Equation 1 applied to the area of the substructure over the estimated stream depth. Although stream velocity varies with depth, a constant velocity for the full depth provides sufficiently accurate results (AASHTO 2005).

Both average and maximum pressures are estimated, however maximum pressures are used for the design loading and structural assessments. Hydraulic loads are calculated assuming a second-degree parabolic velocity distribution and thus a triangular pressure distribution using the following equation:

$$P_{avg} = K(V_{avg})^2 \qquad \textbf{Equation 1}$$

Where:

P_{avg} = average stream pressure in Pa;
V_{avg} = average water velocity in m/s; and
K = a constant, being 360 for metric units for circular shaped piers and structures.

Stream flow pressure is assumed to be triangular in distribution with maximum pressure located at the water surface elevation and zero pressure located at the flow line. Maximum pressure (P_{max}) is computed using Equation 2:

$$P_{max} = 2\,(P_{avg}) \qquad \textbf{Equation 2}$$

It was assumed that the stream flow pressure acting on the superstructure is P_{max} with a uniform distribution (AASHTO 2005). **Table 2** presents the P_{max} stream flow pressure on the pipe for the Regulatory flood.

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

Table 2. Hydraulic Pressures and Forces

Flooding Event	Water Surface Elevation (masl)	Average Water Velocity (m/s)	Average Stream Flow Pressure (P_{avg}) (kPa)	Maximum Stream Flow Pressure (P_{max}) (kPa)	Dynamic Horizontal Ice Forces (F) (kN)
Regulatory Flood	78.4	5.11	1.84	3.679	16,800

Notes:
1. Water surface elevations and average water velocities are taken from TRCA, 2017
2. Ice contact width is 40 m for the Regulatory event

2.2 ICE PRESSURE FORCES

Factors affecting horizontal dynamic ice force include the angular inclination and area of the exposed structure and ice pressure. Dynamic force of floating ice sheets and floes striking the structure were calculated using Equation 3:

$$F = C_n ptw \qquad \textbf{Equation 3}$$

Where:

- F = horizontal ice force on the pier, pipe or superstructure;
- C_n = nose inclination coefficient (1.00 for angles of 0-15° from vertical);
- p = ice pressure (MPa), 1.4 MPa based on assumption that ice break up occurs at melting temperatures, but the ice moves in large pieces and is internally sound;
- t = thickness of ice in contact with pier or superstructures (mm) assumed to be 300 mm;
- w = width of pier, pipe or superstructure at the level of ice action (mm).

Ice pressure forces for the Regulatory flood are presented in **Table 2**.

3 FLOOD SCENARIOS

Elevation of the bottom chord of the bridge is 78.03 m, elevation of the pipe invert is approximately 78.32 m. The 350-year flood elevation is 76.88 m and the Regulatory flood elevation is 78.40 m. Based of hydraulic modeling the pipe becomes submerged by 8 cm (not accounting for backwater or debris jamming) during the Regulatory flood.

The Regulatory flood (Hurricane Hazel in October of 1954) does not have an assigned return period. For the purposes of this study the return period of the Regulatory flood was estimated using

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

the East Humber Station data and various probability distributions. The return period of the Regulatory flood was found to be between 750 years (using Log Pearson III) and 10,000 years (using Normal distribution) depending on the fitting probability distribution used. In this study, for risk calculation purposes, a conservative scenario assumes a 750-year return period of the Regulatory flood. A non-conservative scenario assumes a 10,000-year return period of the Regulatory flood.

There are no available, long term data on ice cover and ice jam conditions for the Don River. Historical data since 1822 exist on ice-in and ice-out dates for Toronto Harbor. They show that typical ice-in dates are in late December and ice out dates for the Harbor are in late March. Ice conditions with ice thickness of 0.3 m and ice jams were assumed to have an approximate probability of occurring in the Don River in 1 in 5 winters. The assumption is based on sparse historical information of 40 extreme winter events for the last 200 years. The ice can only hit the pipe during the water elevation which corresponds to the Regulatory flood or extreme flooding events where debris and ice jamming may cause backwater conditions at the bridge. However, ice conditions occurring coincident with the Regulatory flood (tropical depression storm) are improbable due to different seasonality of occurrence and therefore, was not evaluated.

The Regulatory event is typically accompanied by a large number of floating debris, trees, branches, tree stumps, etc. If these materials directly hit the pipeline they can damage it. Therefore, it was assumed that at the Regulatory flood event the pipe can fail due to direct impact of large debris carried by the river.

4 STRUCTURAL CONSIDERATION

Based on visual observations the bridge and its abutments show no evident signs of structural deterioration or fatigue. The metal utility duct which is located between the gas pipe and the bridge was replaced in 2014. Based on visual observations the three metal saddle supports and the central hold down bracket are in good condition and the pipe can satisfactory withstand normal loading (i.e. dead, live, wind and snow loads).

The Don River upstream and downstream of the bridge is channelized. Both banks are protected by vertical concrete walls. No signs of erosion around the bridge or abutment deterioration were observed.

5 PUBLIC SAFETY

The gas pipe is supported by a saddle support on the left and right embankment. Approximately 2.5 m from the supports the pipe extends underground at a 90° angle on the left bank and at a 45° angle on the right bank (**Figures 4** and **5**). The on-land portion of the pipe is not protected from large debris which can float at high water levels or from the public which can climb the pipe to cross the bridge.

It is recommended that a metal fence was installed around the on-land portion of the pipe, similar to the fence which protects the utility duct. The fence will protect the pipe from large debris which the river can carry, provide public safety and prevent unauthorized access.

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

Figure 4. Right Bank

Figure 5. Left Bank

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

6 PROBABILITY OF FAILURE

It is estimated that the Regulatory event that carries large debris and trees can potentially hit the pipe and cause pipe destabilization and failure. Return period and Probability calculations of pipe failure for different scenarios are presented in **Tables 3, 4** and **5**. Pipe failure was defined as any pipe movement or disintegration which can potentially lead to pipe damage.

Probability of failure calculations in *n* years was conducted using the following equation:

$$r = 1 - (1 - 1/T)^n$$

Where:

r = probability of an event being equaled or exceeded at least once in *n* years
T = return period, years
n = design life, years

It is recommended to use the conservative values (**Table 4**) of the probability of failure.

Table 3. Return Period and Probability of Regulatory Flood

Scenario		Return Period (T), years	Probability of Event (P)
1	Regulatory flood (conservative scenario)	750	0.0013
2	Regulatory flood (non-conservative scenario)	10,000	0.0001

Table 4. Probability Calculations (Conservative Scenario)

Design Life or Risk of Failure(n)	Return Period (T), years	Probability of Event (P)	Probability of Failure in n years (r)
1 year	750	0.0013	0.0013
25 years	750	0.0013	0.0328
50 years	750	0.0013	0.0645
100 years	750	0.0013	0.1249

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

Table 5. Probability Calculations (Non-Conservative Scenario)

Design Life or Risk of Failure(n)	Return Period (T), years	Probability of Event (P)	Probability of Failure in n years (r)
1 year	10,000	0.0001	0.0001
25 years	10,000	0.0001	0.0025
50 years	10,000	0.0001	0.0049
100 years	10,000	0.0001	0.0099

7 CONCLUSIONS

Based on visual observations the bridge and its abutments show no evident signs of structural deterioration or fatigue. Based on visual observations three metal saddle supports and the central hold down bracket are in good conditions and the pipe can satisfactory withstand normal loading (i.e. dead, live, wind and snow loads). No signs of erosion around the bridge or abutment deterioration were observed.

Hydraulic modeling indicates that 0.08 m of the pipe will be submerged during the Regulatory flood. The Regulatory event is typically accompanied by large number of floating debris, trees, branches, tree stumps, etc. If these materials directly hit the pipeline they can damage it. Therefore, it was assumed that at the Regulatory flood event the pipe can fail due to direct impact of large debris carried by the river.

The return period of the Regulatory flood on the Don River was found to be between 750 years (conservative scenario) and 10,000 years (non-conservative scenario) depending on the fitting probability distribution used. Probability of failure calculations are presented in **Tables 4** and **5**.

It is recommended to use the conservative values (**Table 4**) of the probability of failure.

It is recommended that a metal fence be installed around the on-land portion of the pipe, similar to the fence which protects the utility duct. The fence will protect the pipe from large debris which the river can carry at high water levels. Also, the fence will provide public safety and prevent unauthorized access.

8 REFERENCES

AASHTO (2005) American Association of State Highway and Transportation, Highway Bridges, Article 3.18.1.

AECOM (2016) Preliminary Design Drawing S-0001. Don River Bridge, Structure Rehabilitation, Toronto Harbour Spur Mi 0.27, General Arrangement. November 1, 2016.

TRCA (2017) Email from Tony To (TRCA Acting Planner) to Jim Arnott (EGD) and Igor Iskra (Stanec) on March 13, 2017.

Reference: Structural Assessment and Probability of Failure Calculations for Enbridge Gas Pipe, Keating Railway Bridge, Toronto, ON

We trust this information is suitable for the purpose of this study. Please do not hesitate to contact the undersigned should you have any questions or require additional information regarding this Project.

Regards,

STANTEC CONSULTING LTD.

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Water Resources Engineer
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ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Question(s):

a) How will the proposed temporary bypass pipeline be treated from an amortization period and ratepayer cost impact?

b) Please provide a copy of the Enbridge policy/guideline document(s) or OEB direction that sets the basis for evaluation and financial treatment of proposed temporary pipelines.

c) Please explain how the financial treatment of the temporary bypass pipeline differs from the proposed treatment of the permanent pipeline.

Response

a) Enbridge Gas will be treating the Temporary Bypass project costs as a capital expenditure that is necessary to facilitate the Permanent Relocation. Bypasses are commonly utilized during tie-ins for projects to avoid natural gas supply disruption. Consistent with the Company's treatment of other bypasses, the costs for the Temporary Bypass is included in the total capital cost of the Project.

b) Enbridge Gas does not have a specific internal policy/guidance document, nor is the Company aware of OEB direction that sets the basis for evaluation and financial treatment of proposed temporary pipelines.

c) Please see the response to part a) above.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

[Ex. B, Tab 1, Sch. 1, pg 2]

"There are approximately 15,000 customers within the areas primarily supplied by the NPS 20-inch natural gas main at Design Degree Day (41 Degree Day)."

Question(s):

a) Please explain why the recently approved Lakeshore pipeline and other pipelines feeding downtown Toronto can't be leveraged instead of this pipeline section to serve these customers, particularly if gas demand will decrease in the future.

b) What IRP alternatives were evaluated to decrease or eliminate the need for this section of pipeline.

c) Please explain why this project was submitted to the OEB as an individual project rather than a more comprehensive plan on the future needs to provide natural gas to downtown Toronto.

Response

a) Please see Figure 2 and Figure 3 at Exhibit B, Tab 1, Schedule 1. There are no alternate sources of supply in the area, beyond those identified as alternatives in Exhibit C, Tab 1, Schedule 1, that can provide the equivalent benefit of the NPS 20 pipeline spanning the Keating Railway Bridge. There is no other viable and cost-effective alternative to the Project that meets the required timing of Waterfront Toronto. Figure 2 depicts the location of the Project in relation to Station B, the KOL and its major sources of gas supply. As shown, the section of NPS 20 HP ST natural gas main crossing the Don River on the Keating Railway Bridge forms a critical section of the Kipling Oshawa Loop ("KOL"). As shown in Figure 3, the KOL serves a large area of downtown Toronto with natural gas. The KOL is supplied from Station B feeder station in the east and from the West Mall feeder station and Lisgar

gate station in the west. Without this section of NPS 20 main crossing the Don River, gas supply reliability and flexibility to both the east and west side of the Don River would be significantly reduced as there would be no connection between the east and west supply feeds, and Enbridge Gas would be unable to meet all firm demands of the system during a Design Day. A list of firm contract customers located within the area of benefit served by the NPS 20 gas main is provided in Table 1 in Exhibit B, Tab 1, Schedule 1.

b) Enbridge Gas did not consider any IRP alternatives as the Project failed one of the Binary Screening Criteria that were established in the OEB's IRP Framework. This is discussed at Exhibit C, Tab 1, Schedule 1, pages. 5-6.

c) As outlined in Exhibit B, Tab 1, Schedule 1, the Project is driven by an immediate need to relocate an existing portion of a pipeline (i.e., Temporary Bypass completed by April 2023 and the Permanent Relocation by August 2024) that is critical to serving the current demands for natural gas for a large area of downtown Toronto.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

[Ex. B, Tab 1, Sch. 1, pg 7]

"The proposed Project was identified in Enbridge Gas's Asset Management Plan Addendum, which was filed within the Company's 2022 Rates Proceeding."

Question(s):

a) Please confirm that the Enbridge Gas Asset Management Plan Addendum, which was filed within the Company's 2022 Rates Proceeding was provided for information purposes and not for OEB review and approval.

b) Please provide all references in the Gas Asset Management Plan Addendum that relate to this project.

c) When does Enbridge expect its Asset Management Plan Addendum to be reviewed and approved by the OEB?

Response

a) Enbridge Gas provided the Asset Management Plan Addendum in the 2022 Rates proceeding in support its request for ICM funding as per the OEB ICM policy.[1]

b) As outlined in the footnote in Exhibit B, Tab 1, Schedule 1, page 7, the Project was referenced within the Asset Management Plan Addendum on pages 9 and 12.

[1] EB-2014-0219 Report of the OEB – New Policy Options for the Funding of Capital Investments: The Advanced Capital Module, September 18, 2014; EB-2020-0181 (2021 Rates Application – ICM), Procedural Order No. 3, February 5, 2021, P. 3.

c) As per the MAADs decision[2], Enbridge Gas is required to file an Asset Management Plan in support of its ICM request as part of the annual rates proceeding during the deferred rebasing term. The OEB does not approve the Asset Management Plan in the rates proceeding, but instead uses the information provided in the Asset Management Plan to assess the ICM request[3].

[2] EB-2017-0306/EB-2017-0307 Decision and Order, September 17, 2018, pp. 33-34.
[3] EB-2021-0148, Exhibit I.EP.2, January 21, 2022; EB-2020-0181, Procedural Order No.3, February 5, 2021, pp. 3-4

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

[Ex. C, Tab 1, Sch. 1]

Question(s):

a) Has Enbridge conducted any IRP analysis related to the proposed project? If yes, please provide a copy of all material.

b) Please confirm that the IRP exemption Enbridge references would only be applicable if the OEB provides approval and funding to complete construction within three years. If incorrect, please provide the basis of the exemption.

c) Please provide a copy of all documentation Enbridge used to assess and decide that this project should be exempt from an IRP assessment.

d) The OEB IRP Decision (EB-2020-0091) referenced by Enbridge indicates that EGI should conduct IRP pilot projects. Please provide and update on which projects alternatives that have been identified and if any of these could be applied to the City of Toronto.

Response

a) Please see the response at Exhibit I.PP.8 b).

b) As part of this proceeding, and as a standard issue in all leave to construct proceedings, the OEB will assess whether Enbridge Gas has adequately considered alternatives to meeting the Project need, including IRP alternatives when applicable according to guidance from the IRP Framework (such as the application of the Binary Screening Criteria). As explained in Exhibit C, Tab 1, Schedule 1, the Project is driven by the need to relocate the existing gas main from the Keating Railway Bridge to the south side of the Lake Shore Bridge by April 30, 2023 and again to the utility corridor on the new Keating Railway Bridge in 2024.

c) Enbridge Gas's assessment of the applicability of this Project for IRP assessment is fully described in Exhibit C, Tab 1, Schedule 1, pages 5 – 6.

d) This question is beyond of the scope of this proceeding, which is limited to Enbridge Gas's request to the OEB for leave to construct the Project. Enbridge Gas will continue to work with the Technical Working Group to develop the pilot projects and associated IRP alternatives. Enbridge Gas will then file an application for each pilot project with the OEB for approval and implementation.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

[Ex. D, Tab 1, Sch. 1]

"The cost estimates set out above includes 30.0% contingency applied to all direct capital and abandonment costs to reflect the preliminary design stage of this Project."

Question(s):

a) Please explain why the contingency costs in the project estimate are so high compared to typical Leave to Construct applications.

b) Please provide project comparatives of contingency costs for other pipelines approved by the OEB.

