

**Enbridge Pipeline Inc. (“Enbridge”) Line 9B Reversal and  
Line 9 Capacity Expansion Project (“Project”)**

**Application under section 58 and Part IV (“Application”) of the *National Energy Board Act*  
OH-002-2013  
File OF-Fac-Oil-E101-2012-10 02**

**Enbridge Response to City of Toronto Information Request No. 2**

**PROLOGUE:**

The premises of several of the information requests include assertions that may not be factually correct. Unless expressly stated otherwise, Enbridge does not concede the accuracy of any premise. Similarly, Enbridge does not concede the relevance of any request to which it has provided a response.

**2.2 System Operations**

**Reference:** Request: 1.2

Please provide the following:

- b) Enbridge’s operating requirements applicable to Line 9.
- c) Enbridge’s operating and maintenance procedures applicable to Line 9.
- d) Enbridge’s preventative maintenance program applicable to Line 9.

Response: 1.2

b - d) In constructing and operating the Project, Enbridge will follow all applicable internal documents and standards, including: Enbridge Engineering Design Standards; Enbridge Operations and Maintenance Manuals (formerly referred to as Operating and Maintenance Procedures); the Environmental Guidelines for Construction; various other Control Centre and Integrity plans and procedures; and the Line 9 Rules and Regulations Tariff. The Engineering Design Standards and Operations and Maintenance Manuals have been filed confidentially with the NEB. A redacted copy of Book 1 was filed as Attachment to OPLA IR 1.9 in the Line 9 Reversal Phase I proceeding. Please see Attachment 1 to response to Ontario IR 1.44b.v for a redacted copy of Book 7. These redactions remove irrelevant information, such as: information related to U.S. operations; personal information; and information which if released, on its own or in conjunction with other information, could pose a

security risk or safety hazard. Please see Attachment 1 NEB IR 1.14 for the Environmental Guidelines for Construction (2012). The proposed Line 9 Rules and Regulations Tariff is included in Attachment 10 to the Application for approval by the NEB

**Request:** b – d) refers to a redacted version of Book 1 filed in the Phase 1 part of the Line 9 application, OPLA IR 1.9; however, that answer on p. 10 of 26 simply objects to the filing on the ground of confidentiality. Please provide a copy or a link or advise if a copy was provided elsewhere.

**Response:** b – d) Enbridge provided the redacted version of Book 1 as part of its response to the NEB ruling on the OPLA notice of motion in the Line 9 Reversal Phase I proceeding. The link to the document (Exhibit B-25D) is provided below:

<https://www.neb-one.gc.ca/ll-eng/livelink.exe/fetch/2000/90464/90552/92263/706191/706437/770257/809920/B-25D - Attachment to OPLA IR No 1.9 - A2S4G3 ?nodeid=809921&vernum=0>

## 2.3 Pipeline Integrity

**Reference:** Request: 1.3

- d) Enbridge's opinion as to the accuracy of the statement that there were "*only three spills resulting from internal corrosion for pipelines shipping bitumen and blends of bitumen between 1990 and 2005 (and only eight from 1975 to 2010).*"

Response: 1.3

- d) Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding.

**Request:** d) If this information is not relevant to the issues, why did Enbridge file it in Tab 4(f) of the application?

**Response:** d) Enbridge provides a significant amount of information in the public consultation process, some of which relates to pipeline operations generally and not to specific projects. The document cited is such a document. It does not relate to the issues to be considered by the NEB for the Project as outlined in the List of Issues and the scope of the proceeding.

## 2.4 Pipeline Integrity and DilBit, SynBit, and DilSynBit Research

**Reference:** Request: 1.4

Please provide the following:

- c) Enbridge's concerns on the validity of the CanMetMATERIALS rotating cage tests and the results presented in the Summary of the Comparison Report due to the tests being performed at ambient temperature and pressure conditions rather than pipeline operating temperatures and pressures.
- f) Crude corrosiveness test results, if any, since Enbridge's response to Information Request 5.2 of the Line 9 Reversal Phase 1 Project.

Response: 1.4

- c) Enbridge does not question the validity of the findings by CanMetMATERIALS. Enbridge recognizes that there are challenges inherent in bringing any industrial process into the laboratory, and that extraordinary results from one set of conditions to another must be done cautiously. However, trends at ambient temperature and pressure can be expected to be similar to trends observed if the testing were all performed at elevated pressures and temperatures. The body of literature identified in the preamble show that dilbit demonstrates similar corrosive behavior to that of crudes derived from conventional sources.
- f) Enbridge has continued to work with outside consultants to establish a consistent testing protocol for use with crude oils since the referenced IR. Only three crudes have been tested since the test protocol was finalized in 2012. The results are included as Attachment 1 to Toronto IR 1.4.f.

All crudes tested imparted inhibitory effects on model brine, but displayed different wettability and emulsion forming behavior. Over the next three year, Enbridge intends to test the majority of commodities shipped.

- Request:**
- c) Please provide the basis, and examples, where heavy crude and DilBit corrosivity research have shown that “*trends at ambient temperature and pressure can be expected to be similar to trends observed if the testing were all performed at elevated pressures and temperatures*” as stated in the response.