Response

a) Please see the response at Exhibit I.STAFF.3, part f).

b) As stated in the footnote at Exhibit D, Tab 1, Schedule 1, page 2, the contingency amount for the Project is consistent with amounts calculated for the NPS 20 Replacement Cherry to Bathurst (EB-2020-0136) and the St. Laurent Ottawa North Replacement Project (EB-2020-0293). Both projects included a 30% contingency. The NPS 20 Replacement Cherry to Bathurst project was approved by the OEB on December 17, 2020.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

[Exhibit F, Tab 1, Schedule 1]

Question(s):

a) Please provide any updated OPCC or permitting agency correspondence received which was not included in the application.

b) Please provide a list of all OPCC and permitting agencies consulted and provide a column to indicate which parties have provided correspondence confirming approval and/or completed review of the project.

c) Does Enbridge have all permits related to the wetlands and watercourse crossing for this project? If not, please provide details on the outstanding permits/approvals and when they are expected to be received.

Response

a) Please see the OPCC correspondence log, which includes all correspondence since the February 24th filing date, at Attachment 1 to this response.

b) Please see the list of OPCC and permitting agencies consulted for the Project at Attachment 2 to this response. Enbridge Gas is not required to request that agencies provide confirmation of approval or completed review of the Project.

c) Please see the response at Exhibit I.STAFF.9.

Comment Number	Stakeholder Group	Stakeholder Representative Name	Method of Communication	Date of Communication	Summary of Communication	Date of Response	Summary of Response
Government and Agencies							
1	Transport Canada	N/A	Email (sent)	3/24/2022	Enbridge Regulatory Coordinator provided Transport Canada with Enbridge Gas' Notice of Application, the Application itself, and specific evidence (including Project Need, Alternatives and Project Description, Project Costs, Engineering and Constraints, Environmental Matters, Land Matters, Indigenous Consultation).	N/A	N/A
2	Transport Canada - Navigation Protection Program	Cal Fenwick	Email (received)	3/24/2022	The Navigation Protection Program thanked Enbridge for the information and indicated that Enbridge must meet requirements listed in the CANADIAN NAVIGABLE WATERS ACT — DESIGNATED CLASS OF MINOR WORKS UNDER THE MINOR WORKS ORDER, Pipelines and Cables Used For Power or Telecommunication Purposes Attached to an Existing Work.	N/A	N/A
3	Transport Canada - Environmental Assessment Program	N/A	Email (received)	4/5/2022	Transport Canada replied indicating proponents should self-assess if their project is on federal property/waterway, or if an approval or authorization is required from Transport Canada. Transport Canada also provided a summary of the most common Acts that have applied to projects in an Environmental Assessment context.	N/A	N/A

From: NPP ONT / PPN ONT <NPPONT-PPNONT@tc.gc.ca>
Sent: Thursday, March 24, 2022 11:26 AM
To: Stephanie Allman <Stephanie.Allman@enbridge.com>
Subject: [External] RE: EB-2022-0003 - Enbridge Gas Inc. - NPS 20 Waterfront Relocation Pipeline Project - Notice of Hearing

Good morning Stephanie,

Thank you for this information. Please be sure you meet the requirements of the attached.

Regards,

Cal Fenwick

Officer | Agent
Navigation Protection Program | Programme de protection de la navigation
Transport Canada | Transports Canada
100 Front St. S., Sarnia ON N7T 2M4
Government of Canada | Gouvernement du Canada

From: Stephanie Allman <Stephanie.Allman@enbridge.com>
Sent: Thursday, March 24, 2022 8:38 AM
To: NPP ONT / PPN ONT <NPPONT-PPNONT@tc.gc.ca>; ONT Environment / Environnement ONT <EnviroOnt@tc.gc.ca>
Subject: EB-2022-0003 - Enbridge Gas Inc. - NPS 20 Waterfront Relocation Pipeline Project - Notice of Hearing

To: Transport Canada

On March 24, 2022, Enbridge Gas Inc. (Enbridge Gas) filed an application with the Ontario Energy Board (OEB) for an Order granting leave to construct a new 190 meter Nominal Pipe Size ("NPS") 20-

inch high pressure steel temporary bypass pipeline that will replace the existing natural gas pipeline located on the Keating Railway Bridge. In the second stage, Enbridge Gas Inc. will construct a new 160 meter NPS 20-inch high pressure steel pipeline that will permanently replace the temporary bypass pipeline. The existing pipeline on the Keating Railway Bridge and the temporary bypass pipeline will be decommissioned.

On March 16, 2022, the OEB issued the Notice of Hearing and the Letter of Direction for the proceeding. The OEB has directed Enbridge Gas to serve a copy of the Notice of Application, Enbridge Gas' Application and the evidence listed below on Transport Canada.

- Exhibit B-1-1 – Project Need
- Exhibit C-1-1 – Alternatives & Project Description
- Exhibit D-1-1 – Project Costs
- Exhibit E-1-1 – Engineering & Construction
- Exhibit F-1-1 – Environmental Matters
- Exhibit G-1-1 – Land Matters
- Exhibit H-1-1 – Indigenous Consultation

Attached please find a copy of the OEB's Notice of Hearing (English and French) along with Enbridge Gas's Application (Exhibit A-2-1) and the above noted evidence as filed with the OEB for Enbridge's NPS 20 Waterfront Relocation Project. A complete paper copy of the evidence filed in this proceeding is available upon request. The evidence and environmental report can be viewed on the Enbridge Gas website by accessing the link below and navigating to "Regulatory Information".

https://www.enbridgegas.com/about-enbridge-gas/projects/nps-20-waterfront-relocation-project

The deadline to become a registered intervenor is **April 5, 2022**.

Thank you,

Stephanie Allman
Regulatory Coordinator – Regulatory Affairs

ENBRIDGE GAS INC.
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500 Consumers Road North York, Ontario M2J 1P8

enbridgegas.com
Integrity. Safety. Respect.

CANADIAN NAVIGABLE WATERS ACT — DESIGNATED CLASS OF MINOR WORKS UNDER THE *MINOR WORKS ORDER*

Pipelines and Cables Used For Power or Telecommunication Purposes Attached to an Existing Work

Pipelines or a cable used exclusively for power or telecommunication purposes that meets the following criteria is designated as a minor work:

a) The pipeline or cable is attached to an existing work that was approved, validly constructed or placed under the *Canadian Navigable Waters Act*; and
b) The pipeline or cable does not increase the interference with navigation caused by the existing work.

General Requirements

Prior notifications

At least 48 hours before beginning the construction, placement, alteration, rebuilding, removal or decommissioning of a pipelines and cables used for power or telecommunication purposes attached to an existing work in, on, over, under, through or across a charted navigable water[i], the owner of the work must, in writing, notify a **Canadian Coast Guard Marine Communications and Traffic Services Centre** of the day on which construction, placement, alteration, rebuilding, removal or decommission of the work is expected to begin. The owner must also notify the **Canadian Hydrographic Service** and the **Canadian Coast Guard Marine Communications and Traffic Services Centre** upon completion.

During the construction, placement, alteration, rebuilding, removal decommissioning, repair or maintenance of a minor work, the owner of the work must ensure:

a) that vessels can navigate safely through or around the work site or, if navigation is interrupted by any activity related to the construction, placement, alteration, rebuilding, removal, decommission, repair or maintenance of the work, that a suitable means, such as a portage, exists to allow vessels to resume navigation upstream and downstream of the work site;

b) that the perimeter of the work site is visible from sunset to sunrise and during periods of restricted visibility by the placement of:
   (i) yellow flashing lights,
   (ii) cautionary buoys with retro-reflective material, or

(iii) cautionary buoys with yellow flashing lights; and

c) that any cables or pipes that are in, on, over, through or across the navigable water are not left unattended unless:

(i) the cable or pipe is lying on the bed of the navigable water, or

(ii) the cable meets the requirements of *Overhead Systems*, CAN/CSA C22.3 No. 1, as amended from time to time.

Buoys referred in the *Minor Works Order* must meet the following criteria:

a) The part of the buoy that shows above the surface of the water is at least 15.25 cm wide and at least 30.5 cm high;

b) The buoy, including the buoy's anchor, is constructed and maintained in a manner and with materials that ensure that it remains in position after the buoy has been anchored; and

c) The buoy complies with the requirements set out in the section entitled "Floating Aids to Navigation (Buoys)" of TP 968, entitled *Canadian Aids to Navigation System* and published by the Canadian Coast Guard, as amended from time to time.

Contact the Navigation Protection Program (NPP) office in your region with any questions or concerns you may have: https://tc.canada.ca/en/marine/contact-navigation-protection-program-receiver-wreck.

[i] Charted navigable water means navigable waters for which nautical charts are produced by the Canadian Hydrographic Service or the National Oceanic and Atmospheric Administration of the United States.

From: ONT Environment / Environnement ONT <EnviroOnt@tc.gc.ca>
Sent: Tuesday, April 5, 2022 1:48 PM
To: Stephanie Allman <Stephanie.Allman@enbridge.com>
Subject: [External] EB-2022-0003 - Enbridge Gas Inc. - NPS 20 Waterfront Relocation Pipeline Project - Notice of Hearing

Greetings,

Thank you for your correspondence.

Please note Transport Canada **does not** require receipt of all individual or Class EA related notifications. We are requesting project proponents self-assess if their project:

1. Will interact with a federal property and/or waterway by reviewing the Directory of Federal Real Property, available at at www.tbs-sct.gc.ca/dfrp-rbif/; **and**
2. Will require approval and/or authorization under any Acts administered by Transport Canada* available at http://www.tc.gc.ca/eng/acts-regulations/menu.htm.

Projects that will occur on federal property prior to exercising a power, performing a function or duty in relation to that project, will be subject to a determination of the likelihood of significant adverse environmental effects, per Section 82 of the *Impact Assessment Act, 2019*.

If the aforementioned does not apply, the Environmental Assessment program should not be included in any further correspondence and future notifications will not receive a response. If there is a role under the program, correspondence should be forwarded *electronically* to: EnviroOnt@tc.gc.ca with a **brief description of Transport Canada's expected role**.

*Below is a summary of the most common Acts that have applied to projects in an Environmental Assessment context:

- ***Canadian Navigable Waters Act (CNWA)*** – the Act applies primarily to works constructed or placed in, on, over, under, through, or across navigable waters set out under the Act. The

Navigation Protection Program administers the CNWA through the review and authorization of works affecting navigable waters. Information about the Program, CNWA and approval process is available at: http://www.tc.gc.ca/eng/programs-621.html. Enquiries can be directed to NPPONT-PPNONT@tc.gc.ca or by calling (519) 383-1863.

- ***Railway Safety Act (RSA)*** – the Act provides the regulatory framework for railway safety, security, and some of the environmental impacts of railway operations in Canada. The Rail Safety Program develops and enforces regulations, rules, standards and procedures governing safe railway operations. Additional information about the Program is available at: https://www.tc.gc.ca/eng/railsafety/menu.htm. Enquiries can be directed to RailSafety@tc.gc.ca or by calling (613) 998-2985.

- ***Transportation of Dangerous Goods Act (TDGA)*** – the transportation of dangerous goods by air, marine, rail and road is regulated under the TDGA. Transport Canada, based on risks, develops safety standards and regulations, provides oversight and gives expert advice on dangerous goods to promote public safety. Additional information about the transportation of dangerous goods is available at: https://www.tc.gc.ca/eng/tdg/safety-menu.htm. Enquiries can be directed to TDG-TMDOntario@tc.gc.ca or by calling (416) 973-1868.

- ***Aeronautics Act*** – Transport Canada has sole jurisdiction over aeronautics, which includes aerodromes and all related buildings or services used for aviation purposes. Aviation safety in Canada is regulated under this Act and the Canadian Aviation Regulations (CARs). Elevated Structures, such as wind turbines and communication towers, would be examples of projects that must be assessed for lighting and marking requirements in accordance with the CARs. Transport Canada also has an interest in projects that have the potential to cause interference between wildlife and aviation activities. One example would be waste facilities, which may attract birds into commercial and recreational flight paths. The *Land Use In The Vicinity of Aerodromes* publication recommends guidelines for and uses in the vicinity of aerodromes, available at: https://www.tc.gc.ca/eng/civilaviation/publications/tp1247-menu-1418.htm. Enquires can be directed to tc.aviationservicesont-servicesaviationont.tc@tc.gc.ca or by calling 1 (800) 305-2059 / (416) 952-0230.

Please advise if additional information is needed.

Thank you,

Environmental Assessment Program, Ontario Region
Transport Canada / Government of Canada / 4900 Yonge St., Toronto, ON M2N 6A5
EnviroOnt@tc.gc.ca / Facsimile : (416) 952-0514 / TTY: 1-888-675-6863

Programme d'évaluation environnementale, Région de l'Ontario
Transports Canada / Gouvernement du Canada / 4900, rue Yonge, Toronto, ON, M2N 6A5
EnviroOnt@tc.gc.ca / télécopieur: (416) 952-0514

From: Stephanie Allman <Stephanie.Allman@enbridge.com>
Sent: Thursday, March 24, 2022 8:38 AM
To: NPP ONT / PPN ONT <NPPONT-PPNONT@tc.gc.ca>; ONT Environment / Environnement ONT <EnviroOnt@tc.gc.ca>
Subject: EB-2022-0003 - Enbridge Gas Inc. - NPS 20 Waterfront Relocation Pipeline Project - Notice of Hearing

To: Transport Canada

On March 24, 2022, Enbridge Gas Inc. (Enbridge Gas) filed an application with the Ontario Energy Board (OEB) for an Order granting leave to construct a new 190 meter Nominal Pipe Size ("NPS") 20-inch high pressure steel temporary bypass pipeline that will replace the existing natural gas pipeline located on the Keating Railway Bridge. In the second stage, Enbridge Gas Inc. will construct a new 160 meter NPS 20-inch high pressure steel pipeline that will permanently replace the temporary bypass pipeline. The existing pipeline on the Keating Railway Bridge and the temporary bypass pipeline will be decommissioned.

On March 16, 2022, the OEB issued the Notice of Hearing and the Letter of Direction for the proceeding. The OEB has directed Enbridge Gas to serve a copy of the Notice of Application, Enbridge Gas' Application and the evidence listed below on Transport Canada.

- Exhibit B-1-1 – Project Need
- Exhibit C-1-1 – Alternatives & Project Description
- Exhibit D-1-1 – Project Costs
- Exhibit E-1-1 – Engineering & Construction
- Exhibit F-1-1 – Environmental Matters
- Exhibit G-1-1 – Land Matters
- Exhibit H-1-1 – Indigenous Consultation

Attached please find a copy of the OEB's Notice of Hearing (English and French) along with Enbridge Gas's Application (Exhibit A-2-1) and the above noted evidence as filed with the OEB for Enbridge's NPS 20 Waterfront Relocation Project. A complete paper copy of the evidence filed in this proceeding is available upon request. The evidence and environmental report can be viewed on the Enbridge Gas website by accessing the link below and navigating to "Regulatory Information".

https://www.enbridgegas.com/about-enbridge-gas/projects/nps-20-waterfront-relocation-project

The deadline to become a registered intervenor is **April 5, 2022**.

Thank you,

Stephanie Allman
Regulatory Coordinator – Regulatory Affairs

ENBRIDGE GAS INC.

TEL: 416 753-7805 | FAX: 416 495-6072
500 Consumers Road North York, Ontario M2J 1P8

enbridgegas.com
Integrity. Safety. Respect.

FIRST_NAME	SURNAME	ORGANIZATION	DEPARTMENT	POSITION	ADDRESS	CITY_TOWN	POSTAL CODE	TELEPHONE	FAX	E MAIL	AGENCY RESPONDED TO CONSULTATION
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Carly	Bowman	City of Toronto	City Planning	Manager (East Section)	Toronto City Hall, 100 Queen Street West, 18th Floor, East Tower	Toronto, ON	M5H 2N2	416-338-3788	416-392-1330	Carly.Bowman@toronto.ca	X
Michael	D'Andrea	City of Toronto	Engineering and Construction Services	Chief Engineer and Executive Director	Toronto City Hall, 100 Queen Street West, 24th Floor East	Toronto, ON	M5H 2N2	416-392-8256		michael.dandrea@toronto.ca	X
Luis	De Jesus	City of Toronto	Engineering & Construction Services	Senior Manager (Design & Construction, Transportation Infrastructure, Local Roads)	55 John Street, 16th Floor, Metro Hall	Toronto, ON	M5V 3C6	416-392-6935	416-392-6279	luis.dejesus@toronto.ca	X
John	Elvidge	City of Toronto	City Clerk's Office	City Clerk	Toronto City Hall, 100 Queen Street West, 13th Floor West	Toronto, ON	M5H 2N2	416-392-8641		clerk@toronto.ca	X
Paula	Fletcher	City of Toronto	City Council Office	Councillor - Ward 14 Toronto - Danforth	Toronto City Hall, 100 Queen Street West, Suite C44	Toronto, ON	M5H 2N2	416-392-4060	416-397-5200	councillor_fletcher@toronto.ca	X
Easton	Gordon	City of Toronto	Engineering and Construction Services	Senior Manager	55 John Street, Floor 24, Metro Hall	Toronto, ON	M5V 3C6	416-392-5242	416-392-6279	Easton.Gordon@toronto.ca	X
Barbara	Gray	City of Toronto	Transportation Services	General Manager	Toronto City Hall, 100 Queen Street West, 24th Floor East	Toronto, ON	M2N 5V7	416-392-8431	416-696-3743	Barbara.Gray@toronto.ca	X
Suzanne	Hajdu	City of Toronto	Parks, Forestry & Recreation	Senior Project Coordinator (North District)	55 John Street, Floor 24, Metro Hall	Toronto, ON	M5V 3C6	416-392-3930		Suzanne.Hajdu@toronto.ca	X
Anthony	Kittel	City of Toronto	City Planning	Project Manager (East Section)	Toronto City Hall, 100 Queen Street West, 18th Floor, East Tower	Toronto, ON	M5H 2N2	416-392-0758	416-392-1330	Anthony.Kittel@toronto.ca	X
Marc	Kramer	City of Toronto	Parks, Forestry & Recreation	Project Coordinator, Landscape Architects	55 John Street, Floor 24, Metro Hall	Toronto, ON	M5V 3C6	416-392-7438		Marc.Kramer@toronto.ca	X
Gregg	Lintern	City of Toronto	City Planning	Chief Planner & Executive Director	Toronto City Hall, 100 Queen Street West, 12th Floor, East Tower	Toronto, ON	M5H 2N2	416-392-8772		Gregg.Lintern@toronto.ca	X
Patrick	Matozzo	City of Toronto	Corporate Real Estate Management	Executive Director	55 John Street, Floor 2, Metro Hall	Toronto, ON	M5V 3C6	416-392-9158		patrick.matozzo@toronto.ca	X
Robert	Mayberry	City of Toronto	Design & Construction - Major Infrastructure - Don & Central Waterfront Project	Senior Project Manager	55 John Street, 7th Floor, Metro Hall	Toronto, ON	M5V 3C6	416-392-4061	416-392-3300	rmayber@toronto.ca	X
Sylvia	Mullaste	City of Toronto	Toronto & East York Committee of Adjustment	Senior Planner, Wards 4,9,10,11,12,13,14,19	Toronto City Hall, 100 Queen Street West, 1st Floor, West Tower	Toronto, ON	M5H 2N2	416-397-4078	416-392-0580	Sylvia.Mullaste@toronto.ca	X
Chris	Murray	City of Toronto	City Manager's Office	City Manager	Toronto City Hall, 100 Queen Street West, 4th Floor, East Tower	Toronto, ON	M5H 2N2	416-392-8673		talktocitymanager@toronto.ca	X
Frank	Quarisa	City of Toronto	Toronto Water	Wastewater Treatment Director	Metro Hall, 18th Floor, 55 John Street	Toronto, ON	M5V 3C6	416-392-8230	416-338-9000	Fquaris@toronto.ca	X
Janie	Romoff	City of Toronto	Parks, Forestry & Recreation	General Manager	Toronto City Hall, 100 Queen Street West, 4th Floor West	Toronto, ON	M5H 2N2	416-392-8182	416-392-8565	parks@toronto.ca	X
Leila	Valenzuela	City of Toronto	Corporate Real Estate Management	Metrolinx RER	55 John Street, Floor 2, Metro Hall	Toronto, ON	M5V 3C6	416-392-7174	416-392-1880	leila.valenzuela@toronto.ca	X
Irina	Vasile	City of Toronto	Toronto Water	Senior Engineer	545 Commissioners St.	Toronto, ON	M4M 1A5	416-392-8236		irina.vasile@toronto.ca	X
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Stephanie	Vien	Crown-Indigenous Relations and Northern Affairs Canada	Implementation Sector	Correspondence Coordinator	25 Eddy Street	Gatineau, QC	K1A 0H4	873-354-0827	613-943-5857	Stephanie.Vien@rcaanc-cirnac.gc.ca	
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Sara	Eddy	Fisheries and Oceans Canada	Fisheries Protection Program - Central and Arctic Region	Senior Fish Protection Biologist	867 Lakeshore Rd, P.O. Box 5050	Burlington, ON	L7R 4A6	905- 336-4535	905-336-4447	sara.eddy@dfo-mpo.gc.ca	
Kitty	Ma	Health Canada	Environmental Assessment Division	Regional Environmental Assessment Coordinator, Ontario Region	180 Queen Street W, 10th Floor	Toronto, ON	M5V 3L7	416-954-2206	416-952-4444	kitty.ma@hc-sc.gc.ca	
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		Ministry of Economic Development, Job Creation and Trade	Ontario Pipeline Coordinating Committee								
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Maya	Harris	Ministry of Municipal Affairs and Housing	Ontario Pipeline Coordinating Committee	Manager, Community Planning and Development East	777 Bay Street, 13th Flr.	Toronto, ON	M5G 2E5	416-585-6063		maya.harris@ontario.ca	
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Tony	DiFabio	Ministry of Transportation	Ontario Pipeline Coordinating Committee	Senior Planner and Policy Advisor, Corridor	301 St Paul Street, Garden City Tower, 2nd Floor	St. Catharines, ON	L2R 7R4	905-704-2656		tony.difabio@ontario.ca	
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FIRST_NAME	SURNAME	ORGANIZATION	DEPARTMENT	POSITION	ADDRESS	CITY_TOWN	POSTAL CODE	TELEPHONE	FAX	E MAIL	AGENCY RESPONDED TO CONSULTATION
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Laura	Hatcher	Ministry of Heritage, Sport, Tourism, and Culture Industries	Programs and Services Branch	Heritage Planner	400 University Ave, 5th Flr.	Toronto, ON	M7A 2R9	416-239-3404		laura.e.hatcher@ontario.ca	X
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Adam	Carr	Ministry of Infrastructure	Sales, Easements and Acquisitions	Vice President, Real Estate Transactions	1 Dundas St. West, Suite 2000	Toronto, ON	M5G 1Z3	647-952-3657		adam.carr@infrastructureontario.ca	
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Tracey	Dawson-Kinnonen	Ministry of Northern Development, Mines, Natural Resources and Forestry	Transportation, Trade and Investment Branch	Director	Roberta Bondar Pl Suite 200, 70 Foster Dr	Sault Ste Marie, ON	P6A 6V8	705-564-7115		Tracey.Dawson-Kinnonen@ontario.ca	
Grant	Karwacki	Ministry of Northern Development, Mines, Natural Resources and Forestry	Corporate Policy Secretariat	Director	99 Wellesley St. W., 5th Floor	Toronto, ON	M7A 1W3	647-292-0903		grant.karwacki@ontario.ca	
Ruth	Lindenburger	Ministry of Northern Development, Mines, Natural Resources and Forestry	Southern Region	Regional Land Use Planning Supervisor (Acting)	300 Water Street, 4th Floor	Peterborough, ON	K9J 3C7	705-313-0391		ruth.lindenburger@ontario.ca	
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Jimena	Caicedo	Ministry of the Environment, Conservation and Parks	Toronto District Office	Manager (Acting)	5775 Yonge St. Place Nouveau 9th Floor	Toronto, ON	M2M 4J1	416-709-1636		jimena.caicedo@ontario.ca	X
Chunmei	Liu	Ministry of the Environment, Conservation and Parks	Environmental Assessment Services- Project Review	Environmental Resource Assessment Planner and EA Coordinator	135 St Clair Avenue West, 8th Floor	Toronto, ON	M4V 1P5	437-249-3102		chunmei.liu@ontario.ca	X
Alex	MacIntosh	Ministry of the Environment, Conservation and Parks	Conservation and Source Protection Branch	Senior Policy and Program Advisor (Acting)	40 St. Clair Ave. West, 14th Flr.	Toronto, ON	M4V 1M2	437-217-7206		alex.macintosh@ontario.ca	X
Paul D.	Martin	Ministry of the Environment, Conservation and Parks	Air, Pesticides and Environmental Planning	Supervisor	5775 Yonge St. Place Nouveau 9th Floor	Toronto, ON	M2M 4J1	647-688-8395		paul.d.martin@ontario.ca	X
Kathleen	O'Neill	Ministry of the Environment, Conservation and Parks	Environmental Assessment Branch	Director	135 St Clair Ave. W	Toronto, ON	M4V 1P5	647-287-5664		kathleen.oneill@ontario.ca	X
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Michael	Stickings	Ministry of the Environment, Conservation and Parks	Strategic Policy and Partnerships Branch	Director	135 St. Clair Avenue West, 12th Floor	Toronto, ON	M4V 1P5	416-314-7141		michael.stickings@ontario.ca	X
Kevin	Webster	Ministry of the Environment, Conservation and Parks	Drinking Water and Environmental Compliance Division- Central Region Office	Assistant Director	5775 Yonge Street, Place Nouveau 8th Floor	Toronto, ON	M2M 4J1	416-428-6000		kevin.webster@ontario.ca	X
Helen	Zhang	Ministry of the Environment, Conservation and Parks	Water Monitoring Section	Seniro Hydrogeologist/Climate Change Vulnerability Specialist (Acting)	125 Resources Road, North Wing 2nd Floor	Toronto, ON	M9P 3V6	416-235-6240		helen.zhang@ontario.ca	X

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

[Exhibit F, Tab 1, Schedule 1]

"An Environmental Protection Plan ("EPP") will be developed for the Project prior to construction."

Question(s):

a) Please explain why the EPP was not completed and filed in support of OEB approval in this application.

b) There is significant soil contamination within the study area and specifically along and adjacent to the proposed route for the proposed temporary and permanent pipeline routes. Please describe what activities have been undertaken to assess the level of contamination and what mitigation measures are proposed.

c) If the EPP has not been conducted, please provide details on how Environmental and Socio-economic mitigation measures costs were calculated for the proposed project.

Response

a) Please see EB-2020-0293, Exhibit I.PP.22 where Enbridge Gas explained both the requirements to file EPPs and the appropriate timing of submission of EPPs. Enbridge Gas also included similar information in response to Pollution Probe's submission regarding EPPs in EB-2021-0205.[1]

   Enbridge Gas does not create or file EPPs at the time of filing a leave to construct application with the OEB as the EPP is likely to require updates prior to construction to ensure all identified mitigation measures developed from consultations have been

[1] EB-2020-0205, Enbridge Gas Inc Reply Submission, January 21, 2022, pp. 17-18.

incorporated. The Company is not obligated to file an EPP for every project under development. Many of the environmental concerns addressed within an EPP are also addressed within an ER.

The EPP will include site-specific environmental management, monitoring and contingency plans to implement the mitigation and contingency measures outlined in the ER, as well as mitigation measures and conditions made as part of individual agency permits and approvals if required. As the OEB has not yet granted leave to construct for the Project, an EPP has not been created.

b) Stantec completed a desktop review of potentially contaminated sites in the study area, which is outlined in Section 4.3.5 of the ER. The overview includes the location of active and closed landfill sites which were identified by reviewing the Ministry of Environment, Conservation and Parks ("MECP's") Waste Disposal Site Inventory, the City of Toronto Official Plan maps, and the MECP's lists of large and small landfill sites in Ontario. Additionally, Stantec has conducted a certificate of property use records review to evaluate current and historical information pertaining to sites in the areas surrounding the preferred and alternate routes. Mitigation measures are outlined in Table 5-1 of the ER; mitigation measures specific to Contaminated Sites are shown on page 70.

c) Cost estimates were calculated based on the findings of the ER, the Company's historical experience with permitting agencies and the Company's historical experience estimating and implementing environmental and socio-economic mitigation measures.

ENBRIDGE GAS INC.

Answer to Interrogatory from
Pollution Probe ("PP")

INTERROGATORY

Reference:

[Exhibit F, Tab 1, Schedule 1, Attachment 1]

Question(s):

Email correspondence is attached in the application that references letters submitted by TRCA. Please provide a copy of the letters submitted by the TRCA.

Response

Please see Attachment 1 to this response.

From: Nathan Jenkins
To: Hill, Laura; Tanya.Turk@enbridge.com
Cc: NPS 20 Don River Relocation; Michael Noble; Chuck Reaney; Bill Snodgrass; Ken Dion; Beth Williston; Sharon Lingertat; Brandon Hester; Maryam Iler
Subject: TRCA CFN 59825 - Enbridge Gas NPS20 Don River Relocation Project
Date: Thursday, November 18, 2021 4:54:48 PM
Attachments: image001.png
TRCA CFN 59825_20in Lower Don Pipeline EA_NoC_Nov 18-21.pdf

Hi Laura and Tanya,

Please see the attached TRCA response to the Notice of Study Commencement related to the Enbridge Gas NPS20 Don River Relocation Project. Please use TRCA's Central Filing Number (CFN) 59825 for future reference related to this file.

Please feel free to reach out with any questions or concerns you may have with TRCA staff comments.

Thank you,

Nathan Jenkins, H.B.Sc. (Env), M.Pl., RPP (he/him/his)
Planner
Infrastructure Planning and Permits | Development and Engineering Services

T: (416) 661-6600 ext. 5508
E: nathan.jenkins@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

Toronto and Region Conservation Authority

From: Hill, Laura <Laura.Hill@stantec.com>
Sent: Wednesday, November 17, 2021 4:02 PM
To: Nathan Jenkins <Nathan.Jenkins@trca.ca>
Cc: NPS 20 Don River Relocation <EA-Replacement20@stantec.com>
Subject: RE: TRCA CFN 59825 - Enbridge Gas NPS20 Don River Relocation Project

Hi Nathan,

Thank you for your response. I look forward to reviewing the information provided by the TRCA.

Laura

Laura Hill M.Env.Sc.
Environmental Scientist, Project Manager

Mobile: 613-862-9895

laura.hill@stantec.com

From: Nathan Jenkins <Nathan.Jenkins@trca.ca>
Sent: Thursday, November 11, 2021 2:47 PM
To: NPS 20 Don River Relocation <EA-Replacement20@stantec.com>
Subject: TRCA CFN 59825 - Enbridge Gas NPS20 Don River Relocation Project

Good afternoon Laura,

Thank you for providing the Notice of Study Commencement (NoC) and information on the Virtual Open House for the NPS 20 Don River Relocation Project (CFN 59825). Please be advised that TRCA staff are currently reviewing the materials presented in the virtual open house and will be providing an NoC response letter clarifying TRCA's interests by next week.

Thank you,

Nathan Jenkins, H.B.Sc. (Env), M.Pl., RPP (he/him/his)
Planner
Infrastructure Planning and Permits | Development and Engineering Services

T: (416) 661-6600 ext. 5508
E: nathan.jenkins@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

From: NPS 20 Don River Relocation <EA-Replacement20@stantec.com>
Sent: Tuesday, October 26, 2021 3:58 PM
To: Beth Williston <Beth.Williston@trca.ca>; Brandon Hester <Brandon.Hester@trca.ca>; dpina@trca.on.ca; Laurie Nelson <Laurie.Nelson@trca.ca>; meg.stjohn@trca.on.ca; Renee Afoom-Boateng <Renee.Afoom-Boateng@trca.ca>; Robert Chan <Robert.Chan@trca.ca>; Sharon Lingertat <Sharon.Lingertat@trca.ca>
Cc: NPS 20 Don River Relocation <EA-Replacement20@stantec.com>
Subject: Enbridge Gas NPS20 Don River Relocation Project

Good Afternoon,

I'm writing to notify you of the Nominal Pipe Size 20-inch (NPS 20) Don River Relocation Project (the Project) that is being undertaken by Enbridge Gas.

The existing pipeline currently provides the critical supply of natural gas to the City of Toronto and the relocation of the pipeline is required to facilitate the widening of the Keating Railway Bridge, as part of Waterfront Toronto's Port Lands Flood Protection Enabling Infrastructure Project. Further information about the Project is provided in your letter, attached.

A Virtual Open House for the Project will be held for two weeks, starting on November 1 and finishing on November 14, at www.solutions.ca/NPS20DonRiverRelocation to gather input.

Please do not hesitate to reach out should you have any questions.

Laura Hill M.Env.Sc.
Environmental Scientist, Project Manager

Phone: 613-784-2256
EA-Replacement20@stantec.com

Stantec
100-300 Hagey Blvd
Waterloo, ON N2L 0A4

November 18, 2021

CFN 59825
XREF: 58638

BY E-MAIL ONLY (Tanya.Turk@enbridge.com)

Tanya Turk
Environmental Advisor
Enbridge Gas Inc.
3rd Floor, 101 Honda Boulevard
Markham, ON L6C 0M6

Dear Tanya Turk:

Re: Response to Notice of Study Commencement and Virtual Open House
Enbridge Gas Inc. NPS 20 Inch Don River Relocation Project
In Accordance with the Ontario Energy Board's Environmental Guidelines for the Construction of Hydrocarbon Pipelines and Facilities in Ontario
Don River Watershed; City of Toronto – Toronto and East York

Toronto and Region Conservation Authority (TRCA) staff received the Notice of Study Commencement for the above noted Environmental Assessment (EA) on October 26, 2021, and have received publicly available reference materials as presented at the project's Virtual Open House on November 1, 2021. As a recognized commenting agency under the Ontario Environmental Assessment Act, TRCA has interests in this project.

PROJECT OVERVIEW

It is our understanding that this undertaking involves examining options for the relocation of a segment of Nominal Pipe Size (NPS) 20 inch vital gas main located in the lower Don Lands of the City of Toronto. Presently, the pipeline is carried over the Don River via the Keating Railway Bridge. However, the crossing has previously been identified as being subject to risk from significant weather events and in conflict with the scheduled Port Lands Flood Protection Enabling Infrastructure Project, led by Waterfront Toronto, as such the 20in pipeline is being relocated.

It is further understood that this pipeline relocation project was originally a component of the NPS 30 XHP relocation in the lower Don River (CFN 58638). However, due to constraints on construction timing, the original scope of work was divided into two separate projects. This Notice of Study Commencement is directly related to the Lower Don NPS 20in Relocation application previously withdrawn from the OEB as notified by Enbridge Gas Inc. in early 2021 in order to further assess potential route alternatives.

PROJECT REVIEW

TRCA staff has reviewed the above-noted submission and our concerns with this proposal are provided below.

1. As the preferred route for the relocated Enbridge line appears to be close to the Don Roadway Flood Protection Landform (FPL). It's important that the installation and removal of the pipeline does not effect the Don Roadway FPL. The ER should consider how the alignment of the temporary pipeline will avoid negatively impacting the FPL from installation, operation, to decommissioning. This will also need to be carried into detailed design and construction.
2. It is critical that any pipeline placement on the Lakeshore bridge be adequately protected from any shipping or dredging activities in the area in both Phase 1 and 2 of the Preferred Alternative. Please provide clarification on any setbacks for working in the vicinity of the pipeline that could interfere with Sediment and Debris Management Area operations.
3. This assessment of a preferred route should consider holistic assessment and study of all the various proposed alternative routes. As previously advised in the 2020 review of alternative routes for the proposed NPS 20 Relocation TRCA staff have significant concern with any relocation within 10 metres of the limits of the existing TRCA West Don Flood Protection Landform (FPL), including at the intersection of Queen Street, King Street and River Street. TRCA staff requires that the final Environmental Report (ER) consideration of 'Access and Land Requirements' include an evaluation of the relocations impacts to the FPL and associated socio-economic impacts prior to any Leave to Construct. Should an alternative other than what is shown as the preliminary preferred route be chosen then site-specific field investigations and technical reports by a qualified specialist will be required to demonstrate that there will be no impact to the integrity, form and function of the FPL.
4. On confirmation from Enbridge that the proposed installation is not located within the FPL, TRCA staff will also require a site-specific enhanced construction plan for any work in close proximity of the existing West Don FPL, as needed. This enhanced monitoring plan must be designed by Enbridge to the satisfaction of TRCA for any of the Alternative and Tie-In Routes referenced above prior to any Leave to Construct for these routes.
5. TRCA also requests clarification on the requirement for Feeder Stations under the Preferred Alternative #1 as it remains unclear if Station A required with the preferred route and the proposed station is located within the floodplain of the Don River within the associated Special Policy Area.4. Additionally, during this ER assessment it must be demonstrated to TRCA that there will be no impacts on the Regional Flood Plain for the lower Don River. The assessment must consider access and ongoing maintenance requirements for under the Preferred Alternative Route as a part of the Sediment and Debris Management Area (SDMA) which requires regular dredging and mitigation for ice passage on the Don River.
6. Please also be advised of the Coxwell Bypass stormwater management tunnel and shaft connections, currently under construction, in the area of your works which may have the potential to affect the preferred alignment. Please coordinate with the City of Toronto regarding these works; in addition to potential tertiary impacts to parks, trails, and municipal real estate which may be impacted by this work.

TRCA COMMENTING ROLES

As detailed in TRCA's 2014 **The Living City Policies** (LCP), TRCA has a number of commenting roles relative to its review of this environmental assessment, including:

1. Regulatory Authority
2. Delegated Provincial Interests
3. Public Commenting Body
4. Resources Management Agency

5. Service Provider
6. Land Owner
7. Source Protection Authority under the Clean Water Act

These are further detailed in **Appendix A: TRCA Commenting Roles**.

TRCA AREAS OF INTEREST

In relation to this application, TRCA staff have identified a number of areas of interest within the study area related to these various commenting roles, including:

1. TRCA Program and Policy Areas
    a. Natural System Programs and Policies
    b. Sustainability Programs and Policies
2. Provincial Program Areas
3. Federal Program Areas

Further details are provided in **Appendix B: TRCA Areas of Interest**.

In relation to these areas of interest, please be advised that TRCA has select digital data available through an open data platform on the TRCA website that should be used to supplement the existing conditions analysis in the development of the environmental assessment. Upon request, TRCA can provide additional data for areas of interest not available on the web. Please contact the undersigned as needed.

ASSESSMENT OF ALTERNATIVES

In developing, evaluating and selecting alternatives, staff require the LCP policies be considered. TRCA staff recommends the preferred alternative meets the policies of Section 7. In particular, impacts to and opportunities for the following should be addressed:

1. Flooding, erosion or slope instability
2. Existing landforms, features and functions
3. Aquatic and terrestrial habitat and functions, including connectivity
4. TRCA property and heritage resources
5. Environmental best management practices that support climate change mitigation and adaptation
6. Community and public realm benefits

TRCA requires that the preferred alternative considers avoiding, minimizing, mitigating, and compensating impacts to the ecosystem, and avoid, mitigate or remediate hazards, in that order. In order to fulfil requirements of Ontario Regulation 166/06 at the detailed design stage, staff also requires that the preferred alternative meets LCP policies in Section 8.

In order to ensure TRCA concerns are addressed early in the review process, it is recommended that the TRCA planner be contacted when key project milestones are reached, as detailed in **Appendix C: Recommended Contact Points.** Please note that this appendix is based on the Municipal Class EA process, and should be adjusted to meet the requirements of the OEB process. Please contact the

planner to discuss the appropriate time for a site visit; please ensure the TRCA planner is included in the technical advisory committee; and please add Nancy Gaffney (nancy.gaffney@trca.ca), Government and Community Relations Specialist to the project mailing list to receive any public information updates.

SUBMISSION REQUIREMENTS

As this project proceeds through the various stages of the environmental assessment process, please ensure the following is provided to TRCA for review and comment as the appropriate time:

Digital Submissions

1. All technical advisory committee meeting agendas, as well as draft and final meeting minutes
2. All TRCA technical meeting agendas, as well as draft and final meeting minutes
3. Draft public information boards, prior to public review
4. Notices of public meetings, including final display material and handouts
5. Draft Phase 1 and 2 Report, if applicable
6. Draft technical reports and associated materials, including a covering letter that outlines the project purpose and lists the reports enclosed for review
7. Draft evaluation criteria and matrices, including a summary that details how the criteria and weighting (if applicable) were established
8. Draft EA document, including a covering letter that outlines how previous TRCA comments have been addressed
9. Final EA document, including a covering letter that outlines how previous TRCA comments have been addressed
10. Ensure all materials are submitted in PDF format, with drawings pre-scaled to print on 11”x17” pages.
11. Materials submitted through e-mail must be less than 25 MB.
12. Materials submitted through a file transfer protocol (FTP) site must be posted a minimum of two weeks.

Please note, prior to submitting the technical reports and materials, as well as appendices related to the draft and final EA documents, it is recommended that the project manager be contacted so that review requirements can be scoped to the TRCA areas of interest.

Should you have any questions, please contact me at extension 5508 or at Nathan.jenkins@trca.ca.

Regards,

Nathan Jenkins, B.Sc (Env), M.Pl.
Planner, Infrastructure Planning and Permits
Development and Engineering Services

/NJ

Attached: Appendix A: TRCA Commenting Roles
Appendix B: TRCA Areas of Interest
Appendix C: Recommended TRCA Contact Points

BY E-MAIL

cc: Applicant: Chuck Reaney, Land Services, (chuck.reaney@enbridge.com)
Consultant: Laura Hill (EA.Replacement20@stantec.com)

City of Toronto: Michael Noble, Project Manager, Waterfront Secretariat
Bill Snodgrass, Source Water Protection
Waterfront Toronto: Ken Dion, Project Director - Port Lands
TRCA: Beth Williston, Associate Director, Infrastructure Planning and Permits
Sharon Lingertat, Senior Manager, Infrastructure Planning and Permits
Brandon Hester, Senior Property Agent
Maryam Iler, Manager, Restoration & Infrastructure

APPENDIX A: TRCA COMMENTING ROLES

TRCA COMMENTING ROLES	
Public Commenting Body	
Environmental Assessment Act	Pursuant to the federal and provincial **Environmental Assessment** (EA) **Acts**, conservation authorities are a commenting body. Conservation authorities are also responsible for comments made under environmental assessment (EA) exemption regulations, and the Ontario and National Energy boards. TRCA reviews and comments on environmental assessment that occur within TRCA's jurisdiction under these various forms of legislation.
Delegated Provincial Interests	
Hazard Lands	As outlined in the Conservation Ontario/ Ministry of Natural Resources and Forestry/ Ministry of Municipal Affairs and Housing Memorandum of Understanding on CA Delegated Responsibilities, CAs have been delegated the responsibility of representing the provincial interest on natural hazards encompassed by Section 3.1 of the PPS 2014.
Conservation Authorities Act	
Regulatory Authority	
Ontario Regulation 166/06, Development, Interference with Wetlands and Alterations to Shorelines and Watercourses	In accordance with Ontario Regulation 166/06 (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses), a permit is required from the TRCA prior to any development (e.g. construction) if, in the opinion of TRCA, the control of flooding, erosion, dynamic beaches or pollution or the conservation of land may be affected. The Regulation Limit defines the greater of the natural hazards associated with Ontario Regulation 166/06 (listed below). NOTE: The Regulation Limit provides a geographical screening tool for determining if Ontario Regulation 166/06 will apply to a given proposal. Through site assessment or other investigation, it may be determined that areas outside of the defined Regulation Limit require permits under Ontario Regulation 166/06. In these instances, it is the text of the regulation that will prevail; modifications to the regulation line may be required. Any development within the Regulation Limit must comply with the applicable sections of The Living City Policies (2014).
Resources Management Agency	
TRCA Programs	In accordance with Section 20 and 21 of the **Conservation Authorities Act**, CAs are local watershed-based natural resource management agencies that develop programs that reflect local resource management needs within their jurisdiction. TRCA has developed programs and policies related to our role as a resource management agency that include, but are not limited to, watershed plans, fisheries management plans, land management plans, ecosystem restoration programs, and **The Living City Policy** (2014), which are approved by the TRCA Board.

	Please confirm that the preferred alternative design for this project addresses TRCA concerns related to its program areas. These will be further defined through the EA review process.
Land Owner	
TRCA Property	TRCA is a major landowner in the GTA, owning close to 18,000 hectares of land. TRCA comments provided as a landowner are separate from comments provided under a technical, advisory or regulatory role.
Acquisition and Easement	If TRCA property land transfer or easement is required for the implementation of the preferred alternative, permission and approval from TRCA and the Minister of Natural Resources and Forestry are required. The design must demonstrate that TRCA program and policy objectives are met. Formal approval typically takes 12 to 18 months from the completion of the EA document. Please contact Brandon Hester, Property Agent at Brandon.Hester@trca.ca for additional information.
Service Provider	
Service Agreements and Memorandum of Understandings	**Service Level Agreements:** TRCA has service level agreements to provide EA Review services to various partners within specific service delivery timelines. Fees are charged as per agreement stipulations; review fees are not charged for individual files. **Memorandum of Understandings:** The provision of planning advisory services to municipalities is implemented through a Memorandum of Understandings (MOU) with participating municipalities or as part of a CA's approved program activity. In this respect, the CA is essentially acting as a technical advisor to municipalities. The agreements cover the CA's areas of technical expertise such as water management, natural hazards, and natural heritage.
Restoration Opportunities	TRCA requires that the preferred alternative considers avoiding, minimizing, mitigating, and compensating impacts to ecosystems in that order. In areas where impacts are unavoidable, mitigation or compensation will be required. It is recommended that the costs associated with these impacts be factored into decisions made during the EA. TRCA has identified opportunities for habitat restoration and enhancement on TRCA property and some privately owned lands, targeted to improve natural form and function based on goals in the watershed strategies. Should ecosystem restoration or compensation be required for this project, TRCA may be able to provide both restoration opportunities and restoration field services on a project specific basis. This will be further discussed through the EA review process.

Community and Public Realm Benefits	TRCA understands that the purpose of providing project-based community benefits is to provide measurable economic benefits to the local community, and that the purpose of providing public realm benefits is to support local opportunities for social and environmental improvements. As part of the 2013-2022 TRCA Strategic Plan (updated), TRCA has identified the need to achieve measurable positive impacts on the health of our watersheds and has developed a number of programs that actively engage with local communities to support a green, local economy. These programs include but are not limited to, Sustainable Neighbourhood Retrofit Action Plans, TRCA Conservation Land Care Program, TRCA Trails Program, TRCA Community Transformation Program and Partners in Project Green. It is recommended that commitment be made to work with TRCA and other partners to develop a Community and Public Realm Benefits Strategy for this project. This will be further discussed through the EA review process.

APPENDIX B: TRCA AREAS OF INTEREST

TRCA PROGRAM AND POLICY AREAS *Note: Additional program and policy information may be available at www.trca.ca, or by request.*	
Natural System Programs and Policies	
Systems Approach	TRCA follows a systems approach in which the natural features and water resources are considered in relation to each other and the broader landscape in which they occur. The systems approach recognizes the role that linkages and connectivity within the natural system has in supporting ecological and hydrologic processes and functions that are vital to maintaining a healthy and robust natural system that is resilient against the impacts of urbanization and climate change. TRCA may require an assessment of the existing systems, together with an evaluation as to how the proposal may impact the systems.
Aquatic Systems, Species and Habitat	The aquatic system includes watercourses, wetlands, and flora and fauna species. Aquatic species and habitat should be assessed based on their conservation status according to sensitivity to disturbance and specialized ecological needs, as well as rarity. TRCA has prepared watershed plans or strategies, as well as fisheries management plans for some watersheds. The proposal must prevent negative impacts to the aquatic system, and as such, TRCA may require an assessment of the existing aquatic system, an evaluation as to how the proposal will meet the objectives articulated in the watershed plan or strategy, and/or an evaluation as to how the proposal will meet the objectives of the fisheries management plan.
Terrestrial System, Species and Habitat	The terrestrial system includes landscape features, vegetation communities, and flora and fauna species. Terrestrial species and habitat should be assessed based on their conservation status according to sensitivity to disturbance and specialized ecological needs, as well as rarity. TRCA has identified the need to improve both the quality and quantity of terrestrial habitat. TRCA's **Terrestrial Natural Heritage System Strategy** sets measurable targets for attaining a healthier natural system by creating an expanded and targeted land base. It includes strategic directions for stewardship and securement of the land base, a land use policy framework to help achieve the target system, and other implementation mechanisms. TRCA may require an assessment of the existing terrestrial species and habitat, together with an evaluation as to how the proposal will meet the objectives articulated in the watershed plan or terrestrial natural heritage strategy, as well as prevent negative impacts to the terrestrial system.

Groundwater Systems	
Aquifers and Hydrogeological Features and Functions	Groundwater systems include aquifers and their functional connections to surface water. The extraction and discharge of groundwater has the potential to negatively impact surrounding natural features and their functions. Even small amounts of groundwater extraction may reduce contributions to groundwater dependent features such as wetlands, springs, or fish spawning habitat. In addition, the discharge of groundwater must be controlled to avoid impacts to watercourses and fish habitat from temperature, erosion and sedimentation, as well other water quantity and quality issues. TRCA may require geotechnical or hydrogeological investigations to confirm dewatering and discharge requirements, and to identify appropriate mitigation measures with respect to potential impacts to natural features and functions.
Surface Water Systems	
Watercourses	Typically, watercourses are associated with aquatic species, and direct or indirect habitat. Any alteration or interference to a watercourse (e.g., straightening, diverting, realigning, altering baseflow) has the potential to impact fish communities, but may also affect the Regulatory Flood Plain, erosion or other natural channel processes. TRCA may require an environmental study or site confirmation of watercourse locations.
Meander Belt	Channel migration has a significant impact on infrastructure, structures and property located near river systems. Determining channel stability is important to ensure that damage from erosion, down-cutting or other natural channel processes is avoided. TRCA may require a meander belt delineation study or fluvial geomorphology analysis to confirm that any development does not conflict with natural channel processes.
Regulatory Flood Plain	The Regulatory Flood Plain is the approved standard used in a particular watershed to define the limit of the flood plain for regulatory purposes. Within TRCA's jurisdiction, the Regulatory Flood Plain is based on the greater of the regional storm, Hurricane Hazel, and the 100-year flood. TRCA's framework for Flood Plain Management is the LCP. TRCA may require a flood study or hydraulic update to confirm that there will be no impacts to the storage or conveyance of flood waters.
Storm Water Management, including Green Infrastructure	Stormwater management is integral to the health of streams, rivers, lakes, fisheries and terrestrial habitats, and source water protection is integral for managing the quality and quantity of drinking water at its source. TRCA requires all development, infrastructure and site alteration meet the criteria in the TRCA 2012 Stormwater Management Criteria document for water

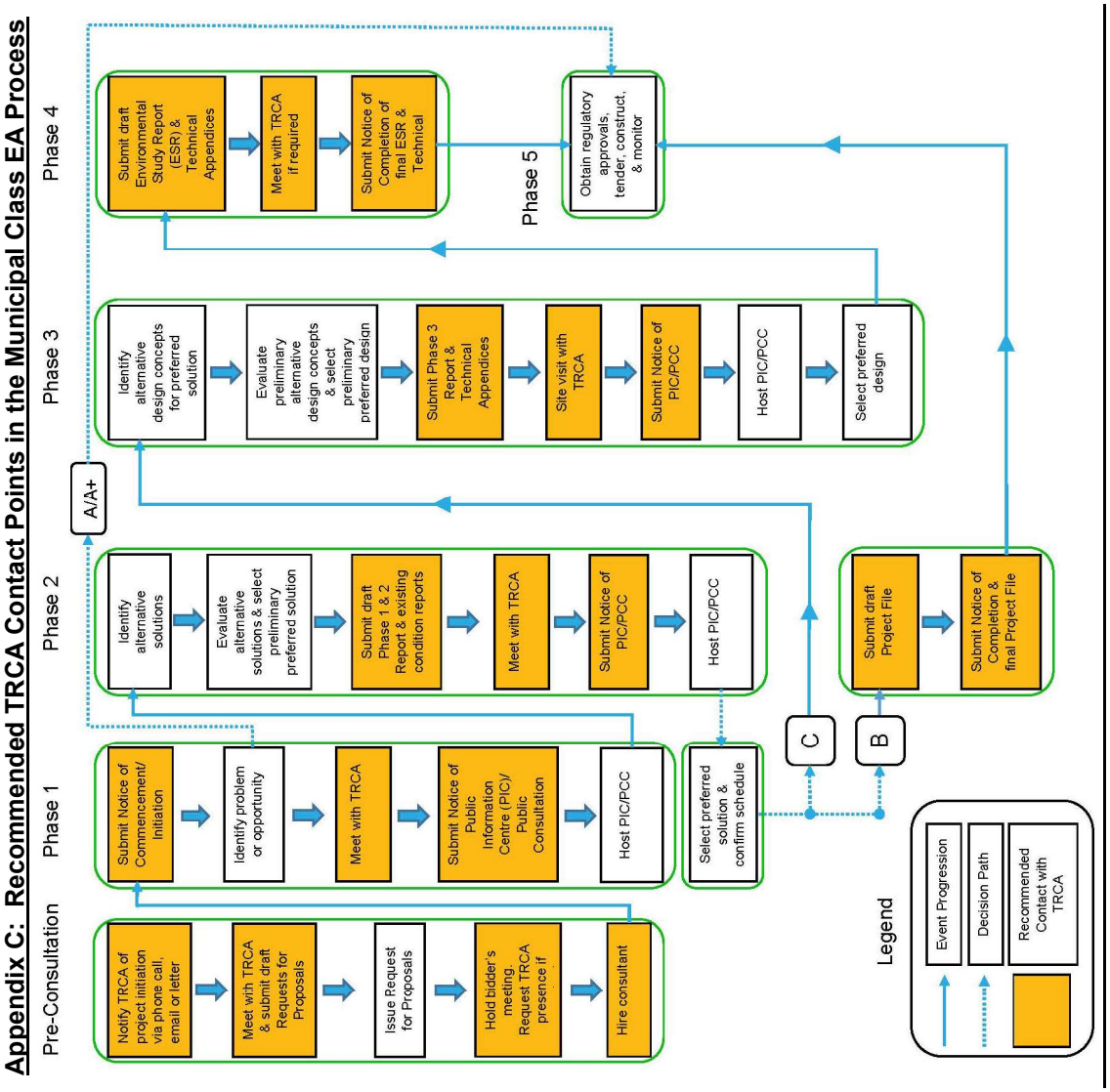
	quantity, water quality, erosion control, discharge water temperature, and water balance for groundwater recharge and natural features. Green Infrastructure techniques, including Low Impact Development (LID) measures should be used to address issues related to stormwater management, as well as maximize ecosystem services and mitigate the impacts of urbanization and climate change. For further information, please refer to the TRCA Introduction to Green Infrastructure, the Sustainable Technologies Evaluation Program (STEP) -Urban Runoff Green Infrastructure and the STEP 2010 Low Impact Development Stormwater Management Planning and Design Guide.
Special Policy Areas	Developed areas have historically existed within a flood plain may be designated as Special Policy Areas (SPA) as permitted under the 2014 **Provincial Policy Statement**. Policies for development and land use in these areas address the social, economic and cultural factors that support the continuation of the community. SPAs allow development and land uses that would not otherwise be permitted by the provincial policies on flood plain management.
Flood or Erosion Control Structures	There is an existing flood or erosion control structure (e.g., dam, weir, berm, channel) located in the project vicinity that must be considered as the project proceeds. A meeting with TRCA should be arranged as early as possible.
Valley Slopes	
Crest of Slope	Valley and stream corridors are dynamic systems that provide important natural functions and linkages for the physical, chemical and biological processes of wildlife, watercourses, and other natural features. The crest of slope identifies the physical limit of these corridors; however, due to ecological sensitivities, development restrictions typically extend beyond the actual crest of slope. TRCA may require the determination of the long term stable crest of slope (or toe of slope) through a staking with TRCA staff, as well as a geotechnical assessment.
Sustainability Programs and Policies	
Climate Change	In October 2017, MECP released a guideline under the Ontario environmental assessment legislation directing that all projects going through the EA process, including IEAs, Class EAs, and those governed by EA regulations, must consider impacts to and opportunities for climate change mitigation and adaptation, and consider the vulnerability of projects to climate change. It was further recommended that applicable policies in the 2014 **Provincial Policy Statement** be addressed, including but not limited to encouraging green infrastructure and strengthening stormwater management requirements; requiring consideration of energy conservation and efficiency, reduced greenhouse gas emissions and climate change adaptation (e.g. tree cover); and consideration of the potential impacts of climate change that may increase the risk associated with natural hazards (e.g. flooding due to severe weather).

	The climate change section of the EA should include recommendations for Green Infrastructure, Sustainable Buildings and Sustainable Construction Practices, as further described below. It is recommended that a completed Sustainable Technologies for Green Building, Green Infrastructure, and Sustainable Energy Design in Evaluation Matrix be included in the EA document.
Sustainable Communities	The TRCA Living City vision is based on a foundation that includes Sustainable Communities. Planning for community sustainability requires the identification of the complex and inter-related social, economic and ecological systems involved; TRCA supports a systems approach to developing integrative and adaptive solutions to improve community sustainability. Key socio-economic systems include: transportation facilities (including trails, sidewalks & multi-use pathways), community greenspaces (including parks), urban forests, cultural heritage resources, and the local economy. For transportation projects, a context sensitive design/solutions framework are encouraged.
PROVINCIAL PROGRAM AREAS	
Clean Water Act and Credit Valley - Toronto & Region - Central Lake Ontario (CTC) Source Protection Plan	The Clean Water Act ensures communities protect their drinking water supplies through prevention by developing collaborative, watershed-based source protection plans that are locally driven and based on science. Please be advised that the subject property appears to fall within the Intake Protection Zone (IPZ), Highly Vulnerable Aquifers (HVA), vulnerable areas under the Credit Valley - Toronto and Region - Central Lake Ontario Source Protection Plan (CTC SPP). Please confirm that the preferred alternative design for this project conforms with the CTC SPP. Please also consult with the Risk Management Official as copied on this letter. Please note that in accordance with Ontario Regulation 166/06, permits from TRCA may be required for mitigation solutions that are designed to ensure conformity with the CTC SPP.
PROVINCIAL PROGRAM AREAS	
Please contact the Ministry of Natural Resources and Forestry to confirm if there are program interests related to this project for: • **Areas of Natural and Scientific Interest** (ANSI) • **Provincially Significant Wetlands** (PSW) • **Provincially Endangered Species under the Species at Risk Act** (SARA) Please be advised that this list is not inclusive and the onus is on the proponent and it consultants to consult with other provincial agencies, as required, to ensure that requirements of their respective legislation is met.	
FEDERAL PROGRAM AREAS	
Please contact the relevant federal agency to confirm if there are issues related to: • Asian Long-horned Beetle Regulated Area	

- Federally Endangered Species under the **Endangered Species Act** (ESA)
- The **Fisheries Act**

Please be advised that this list is not inclusive and the onus is on the proponent and it consultants to consult with other provincial agencies, as required, to ensure that requirements of their respective legislation is met.

Appendix C: Recommended TRCA Contact Points in the Municipal Class EA Process



Stantec Consulting Ltd.
100-300 Hagey Boulevard, Waterloo ON N2L 0A4

January 6, 2022
File: 160951293

Attention: Nathan Jenkins, B.Sc.(Env), M.Pl., Planner, Infrastructure and Permits
Toronto Region Conservation Authority
101 Exchange Avenue
Vaughan, Ontario L4K 5R6

Dear Nathan Jenkins,

Reference: TRCA Response to Notice of Study Commencement and Virtual Open House for Enbridge Gas Inc. NPS 20 Inch Don River Relocation Project (CFN 59825)

Enbridge Gas Inc. (Enbridge) circulated a Notice of Study Commencement and Virtual Open House for the NPS 20 Don River Relocation Project (the Project) to various agencies, including the Toronto and Region Conservation Authority (TRCA), on October 26, 2021. TRCA responded to that notice on November 18, 2021, indicating that the TRCA have reviewed the notice and the publicly available reference materials as presented at the project's Virtual Open House. In their response, the TRCA indicated their interest in the Project and provided comments back to Enbridge.

Enbridge's responses to these comments are provided in Table 1 (Attachment 1).

Enbridge would like to thank the TRCA for their comments and note that based on all the comments received as a result of the Virtual Open House and associated engagement activities, the preliminary preferred route has been selected as the preferred route.

Regards,

Stantec Consulting Ltd.

Laura Hill M.Env.Sc
Project Manager
Phone: 613-862-9895
Laura.Hill@stantec.com

Attachment: Table 1: Comment Responses

c. Tanya Turk, Enbridge
Stephanie Muller, Enbridge
Chuck Reany, Enbridge

hl \\cd1215-f01\work_group\01609\active\160951293\02_correspondence\correspondence_record\received\trca_20211118\160951293_trca-cfn59825-vohcomments-20220105_response.docx

Attachment 1:
Table 1: Comment Responses

Stantec

Table 1: Comment Responses

TRCA Comment Number	TRCA Comment	Enbridge Response
1	As the preferred route for the relocated Enbridge line appears to be close to the Don Roadway Flood Protection Landform (FPL). It's important that the installation and removal of the pipeline does not effect the Don Roadway FPL. The ER should consider how the alignment of the temporary pipeline will avoid negatively impacting the FPL from installation, operation, to decommissioning. This will also need to be carried into detailed design and construction.	Enbridge notes that the Corktown Commons FPL is located approximately 350 m north of the preferred route and is not expected to be intersected or impacted by the preferred route or any temporary workspace.
2	It is critical that any pipeline placement on the Lakeshore bridge be adequately protected from any shipping or dredging activities in the area in both Phase 1 and 2 of the Preferred Alternative. Please provide clarification on any setbacks for working in the vicinity of the pipeline that could interfere with Sediment and Debris Management Area operations.	Enbridge will work with Ellis Don (and any other sub-contractors assigned to the Waterfront Toronto PLFPEI project) so that the existing pipeline currently on the Keating Railway Bridge has the necessary protection from all shipping and dredging activities. As part of the protection methods in place for this pipeline, Enbridge Gas Damage Prevention will coordinate with the constructor to ensure there is Vital Main Standby in place which consists of an Enbridge Inspector who will remain on site while work is taking place around this gas main.
3	This assessment of a preferred route should consider holistic assessment and study of all the various proposed alternative routes. As previously advised in the 2020 review of alternative routes for the proposed NPS 20 Relocation TRCA staff have significant concern with any relocation within 10 metres of the limits of the existing TRCA West Don Flood Protection Landform (FPL), including at the intersection of Queen Street, King Street and River Street. TRCA staff requires that the final Environmental Report (ER) consideration of 'Access and Land Requirements' include an evaluation of the relocations impacts to the FPL and associated socio-economic impacts prior to any Leave to Construct. Should an alternative other than what is shown as the preliminary preferred route be chosen then site-specific field investigations and technical reports by a qualified specialist will be required to demonstrate that there will be no impact to the integrity, form and function of the FPL.	Enbridge notes that the Corktown Commons FPL is located approximately 350 m north of the preferred route and is not expected to be intersected or impacted by the preferred route or any temporary workspace.

Stantec

Table 1: Comment Responses

TRCA Comment Number	TRCA Comment	Enbridge Response
4	On confirmation from Enbridge that the proposed installation is not located within the FPL, TRCA staff will also require a site-specific enhanced construction plan for any work in close proximity of the existing West Don FPL, as needed. This enhanced monitoring plan must be designed by Enbridge to the satisfaction of TRCA for any of the Alternative and Tie-In Routes referenced above prior to any Leave to Construct for these routes.	The Project is not in close proximity to the FPL.
5	TRCA also requests clarification on the requirement for Feeder Stations under the Preferred Alternative #1 as it remains unclear if Station A required with the preferred route and the proposed station is located within the floodplain of the Don River within the associated Special Policy Area.4. Additionally, during this ER assessment it must be demonstrated to TRCA that there will be no impacts on the Regional Flood Plain for the lower Don River. The assessment must consider access and ongoing maintenance requirements for under the Preferred Alternative Route as a part of the Sediment and Debris Management Area (SDMA) which requires regular dredging and mitigation for ice passage on the Don River.	No feeder station is required for the preferred route. See response to item 2 for considerations with respect to SDMAs.
6	Please also be advised of the Coxwell Bypass stormwater management tunnel and shaft connections, currently under construction, in the area of your works which may have the potential to affect the preferred alignment. Please coordinate with the City of Toronto regarding these works; in addition to potential tertiary impacts to parks, trails, and municipal real estate which may be impacted by this work.	Noted.

From: Nathan Jenkins
To: Tanya Turk
Cc: NPS 20 Don River Relocation; Chuck Reaney; Hill, Laura; Michael Noble; Bill Snodgrass; Ken Dion; Beth Williston; Sharon Lingertat; Maryam Iler
Subject: RE: TRCA CFN 59825 - Enbridge Gas Inc. - Don River Relocation Project ER Response Letter
Date: Tuesday, February 1, 2022 4:32:51 PM
Attachments: image001.png
TRCA CFN 59825_20in Lower Don Relocation Environmental Report Response_Feb 1-22.pdf

Good afternoon Tanya,

Please see the attached Toronto and Region Conservation Authority (TRCA) Response Letter related to the Enbridge Gas Inc. – NPS 20 Inch Don River Relocation Project Environmental Report.

Thank you,

Nathan Jenkins, H.B.Sc. (Env), M.Pl., RPP (he/him/his)
Planner
Infrastructure Planning and Permits | Development and Engineering Services

T: (416) 661-6600 ext. 5508
E: nathan.jenkins@trca.ca
A: 101 Exchange Avenue, Vaughan, ON, L4K 5R6 | trca.ca

Toronto and Region Conservation Authority

From: Tanya Turk <Tanya.Turk@enbridge.com>
Sent: Friday, December 17, 2021 3:55 PM
To: cory.ostrowka@infrastructureontario.ca; helma.geerts@ontario.ca; jason.mccullough@ontario.ca; sourceprotectionscreening@ontario.ca; dan.minkin@ontario.ca; maya.harris@ontario.ca; environment.toronto@ontario.ca; tony.difabio@ontario.ca; Zora.Crnojacki@oeb.ca; kmanouchehri@tssa.org; keith.johnston@ontario.ca; James.hamilton@ontario.ca; karla.barboza@ontario.ca; Renee Afoom-Boateng <Renee.Afoom-Boateng@trca.ca>; Robert Chan <Robert.Chan@trca.ca>; Brandon Hester <Brandon.Hester@trca.ca>; Sharon Lingertat <Sharon.Lingertat@trca.ca>; Laurie Nelson <Laurie.Nelson@trca.ca>; dpina@trca.on.ca; meg.stjohn@trca.on.ca; Beth Williston <Beth.Williston@trca.ca>; Nathan Jenkins <Nathan.Jenkins@trca.ca>; bryan.bowen@toronto.ca; Carly.Bowman@toronto.ca; michael.dandrea@toronto.ca; luis.dejesus@toronto.ca; easton.gordon@toronto.ca; Barbara.Gray@toronto.ca; Suzanne.Hajdu@toronto.ca; Anthony.Kittel@toronto.ca; Marc.Kramer@toronto.ca; gregg.lintern <gregg.lintern@toronto.ca>; patrick.matozzo@toronto.ca; rmayber@toronto.ca; Sylvia.Mullaste@toronto.ca; Fquaris@toronto.ca; parks@toronto.ca; leila.valenzuela@toronto.ca; irina.vasile@toronto.ca; Derek.Waltho@toronto.ca; dsharma@toronto.ca
Cc: NPS 20 Don River Relocation <EA-Replacement20@stantec.com>; Chuck Reaney

<Chuck.Reaney@enbridge.com>; Stephanie Muller <Stephanie.Muller@enbridge.com>; Patrick Osland <patrick.osland@enbridge.com>
Subject: Enbridge Gas Inc. - Don River Relocation Project OPCC Review

Hello,

Enbridge Gas Inc. ("Enbridge") is proposing to construct the Don River Relocation Project ("the Project"). As part of Waterfront Toronto's Port Lands Flood Protection Enabling Infrastructure Project, the Keating Railway Bridge must be widened, in addition to the construction of the new Lake Shore Bridge. As such, Enbridge Gas has identified that a segment of a 20-inch vital natural gas main needs to be relocated in order to facilitate the Waterfront's construction project while maintaining the safe and reliable delivery of natural gas to customers in the City of Toronto. The Ontario Energy Board's Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario 7th Edition 2016 (Guidelines) recommend that a project proponent provide a copy of the Environmental Report (ER) for a project to the Ontario Pipeline Coordinating Committee for review and comment.

The ER can be downloaded at the link below (click on 'Regulatory Information' under the 'Project Information' tab).

https://www.enbridgegas.com/donriver

Please provide any comments on the ER for the Project *by February 1st, 2022.*

Comments should be directed to:

Tanya Turk
Advisor, Environment
Enbridge Gas Inc.
101 Honda Boulevard
Markham, Ontario
L6C 0M6
Cell: 416-371-8790
Email: EA-Replacement20@stantec.com

Have a safe and Happy Holiday,

Tanya Turk, **M.Sc., P.Ag. (she/her)**
Advisor Environment
Lands, Permitting & Environment

ENBRIDGE
TEL: 416-495-3103 | CELL: 416-371-8790
101 Honda Blvd. Markham, ON L6C 0M6

enbridge.com
Safety. Integrity. Respect. Inclusion.

In the spirit of reconciliation, I mindfully acknowledge that I live and work on the Indigenous traditional territory and ancestral lands of the Anishinabek Nation, the Haudenosaunee Confederacy, the Mississaugas of Scugog, Hiawatha, and Alderville First Nations, Wendat and the Métis Nation. The treaties that were signed for this particular parcel of land are collectively referred to as the Williams Treaties of 1923.

Toronto and Region Conservation Authority

February 1, 2022

CFN 59825
XREF CFN 58638; 60215; 63062

BY E-MAIL ONLY (Tanya.Turk@enbridge.com)

Tanya Turk
Environmental Advisor
Enbridge Gas Inc.
3rd Floor, 101 Honda Boulevard
Markham, ON
L6C 0M6

Dear Tanya Turk:

Re: Final Environmental Report (ER)
Enbridge Gas Proposed 20 Inch Natural Gas Pipeline Relocation
In Accordance with the Ontario Energy Board's Environmental Guidelines for the Construction of Hydrocarbon Pipelines and Facilities in Ontario
Don River Watershed; City of Toronto – Toronto and East York

Toronto and Region Conservation Authority (TRCA) staff received email confirmation of the final Environmental Report (ER) for the above noted project from Enbridge Gas Inc. on December 17, 2021, and have received a comment response letter to TRCA staff's Notice of Commencement comment letter on January 6, 2022.

PROJECT OVERVIEW

Staff understand that this study, completed under the Ontario Energy Board's (OEB) Guidelines for the Construction of Hydrocarbon Pipelines and Facilities in Ontario, has examined options for replacing an approximately 1.6 kilometre segment of Nominal Pipe Size (NPS) 20-inch natural gas pipeline located in the West Don Lands, in the City of Toronto. Presently, the pipeline is carried over the Don River via the Keating Railway Bridge. However, the crossing has previously been identified as being subject to risk from significant weather events and in conflict with the scheduled Port Lands Flood Protection Enabling Infrastructure Project, led by Waterfront Toronto, as such the 20-inch pipeline is being relocated.

The Preferred Route involves two phases: a temporary above ground by-pass phase, and final relocation phase. The temporary above ground by-pass installation is proposed to be located on the south side of the newly built and widened Lake Shore Bridge, and the final relocation is proposed to be in a dedicated utility corridor on the north side of the Keating Railway Bridge. The temporary above ground by-pass will include construction of approximately 209 metres of pipeline and the final relocation will include construction of approximately 166 metres of pipeline. Tie-ins to the existing Enbridge NPS20 pipeline will occur on the east and west side of each bridge.

Further details regarding prior communications between TRCA and Enbridge Gas staff in relation this this pipeline are provided below.

PROJECT BACKGROUND

It is TRCA staff's understanding that this pipeline relocation was originally a component of the NPS 30 XHP relocation in the lower Don River (CFN 58638). However, due to constraints on construction timing, the original scope of work was divided into two separate projects.

It is further understood that this pipeline relocation is directly related to the Lower Don NPS 20in relocation application previously withdrawn from the OEB as notified by Enbridge Gas Inc. in early 2021 in order to further assess potential route alternatives.

PROJECT REVIEW

TRCA staff were circulated a formal Notice of Project Commencement for this EA on October 26, 2021, with TRCA's response provided clarifying our interests in this study on November 18, 2021. TRCA requested to be circulated on a draft copy of the Environmental Report; this was not provided by Enbridge Gas Inc.. TRCA staff have not had the opportunity to clarify key commitments and requirements which should be incorporated within the ER to the satisfaction of TRCA staff.

TRCA acknowledges the proposal's goal of relocating the existing pipe off of the Keating Bridge as located immediately north of Lake Shore Boulevard, and a preferred route that attempts to avoid the existing West Don FPL; TRCA has always maintained the importance of ensuring that the proposed relocation exercise does not impact both the existing and future critical flood infrastructure and city building efforts by the TRCA, City of Toronto and Waterfront Toronto. Detailed comments are included in **Appendix A**; our support of this proposal is contingent on the following key requirements:

1) **Don Roadway Flood Protection Landform (FPL):** TRCA requires clarification on the potential impacts to the Don Roadway FPL footprint for the proposed works (removals, temporary relocation and permanent) along the Don Roadway. This includes the proposed alignment, associated construction activities shaft locations, construction staging, site access and surface structures/valves. TRCA requires confirmation of this in the final ER, prior to the Leave to Construct.

2) **Sediment and Debris Management:** It is critical that any pipeline placement on the Lake Shore bridge be adequately protected from any shipping or dredging activities in the area in both Phase 1 and 2 of the Preferred Alternative. Please provide clarification on any setbacks for working in the vicinity of the pipeline that could interfere with Sediment and Debris Management Area operations.

3) **Ongoing Agency Consultation:** TRCA formally requests that Enbridge coordinate with Waterfront Toronto and other affected agencies, prior to detailed design and the anticipated permit submission, to ensure coordination of multiple on-going construction activities within the area.

Moving forward, Enbridge must demonstrate how these requirements have been or are being incorporated into the proposal as part of the "Leave to Construct" application.

Should you have any questions, please contact me at extension 5508 or at Nathan.jenkins@trca.ca.

Regards,

Nathan Jenkins, H.B.Sc (Env), M.Pl., RPP
Planner, Infrastructure Planning and Permits
Development and Engineering Services

Attached: Appendix A: TRCA Comments

BY E-MAIL

cc:	Applicant:	Chuck Reaney, Land Services, (chuck.reaney@enbridge.com)
	Consultant:	Laura Hill (EA.Replacement20@stantec.com)
	City of Toronto:	Michael Noble, Project Manager, Waterfront Secretariat
		Bill Snodgrass, Source Water Protection
	Waterfront Toronto:	Ken Dion, Project Director - Port Lands
	TRCA:	Beth Williston, Associate Director, Infrastructure Planning and Permits
		Sharon Lingertat, Senior Manager, Infrastructure Planning and Permits
		Maryam Iler, Manager, Restoration & Infrastructure

APPENDIX A: TRCA COMMENTS AND PROPONENT RESPONSES

ITEM	TRCA COMMENTS (November 18, 2021)	Enbridge/Stantec RESPONSE (January 6, 2022)	TRCA COMMENTS (February 1, 2022)
General			
1.	As the preferred route for the relocated Enbridge line appears to be close to the Don Roadway Flood Protection Landform (FPL). It's important that the installation and removal of the pipeline does not effect the Don Roadway FPL. The ER should consider how the alignment of the temporary pipeline will avoid negatively impacting the FPL from installation, operation, to decommissioning. This will also need to be carried into detailed design and construction.	Enbridge notes that the Corktown Commons FPL is located approximately 350 m north of the preferred route and is not expected to be intersected or impacted by the preferred route or any temporary workspace.	**Unaddressed** - The West Don FPL (Corktown Commons FPL) is wholly separate in geography and purpose from the Don Roadway FPL. The Don Roadway FPL is located along the Don Roadway just south of Lakeshore Blvd E, which is close to the proposed pipeline route. The latest design of the Don Roadway FPL can be obtained from Waterfront Toronto. It remains unclear how the preferred route for the relocated Enbridge line will consider and avoid/mitigate impacts to the Don Roadway Flood Protection Landform (FPL) as this was not a consideration in the final ER. It is critical that the installation and removal of the Enbridge Phase 1 and 2, temporary and permanent pipeline, does not impact the Don Roadway FPL. Enbridge must ensure this is addressed in the next phase of work as this will need to be carried into detailed design which considers how the alignment of the temporary pipeline will avoid negatively impacting the FPL from installation, operation, to decommissioning. This will also need to be carried into detailed design and construction in order to receive necessary permit authorization from TRCA under O.Reg 166/06.

ITEM	TRCA COMMENTS (November 18, 2021)	Enbridge/Stantec RESPONSE (January 6, 2022)	TRCA COMMENTS (February 1, 2022)
2.	It is critical that any pipeline placement on the Lakeshore bridge be adequately protected from any shipping or dredging activities in the area in both Phase 1 and 2 of the Preferred Alternative. Please provide clarification on any setbacks for working in the vicinity of the pipeline that could interfere with Sediment and Debris Management Area operations.	Enbridge will work with Ellis Don (and any other sub-contractors assigned to the Waterfront Toronto PLFPEI project) so that the existing pipeline currently on the Keating Railway Bridge has the necessary protection from all shipping and dredging activities. As part of the protection methods in place for this pipeline, Enbridge Gas Damage Prevention will coordinate with the constructor to ensure there is Vital Main Standby in place which consists of an Enbridge Inspector who will remain on site while work is taking place around this gas main.	**Unaddressed** Future shipping and dredging activities in and around the preferred route should be addressed in the report. Heavy equipment and marine shipping will be operating adjacent and underneath the new Lake Shore Bridge. The design of the pipeline crossing must take these activities into account and Enbridge infrastructure must be properly protected to allow long-term dredging activities to proceed unfettered. The Environmental Report should be revised to consider future dredging activities under the socio-economic section of the report.
3.	This assessment of a preferred route should consider holistic assessment and study of all the various proposed alternative routes. As previously advised in the 2020 review of alternative routes for the proposed NPS 20 Relocation TRCA staff have significant concern with any relocation within 10 metres of the limits of the existing TRCA West Don Flood Protection Landform (FPL), including at the intersection of Queen Street, King Street and River Street. TRCA staff requires that the final Environmental Report (ER) consideration of 'Access and Land Requirements' include an evaluation of the relocations impacts to the FPL and associated socio-economic impacts prior to any Leave to Construct. Should an alternative other than what is shown as the preliminary preferred route be chosen then site-specific field investigations and technical reports by a qualified specialist will be required to demonstrate that there	Enbridge notes that the Corktown Commons FPL is located approximately 350 m north of the preferred route and is not expected to be intersected or impacted by the preferred route or any temporary workspace.	**Unaddressed** All evaluated alternative routes have the potential to impact the West Don Flood Protection Landform (WDFPL), an existing critical flood protection infrastructure for the Don River. While the preferred alternative route does not conflict with the WDFPL this should be considered in the holistic assessment for the pipeline's relocation. Section 4.3.11 – Infrastructure, and section 6.0 Cumulative effects assessment, should be revised to include the existing and future planned flood protection landforms as constraints that were evaluated when generating route options for the pipeline.

ITEM	TRCA COMMENTS (November 18, 2021)	Enbridge/Stantec RESPONSE (January 6, 2022)	TRCA COMMENTS (February 1, 2022)
	will be no impact to the integrity, form and function of the FPL.		If Enbridge does not plan to further update the ER please ensure these comments are carried forward to the design and permitting stage.
4.	On confirmation from Enbridge that the proposed installation is not located within the FPL, TRCA staff will also require a site-specific enhanced construction plan for any work in close proximity of the existing West Don FPL, as needed. This enhanced monitoring plan must be designed by Enbridge to the satisfaction of TRCA for any of the Alternative and Tie-In Routes referenced above prior to any Leave to Construct for these routes.	The Project is not in close proximity to the FPL.	Please confirm this response also applies to the Don Roadway FPL.
5.	TRCA also requests clarification on the requirement for Feeder Stations under the Preferred Alternative #1 as it remains unclear if Station A required with the preferred route and the proposed station is located within the floodplain of the Don River within the associated Special Policy Area.4. Additionally, during this ER assessment it must be demonstrated to TRCA that there will be no impacts on the Regional Flood Plain for the lower Don River. The assessment must consider access and ongoing maintenance requirements for under the Preferred Alternative Route as a part of the Sediment and Debris Management Area (SDMA) which requires regular dredging and mitigation for ice passage on the Don River.	No feeder station is required for the preferred route. See response to item 2 for considerations with respect to SDMAs.	Noted
6.	Please also be advised of the Coxwell Bypass stormwater management tunnel and shaft connections, currently under construction, in the area of your works which may have the potential to affect the preferred alignment. Please coordinate with the City of Toronto regarding these works; in addition to potential tertiary impacts to parks, trails,	Noted.	Noted

ITEM	TRCA COMMENTS (November 18, 2021)	Enbridge/Stantec RESPONSE (January 6, 2022)	TRCA COMMENTS (February 1, 2022)
	and municipal real estate which may be impacted by this work.		
7.	-	-	Please be advised that the preferred route appears to fall within the Intake Protection Zone (IPZ), Highly Vulnerable Aquifers (HVA), vulnerable areas under the Credit Valley - Toronto and Region - Central Lake Ontario Source Protection Plan (CTC SPP). TRCA supports the legislated protection of municipal drinking water sources through the Clean Water Act and acts as a technical advisor to municipalities in their role for implementing some aspects of the CTC SPP. For more information please visit http://www.ctcswp.ca/.
8.	-	-	Please include the Greenbelt Plan in policy review as the Don River has been added as an Urban River Valley Area in 2017. Please address how the proposed works and abandonment will attempt to meet Section 6 and Section 3.2.4 of the Plan. https://files.ontario.ca/greenbelt-plan-2017-en.pdf
TRCA Permitting Requirements for Detail Design Application			
9.	-	-	As noted in the ER, permits in accordance with Ontario Regulation 166/06 are required from TRCA prior to project construction. Please submit the detailed design drawings, together with the appropriate reports and documents. The TRCA Complete Submission

ITEM	TRCA COMMENTS (November 18, 2021)	Enbridge/Stantec RESPONSE (January 6, 2022)	TRCA COMMENTS (February 1, 2022)
			Checklist for Infrastructure Projects is available on our website (https://trca.ca/app/uploads/2016/01/TRCA-PRE-CONSULTATION-CHECKLIST.pdf) , and should be used as a guide to your permit submission. The permit application form, together with additional submission checklist and guidelines are also available on our website should be used as appropriate to inform the development of your application. These can be found under the Planning and Permitting, Environmental Assessment section of the TRCA website at: http://www.trca.on.ca/planning-services-permits/environmental-assessment.dot#check. Please include a digital copy of all submitted material. Materials must be submitted in PDF format, with drawings pre-scaled to print on 11"x17" pages. Materials may be submitted via e-mail (if less than 25 MB), or through file transfer protocol (FTP) sites (if posted for a minimum of two weeks).
10.	-	-	TRCA staff encourage the Enbridge team to contact TRCA during detail design stages to ensure that the design has adequately considered impacts to, and caused by, the floodplain. Additionally, TRCA recommend locating all equipment staging, stockpiling and temporary facilities outside of the Regulatory floodplain. Staff can provide updated floodplain mapping if required by Enbridge.
11.	-	-	Erosion and sediment control (ESC) measures should be implemented to mitigate erosion and sediment processes during construction. At the detailed design stage, please provide

ITEM	TRCA COMMENTS (November 18, 2021)	Enbridge/Stantec RESPONSE (January 6, 2022)	TRCA COMMENTS (February 1, 2022)
			comprehensive ESC plans as part of associated applications. The ESC plan should be consistent with the Erosion and Sediment Control Guideline for Urban Construction (December 2019). The most up to date guideline can be found on the Sustainable Technologies Evaluation Program (STEP) website at www.sustainabletechnologies.ca
12.	-	-	Enbridge should identify appropriate design measures to mitigate the risk of debris hitting the pipeline during a Regional Storm event in detailed design.
13.	-	-	Under Section 7.2 'Contingency' a contingency plan should be created and submitted at the design stage to address the risk of flooding from the Don River during construction of the permanent and temporary pipeline replacement.
18.	-	-	At the detailed design stage please include TRCA's Standard Notes to the drawings. The note can be found in the following links: http://www.trca.on.ca/dotAsset/93458.pdf

Stantec Consulting Ltd.
100-300 Hagey Boulevard, Waterloo ON N2L 0A4

February 18, 2022

File: 160951293

Nathan Jenkins, H.B.Sc. (Env), M.Pl., RPP
Toronto Region Conservation Authority
101 Exchange Ave
Concord, Ontario L4K 5R6

Dear Nathan Jenkins,

Reference: CFN 59825: TRCA Comments on Environmental Report prepared for NPS 20 Don River Pipeline Relocation Project

Enbridge Gas Inc. (Enbridge) circulated a Notice of Study Commencement and Virtual Open House for the NPS 20 Don River Relocation Project (the Project) to various agencies, including the Toronto and Region Conservation Authority (TRCA), on October 26, 2021. TRCA responded to that notice on November 18, 2021, indicating that the TRCA have reviewed the notice and the publicly available reference materials as presented at the project's Virtual Open House. Enbridge responded to these comments on January 5, 2022.

TRCA provided subsequent comments on February 2, 2022. Enbridge's responses to these comments are provided below in **Table 1**.

Enbridge would like to thank the TRCA for their comments and note their commitment to working with TRCA through the permitting phase of the Project. Enbridge would also like to reiterate that the Project is being conducted in coordination with and as a direct result of Waterfront Toronto's activities. As the OPCC review period has ended, and to ensure timely execution of the work, Enbridge will file its LTC application and continue to work with the TRCA to address any concerns with the Project prior to obtaining a permit.

If you have any questions or require anything further, please do not hesitate to contact the undersigned.

Regards,

Laura Hill M.Env.Sc.
Project Manager
Mobile: (613) 862-9895
laura.hill@stantec.com

c: Tanya Turk, Chuck Reany, Stephanie Muller (Enbridge)
Zora Crnojacki, Chair, Ontario Pipeline Coordinating Committee

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Reference: **CFN 59825: TRCA Comments on Environmental Report prepared for NPS 20 Don River Pipeline Relocation Project**

Table 1: Comment Response

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1.	As the preferred route for the relocated Enbridge line appears to be close to the Don Roadway Flood Protection Landform (FPL). It's important that the installation and removal of the pipeline does not effect the Don Roadway FPL. The ER should consider how the alignment of the temporary pipeline will avoid negatively impacting the FPL from installation, operation, to decommissioning. This will also need to be carried into detaileddesign and construction.	Enbridge notes that the Corktown Commons FPL is located approximately 350 m north of the preferred route and is not expected to be intersected or impacted by the preferred routeor any temporary workspace.	**Unaddressed** - The West Don FPL (CorktownCommons FPL) is wholly separate in geography and purpose from the Don Roadway FPL. The Don Roadway FPL is located along the Don Roadway just south of Lakeshore Blvd E, which is close to the proposed pipeline route. The latest design of the Don Roadway FPL can be obtained from Waterfront Toronto. It remains unclear how the preferred route forthe relocated Enbridge line will consider and avoid/mitigate impacts to the Don Roadway Flood Protection Landform (FPL) as this was not a consideration in the final ER. It is critical that the installation and removal of the Enbridge Phase 1 and 2, temporary and permanent pipeline, does not impact the Don Roadway FPL. Enbridge must ensure this is addressed in the next phase of work as this will need to be carried into detailed design which considers how the alignment of the temporary pipeline will avoid negatively impacting the FPL from installation, operation, to decommissioning. This will also need to be carried into detailed design and construction in order to receive necessary permit authorization from TRCA under O.Reg 166/06.	The temporary and final locations for the pipeline are proposed to be located within road structures. Enbridge is continuing to coordinate project activities with Waterfront Toronto for the temporary bypass location, on the south side of Lake Shore Boulevard. The location will be above ground, in line with and on-top of the south sidewalk of Lake Shore Bridge north of the Don Roadway FPL. The final pipeline placement will be further north, on the Keating Railway Bridge, within a designated, protected, utility corridor. The Don Roadway FPL is located at least 15 m south of the Lake Shore Bridge and is currently proposed to be separated from Lake Shore Bridge by a sheet pile wall. Since neither the temporary bypass location or permanent location are in close proximity to the Don Roadway FPL, no effects to the FPL are anticipated.
2.	It is critical that any pipeline placement on the Lakeshore bridge be adequately protected from any shipping or dredging activities in the area in both Phase 1 and 2 of the Preferred Alternative. Please provide clarification on any setbacks for working in the vicinity of the pipeline that could interfere with Sediment and Debris ManagementArea operations.	Enbridge will work with Ellis Don (and any other sub-contractors assigned to the Waterfront Toronto PLFPEI project) so that the existing pipeline currently on the Keating Railway Bridge has the necessary protection from all shipping and dredging activities. As part of the protection methods in place for thispipeline, Enbridge Gas Damage Prevention will coordinate with the constructor to ensure there is Vital Main Standby in place which consists of an Enbridge Inspector who will remain on site while work is taking place around this gas main.	**Unaddressed** Future shipping and dredging activities in and around the preferred route should be addressed in the report. Heavy equipment andmarine shipping will be operating adjacent andunderneath the new Lake Shore Bridge. The design of the pipeline crossing must take these activities into account and Enbridge infrastructure must be properly protected to allow long-term dredging activities to proceed unfettered. The Environmental Report should be revised to consider future dredging activities under the socio-economic section of the report.	Enbridge will continue to work with Waterfront Toronto on the locations for the gas pipeline for both Phase 1 and 2 of the relocation project to address the concerns of the TRCA. Specifically, with regards to the permanent pipeline location (Phase 2) in the Utility Corridor, Enbridge will work with Waterfront Toronto and seek confirmation from them that their Utility Corridor design incorporates the required safety considerations to ensure the protection of utilities (including the gas pipeline), in the Utility Corridor, against any maintenance and dredging activities required in the SDMA.

Reference: CFN 59825: TRCA Comments on Environmental Report prepared for NPS 20 Don River Pipeline Relocation Project

Table 1: Comment Response

ITEM	TRCA COMMENTS (November 18, 2021)	Enbridge/Stantec RESPONSE (January 6,2022)	TRCA COMMENTS (February 1, 2022)	Enbridge/Stantec Response (February 18, 2022)
3. ..	This assessment of a preferred route should consider holistic assessment and study of all the various proposed alternative routes. As previously advised in the 2020 review of alternative routes for the proposed NPS 20 Relocation TRCA staff have significant concern with any relocation within 10 metres of the limits of the existing TRCA West Don Flood Protection Landform (FPL), including at the intersection of Queen Street, King Street and River Street. TRCA staff requires that the final Environmental Report (ER) consideration of 'Access and Land Requirements' include an evaluation of the relocations impacts to the FPL and associated socio-economic impacts prior to any Leave to Construct. Should an alternative other than what is shown as the preliminary preferred route be chosen then site-specific field investigations and technical reports by a qualified specialist will be required to demonstrate that there will be no impact to the integrity, form and function of the FPL.	Enbridge notes that the Corktown Commons FPL is located approximately 350 m north of the preferred route and is not expected to be intersected or impacted by the preferred route or any temporary workspace.	**Unaddressed** All evaluated alternative routes have the potential to impact the West Don Flood Protection Landform (WDFPL), an existing critical flood protection infrastructure for theDon River. While the preferred alternative route does not conflict with the WDFPL thisshould be considered in the holistic assessment for the pipeline's relocation. Section 4.3.11 – Infrastructure, and section 6.0 Cumulative effects assessment, should be revised to include the existing and future planned flood protection landforms as constraints that were evaluated when generating route options for the pipeline. If Enbridge does not plan to further update the ER please ensure these comments are carriedforward to the design and permitting stage.	The presence of the WDFPL is discussed in Section 4.1.6 of the ER. There is no anticipated interaction identified between the preferred route and the WDFPL. As there is no anticipated interaction between the project and the WDFPL, there are no anticipated residual effects, and therefore, a cumulative effects assessment is not required. Enbridge will consider TRCA's comments during detailed design and during the TRCA permitting process.
4. .	On confirmation from Enbridge that the proposed installation is not located within the FPL, TRCA staff will also require a site-specific enhanced construction plan for any work in close proximity of the existing West Don FPL, as needed. This enhanced monitoring plan must be designed by Enbridge to the satisfaction of TRCA for any of the Alternative and Tie-In Routes referenced above prior to any Leave to Construct for these routes.	The Project is not in close proximity to theFPL.	Please confirm this response also applies to the Don Roadway FPL.	Confirmed. Please refer to the response to Item 1.
5.	TRCA also requests clarification on the requirement for Feeder Stations under the Preferred Alternative #1 as it remains unclear if Station A required with the preferred route and the proposed station is located within the floodplain of the Don River within the associated Special Policy Area.4. Additionally, during this ER assessment it must be demonstrated to TRCA that there will be no impacts on the Regional Flood Plain for the lower Don River. The assessment must consider access and ongoing maintenance requirements for under the Preferred Alternative Route as a part of the Sediment and Debris Management Area (SDMA) which requires regular dredging and mitigation for ice passage on the Don River.	No feeder station is required for the preferredroute. See response to item 2 for considerations with respect to SDMAs.	Noted	-
6.	Please also be advised of the Coxwell Bypass stormwater management tunnel and shaft connections, currently under construction, in the area of your works which may have the potential to affect the preferred alignment. Please coordinate with the City of Toronto regarding these works; in addition to potential tertiary impacts to parks, trails, and municipal real estate which may be impacted by this work.	Noted.	Noted	-

Reference: **CFN 59825: TRCA Comments on Environmental Report prepared for NPS 20 Don River Pipeline Relocation Project**

Table 1: Comment Response

ITEM	TRCA COMMENTS (November 18, 2021)	Enbridge/Stantec RESPONSE (January 6,2022)	TRCA COMMENTS (February 1, 2022)	Enbridge/Stantec Response (February 18, 2022)
7.	-	-	Please be advised that the preferred route appears to fall within the Intake Protection Zone (IPZ), Highly Vulnerable Aquifers (HVA), vulnerable areas under the Credit Valley - Toronto and Region - Central Lake Ontario Source Protection Plan (CTC SPP). TRCA supports the legislated protection of municipal drinking water sources through the Clean Water Act and acts as a technical advisor to municipalities in their role for implementing some aspects of the CTC SPP. For more information please visit http://www.ctcswp.ca/.	Noted.
8.	-	-	Please include the Greenbelt Plan in policy review as the Don River has been added as an Urban River Valley Area in 2017. Please address how the proposed works and abandonment will attempt to meet Section 6 and Section 3.2.4 of the Plan. https://files.ontario.ca/greenbelt-plan-2017- en.pdf	Natural gas pipelines are included in the definition of “infrastructure” in the Greenbelt Plan (2017) and are permitted in Urban River Valley Areas (Section 6.2.3). The Project is a relocation of an existing pipeline that currently services the City of Toronto’s needs. As noted in Section 6.2.4 of the Greenbelt Plan, Protected Countryside Policy 3.2.4 does not apply.
TRCA Permitting Requirements for Detail Design Application				
9.	-	-	As noted in the ER, permits in accordance with Ontario Regulation 166/06 are required from TRCA prior to project construction. Please submit the detailed design drawings, together with the appropriate reports and documents. The TRCA Complete Submission Checklist for Infrastructure Projects is available on our website (https://trca.ca/app/uploads/2016/01/TRCA- PRE-CONSULTATION-CHECKLIST.pdf) , and should be used as a guide to your permit submission. The permit application form, together with additional submission checklist and guidelines are also available on our website should be used as appropriate to inform the development of your application. These can be found under the Planning and Permitting, Environmental Assessment section of the TRCA website at: http://www.trca.on.ca/planning-services-permits/environmental-assessment.dot#check. Please include a digital copy of all submitted material. Materials must be submitted in PDF format, with drawings pre-scaled to print on 11”x17” pages. Materials may be submitted via e-mail (if less than 25 MB), or through file transfer protocol (FTP) sites (if posted for a minimum of two weeks).	Noted.

Reference: **CFN 59825: TRCA Comments on Environmental Report prepared for NPS 20 Don River Pipeline Relocation Project**

Table 1: Comment Response

ITEM	TRCA COMMENTS (November 18, 2021)	Enbridge/Stantec RESPONSE (January 6,2022)	TRCA COMMENTS (February 1, 2022)	Enbridge/Stantec Response (February 18, 2022)
10.	-	-	TRCA staff encourage the Enbridge team to contact TRCA during detail design stages to ensure that the design has adequately considered impacts to, and caused by, the floodplain. Additionally, TRCA recommend locating all equipment staging, stockpiling and temporary facilities outside of the Regulatory floodplain. Staff can provide updated floodplain mapping if required by Enbridge.	Noted. Enbridge requests that floodplain mapping be provided to Stantec.
11.	-	-	Erosion and sediment control (ESC) measures should be implemented to mitigate erosion and sediment processes during construction. At the detailed design stage, please provide comprehensive ESC plans as part of associated applications. The ESC plan should be consistent with the Erosion and Sediment Control Guideline for Urban Construction (December 2019). The most up to date guideline can be found on the Sustainable Technologies Evaluation Program (STEP) website at www.sustainabletechnologies.ca	Noted.
12.	-	-	Enbridge should identify appropriate design measures to mitigate the risk of debris hitting the pipeline during a Regional Storm event in detailed design.	Noted.
13.	-	-	Under Section 7.2 ‘Contingency’ a contingency plan should be created and submitted at the design stage to address the risk of flooding from the Don River during construction of the permanent and temporary pipeline replacement.	Noted.
14.	-	-	At the detailed design stage please include TRCA’s Standard Notes to the drawings. The note can be found in the following links: http://www.trca.on.ca/dotAsset/93458.pdf	Noted.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition ("SEC")

INTERROGATORY

Reference:

[General]

Question:

Please confirm if EGI plans to file ICM application to recover the cost for proposed project. If yes, in what year.

Response

At this time, Enbridge Gas is not planning to file an ICM application to recover the cost for the proposed Project.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition ("SEC")

INTERROGATORY

Reference:

[B-1-1 p.2-3; C-1-1 p.9]

Question:

Please confirm, if the Keating Railway Bridge segment (the 154m segment at issue) of the NPS 20 gas main is disrupted due to construction for 1 to 2 years, then there will be no alternative supplies of natural gas to customers identified in Figure 3.

Response

See the response at Exhibit I.PP.8 part a).

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition ("SEC")

INTERROGATORY

Reference:

[B-1-1 p.7; C-1-1 p.6]

Question:

The conflict between the existing natural gas main on the Keating Railway Bridge and the PLFPEI project is identified in 2018 and the deadline for relocation is 2023. The need to relocate the pipeline is identified more than 3 years before its deadline, please explain why EGI does not consider IRP evaluation.

Response

The conflict with the PLFPEI project identified in 2018 gave rise to the project proposed in Enbridge Gas's EB-2020-0198 application, which was planned to be placed into service in 2022. That application was subsequently withdrawn in early 2020, as changes to the PLFPEI project schedule allowed for reassessment of previously unfeasible alternatives.

The changes to the PLFPEI project schedule and the termination of the Company's licence to occupy the Keating Railway Bridge by the City of Toronto resulted in significant changes to the timing and nature of the Project Need in early 2021. As a result, Enbridge Gas must remove the NPS 20-inch natural gas main from the Keating Railway Bridge by April 30, 2023.

As discussed in Exhibit C, Tab 1, Schedule 1, given that i) the IRP Framework was issued on July 22, 2021, long after the commencement of the preliminary stages of Project development; and ii) Enbridge Gas is legally obligated to remove the existing gas main in less than one year from the time of filing this response, it is not possible for Enbridge Gas to complete an IRP assessment, design a portfolio of IRPAs, propose and gain OEB approval for an IRP Plan, and subsequently implement and confirm the achievement of peak period demand reductions within this timeframe.

Further, the NPS 20-inch natural gas main that is the subject of this application is critical infrastructure within the City of Toronto.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition ("SEC")

INTERROGATORY

Reference:

[B-1-1 p.7]

Question:

As the conflict is identified in 2018, please confirm if EGI and Waterfront Toronto have discussed the possibility of allowing EGI to relocate the Keating Railway Bridge segment before the construction of the PLFPEI project.

Response

Enbridge Gas and Waterfront Toronto discussed relocating the pipeline from the Keating Railway Bridge prior to the construction of the PLFPEI project. The only viable solution identified at that time to meet the required PLFPEI project schedule was proposed as part of the Company's EB-2020-0198 application. As a result of the change in the timing of the PLFPEI project schedule, Enbridge Gas reassessed several project alternatives that were originally deemed infeasible. This reassessment assisted Enbridge Gas in the development of the current proposed Project. The proposed Project requires the south half of the Lake Shore Bridge to be constructed and widened (as part of the PLFPEI project) to allow for the Temporary Bypass to be installed. The Permanent Relocation requires completion of the proposed utility corridor on the north side of the new Keating Railway Bridge (as part of the PLFPEI project). Please see Exhibit B, Tab 1, Schedule 1, Pages 7-11 for further details on project history.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition ("SEC")

INTERROGATORY

Reference:

[B-1-1 Attachment 4 p.1; D-1-1 Attachment 1 p.2]

Question:

EGI's original position regarding the cost responsibility of the project is that Enbridge Gas should be reimbursed for 100% of the project costs while EGI eventually agreed to that Waterfront Toronto will contribute $5 million, or 21.3%, to the $23.5 million budget. Please discuss the rationale for supporting EGI's original 100% reimbursement position and justify the $5 million contribution from Waterfront Toronto.

Response

At the time of the EB-2020-0198 Application, it was Enbridge Gas's position that Waterfront Toronto was not an agent acting on behalf of the City of Toronto, resulting in the Project being treated as a third-party rebillable project where Waterfront Toronto would be responsible for 100% of the costs related to the relocation of the pipeline.

The City of Toronto did not agree with Enbridge Gas's position and on October 30, 2020, the City of Toronto submitted a Notice of Termination to Enbridge Gas indicating that the license to occupy the Keating Railway Bridge was terminated. The City of Toronto required Enbridge Gas to remove the NPS 20-inch natural gas main from the Keating Railway Bridge by May 2, 2022,[1] which was subsequently extended to August 31, 2022.

The City of Toronto then commenced an application under Rule 14.05(3)(d) of the *Rules of Civil Procedure*, RRO 1990, Reg 194 against Enbridge Gas for an order requiring it to remove the NPS 20-inch natural gas main from the Keating Railway Bridge by August 31, 2022, at the sole expense of Enbridge Gas. The Court held that

[1] Exhibit B, Tab 1, Schedule 1, Attachment 1.

Enbridge Gas will be liable to the City of Toronto for damages as a trespasser if it has not removed the pipeline from the Keating Railway Bridge by August 31, 2022[2]. Following the Court Order, Enbridge Gas, Waterfront Toronto, and the City of Toronto negotiated a timeline that would allow Enbridge Gas to fully examine a lower cost alternative and meet the timelines provided by Waterfront Toronto. Additionally, Enbridge Gas secured a $5 million contribution from Waterfront Toronto for the pipeline relocation and Waterfront Toronto agreed to cover the costs (i.e., construction, coordination, and consultation costs which the Court recognized as significant undertaking for an infrastructure project of this size) associated with building the utility corridor. Absent the negotiations, Waterfront Toronto and the City of Toronto had provided no upfront contribution towards the relocation of the pipeline off the Keating Railway Bridge.

For additional context, please see the response to Exhibit I.STAFF.3 part a) and part b) i) for justification of the $5 million contribution from Waterfront Toronto.

[2] Exhibit B, Tab 1, Schedule 1, Attachment 2.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition ("SEC")

INTERROGATORY

Reference:

[C-1-1 p.2-3]

Question:

Please explain whether the permanent relocation of the 154m of NPS 20 gas main to the location of the proposed temporary bypass is possible.

Response

It is not possible to use the location of the Temporary Bypass for the permanent relocation of the pipeline. The Temporary Bypass will rest upon temporary supports located along a pedestrian sidewalk on the Lake Shore Bridge. This temporary location is only possible during PLFPEI project construction when access to the public is restricted.

ENBRIDGE GAS INC.

Answer to Interrogatory from
School Energy Coalition ("SEC")

INTERROGATORY

Reference:

[D-1-1 p.1]

Question:

Regarding project cost and economics, please:

a) provide explanations specific to this project that justifies the 30% contingency included in the cost estimates;
b) provide cost details for each item in Table 1;
c) provide EGI's proposed depreciation plan for the cost of the proposed project;
d) explain whether EGI will treat any of the cost associated with the temporary bypass as capital expenditure and future rate base for cost recovery purpose?

Response

a) Please see the response to Exhibit I.STAFF.3 part f).

b) Cost details are provided in Table 1 below.

Table 1: Cost Details

Item No.	Description	Explanation
1.0	Material Costs	Costs related to materials to build the Temporary Bypass and Permanent Relocation.
2.0	Labour Costs	Costs related to the construction contractor and sub-contractors.
3.0	External Permitting, Land	Costs related to permitting and land easements and/or temporary workspace.

4.0	Outside Services	Costs for all consulting services and other vendor costs that aren't related to the construction contractor costs, such as survey/topographical studies, drafting, environmental assessments, environmental protection, engineering, geotechnical, NDE, regulatory, hydrostatic testing and legal costs.
5.0	Direct Overheads	Costs include overheads directly related to the project, expenses, and internal labour.
6.0	Contingency Costs	Costs applied to the various Project components that are reflective of each component's level of development, risk profile and expected construction characteristics.
7.0	Direct Capital Costs	Summation of Items 1.0 - 6.0.
8.0	Indirect Overheads	Overhead costs that can be linked to the creation of capital and support the production or construction of an asset however cannot be directly associated with any particular asset or working group. Examples include Engineering, Finance and Procurement support.
9.0	IDC	Capitalized interest is calculated by taking the previous month end account balance of the Project plus one half of the current month end additions multiplied by the OEB prescribed interest rate using the simple interest method.
10.0	Total Project Costs	Summation of Items 7.0 – 9.0.
11.0	Less: CIAC	Costs contributed to the project by Waterfront Toronto.
12.0	Net Project Costs	Total Project Costs (Item 10.0) less CIAC (Item 11.0).

c) Please see the responses to Exhibit I.ED.3 and Exhibit I.PP.5.

d) Please see response to Exhibit I.PP.7 a).

ENBRIDGE GAS INC.

Answer to Interrogatory from
City of Toronto ("Toronto")

INTERROGATORY

Question(s):

Please confirm that Enbridge will, upon request by Toronto, provide updated alignment sheets for the Project to Toronto.

Response

Confirmed. Enbridge Gas will circulate the final alignment plan to the City of Toronto for approval during the Toronto Public Utilities Coordinating Committee drawing circulation process. Should the alignment need to change once construction commences, the City of Toronto will be engaged.

ENBRIDGE GAS INC.

Answer to Interrogatory from
City of Toronto ("Toronto")

INTERROGATORY

Question(s):

Please confirm that Enbridge will, if requested by Toronto, provide as-built plans of its Project to Toronto.

Response

Confirmed. As per standard company practice, Enbridge Gas will supply as-built drawings once the project construction has been completed.

ENBRIDGE GAS INC.

Answer to Interrogatory from
City of Toronto ("Toronto")

INTERROGATORY

Reference:

Application and Evidence EB-2022-0003, Exhibit C, Tab 1, Schedule 1, page 1 of 12

Preamble:

Enbridge's "Figure 1: Location of the Project and Preferred Route" and associated text indicates that its proposed temporary bypass and its proposed permanent relocation of its pipeline pass over the mouth of the Don River.

Question(s):

Please confirm that Enbridge will provide, if requested by Toronto complete, site-specific water crossing plans and specifications for the Project.

Response

A water crossing plan is normally developed for a pipeline crossing a watercourse using an open cut or trenchless technology construction method. This Project involves a temporary above-ground bypass installed on the proposed sidewalk on the south side of the Lake Shore Bridge, followed by the permanent relocation to the above-ground utility corridor located on the north side of the proposed Keating Railway Bridge. Neither phase of the project will be crossing through or under the watercourse.

For each of the two phases related to this project, Enbridge Gas will consult with the City of Toronto Bridges, Structures and Expressway ("BSE") team and partake in the Toronto Public Utilities Coordinating Committee drawing review process per City of Toronto standards for third-party construction. These drawings will detail the proposed running line and specifications for the construction of the Project. The Project Environmental Report, found at Exhibit F, Tab 1, Schedule 1, Attachment 1, includes details on all environmental measures to be put in place as part of this Project. Enbridge Gas will obtain all required municipal consent permits/approvals.

ENBRIDGE GAS INC.

Answer to Interrogatory from
City of Toronto ("Toronto")

INTERROGATORY

Reference:

Application and Evidence 2022-02-24, Exhibit F, Tab 1, Schedule 1, page 5 of 7

Preamble:

Enbridge indicates that it will prepare an Environmental Protection Plan for the Project.

Question(s):

Please:

a) confirm that Enbridge will provide the Project-specific Environmental Protection Plan on request to Toronto;
b) if this Environmental Protection Plan has not been completed, confirm when it will be completed, and;
c) if it has not been completed, consult with Toronto on its preparation.

Response

a) Confirmed.

b) The EPP will be prepared prior to construction of the Project.

c) Enbridge Gas will consult with the City of Toronto so that any specific environmental sensitivities of concern to the City of Toronto are captured within the EPP.

ENBRIDGE GAS INC.

Answer to Interrogatory from
City of Toronto ("Toronto")

INTERROGATORY

Reference:

Environmental Report, page 72

Preamble:

Enbridge's Environmental Report states: "Although rare in occurrence, it is plausible that accidents or emergency events may arise due to an unforeseen chain of events during the project's construction or operational life. Due to the rarity and magnitude of such events, they have not been assessed here, as they are extreme in nature when compared to the effects of normal construction and operation activities and require separate response plans.

Question(s):

Please:

a) confirm that Enbridge will, on request by Toronto, provide its emergency response plans for the construction and operation of the Project;
b) confirm if Enbridge will have an emergency response team available in the event of an emergency in its proposed pipeline, and their response time (accounting for downtown traffic conditions);
c) advise if Enbridge will conduct emergency training exercises for the proposed pipeline. If so:
    i. please describe these exercises, and;
    ii. will Enbridge share details of, and invite Toronto emergency staff to observe and participate in, these exercises.

Response

a) Confirmed.

b) Enbridge Gas has an emergency response team available on-call 24/7 as part of regular operations. The nearest field office is located at Enbridge's Station B facility (405 Eastern Ave). This facility is located approximately 4 km from the Project area. The Company aims to achieve a 45-minute response time.

c) Enbridge Gas provides natural gas Awareness training to first responders in its distribution area as part of its external outreach program. Enbridge Gas's Emergency Programs Office and Technical Training Department continually offer and deliver this awareness training and simulated exercises to municipal fire and emergency services departments. The first responders can participate in training sessions at the Technology and Operations Centre's ("TOC") Streetscape in Markham, Ontario. The Streetscape is the hallmark of the Technology and Operations Centre and was designed to provide the most comprehensive and realistic training facility for a natural gas utility in Canada. The Streetscape's distribution system can operate with compressed air to simulate natural gas, offering a flexible and safe environment for training. This allows participants to practice emergency procedures in a safe, realistic environment and see the tools and equipment Enbridge Gas uses when called to an emergency. This natural gas awareness training can be coordinated and set up with the City of Toronto's first responders upon request by the City of Toronto.

ENBRIDGE GAS INC.

Answer to Interrogatory from
City of Toronto ("Toronto")

INTERROGATORY

Question(s):

Please confirm:

a) the name of the corporate entity(s) that will (1) own and (2) operate Enbridge's proposed pipeline, and;
b) if there are multiple corporate entities, their relationship to each other.

Response

a) and b) The name of the corporate entity that will own and operate the proposed pipeline is Enbridge Gas Inc.

ENBRIDGE GAS INC.

Answer to Interrogatory from
City of Toronto ("Toronto")

INTERROGATORY

Question(s):

Please confirm that Enbridge will comply with all Toronto bylaws and obtain all necessary approvals, permits, licences, and certificates required to construct, operate and maintain the Project.

Response

Confirmed.