- f) Tables 7.2.1 through 7.2.3 provide Maximum and Minimum Product Properties of Light, Medium and Heavy Crude. Table 4-6 provides Baseline Product Properties “*that have been used to analyse corrosion susceptibility*”. The Baseline Product Properties shown in Table 4-6 are the Minimum Product Properties shown in Tables 7.2.1 through 7.2.3. Please: 1) confirm that the analysis of internal corrosion susceptibility in the Pipeline Integrity Engineering Assessment assumes the minimum Density and Viscosity for each type of crude, and, 2) provide the rationale for utilizing the minimum density and viscosity (rather than the range of density and viscosity) for each crude in the analyses for corrosion susceptibility.

- Response:** c) The response to Toronto IR 1.4.c applies to chemical processes in general (corrosion is a chemical process). In the absence of passivating surface films, corrosion rate is determined by reaction kinetics and diffusion processes. Reaction kinetics (the speed at which a chemical reaction occurs) increases with both temperature and pressure. Diffusion rates also increase with increasing temperature. The relationship between system temperature and pressure with respect to corrosion rate is well established in corrosion science.

If three electrolytes had their relative corrosivity ranked from #1 (highest) to #3 (lowest) at a set of conditions (temperature and pressure), then increasing the temperature and pressure would not alter their relative rankings.

For further information regarding the corrosivity of diluted bitumen, please refer to the updated response to Mississauga 1.11.a, which includes as Attachment 1 (Document A3I954) the recent report published by the National Academy of Sciences “TRB Special Report 311: Effects of Diluted Bitumen on Crude Oil Transmission Pipelines.” The report concludes that bitumen based products are no more likely to cause a pipeline release than conventional crudes.

- f) Please refer to response to Toronto IR 1.5.m.

## 2.5 Amendments to Line 9 Rules and Regulations

**Reference:** Request: 1.5

- h) The circumstances under which Enbridge may provide Shippers with a waiver of the Tariff Specifications as to Quality such that Enbridge accepts crude oil not meeting the Tariff quality specifications.

Response: 1.5

- h) Enbridge does not provide waivers (exceptions) to receive off specification crude oil. If there are circumstances where off specification crude oil is received, Enbridge will send the responsible feeder or shipper a violation letter informing them of the infraction. The letter will ask them to explain what measures have been taken to bring the commodity to within specifications. If a satisfactory response is not received or a batch continues to be off spec Enbridge will shut out the feeder/shipper until proof is provided (by way of a certificate of analysis) that the next batch will be on spec.

**Request:** h) Please confirm our understanding that there are in fact occasions when materials that are "off spec" are shipped through the pipeline. Please advise what percentage of the time this occurs in general, and specifically with respect to Line 9.

**Response:** h) Taking into account a full year's data, approximately 1% of off spec crude entered the Enbridge mainline system in 2012. For Line 9 specifically, 0% of off spec crude was shipped through the pipeline in 2012.

## 2.6 Pipeline Construction - Original and Current Construction Specifications

**Reference:** Request: 1.6

- a) Regarding the differences in the pipeline construction specifications and regulatory requirements (jointly “Specifications”) pertaining to pipeline construction between: 1) the construction of Line 9B in 1975, and, 2) the construction requirements of Line 9B as if being built in 2013, please provide a:
  - a.1) Description of the Specifications that Enbridge has implemented since 1975 that were not required in 1975 but would now be required if the pipeline had been constructed in 2013.
  - b.1) Description of the Specifications that would have been required for the construction of Line 9B in 2013 that Enbridge has not implemented on Line 9B.

Response: 1.6

- a.a.1– a.b.1) Enbridge objects to the request as it is unreasonable, unduly onerous and engages in a "fishing expedition". The time, effort and expense involved in the compilation of the requested information are not warranted by the relevance, if any, of the information sought, by the significance of that information in the context of the proceeding, or by the probative value of the result.

**Request:** Please provide the standards and specifications of 2013 pipeline construction which can be reasonably implemented to mitigate the shortcomings of 1975 construction standards.

Also, please note that Enbridge transcribed the Information Request 1.6.a.a1 incorrectly.

Original Information Request:

- a.1) Description of the Specifications that Enbridge has implemented since 1975 that were not required in 1975 but would now be required if the pipeline had been constructed in 2013.

Incorrect Transcription:

- a.1) Description of the Specifications that Enbridge has implemented

since 1975 that were not required in 1975 but would not be required if the pipeline had been constructed in 2013.

Please notify the NEB of the incorrect transcription and advise whether Enbridge will reconsider its response.

**Response:** a.1) This question was included in the motion filed by Toronto on July 9, 2013. Please refer to response to Toronto IR 1.6R filed by Enbridge on July 13, 2013.

## 2.7 Elements of Integrity Management and Integration of Threats

**Reference:** Request: 1.7

- b) Please provide an annotation of the latest Integrity Management Plan highlighting the policies and procedures where Enbridge is implementing a methodology to integrate “an overlay or side-by-side analyses” for evaluating threats.
- c) In particular, please provide changes to the Integrity Management Plan that Enbridge has implemented to develop a methodology described in [NTSB] Recommendation No. 3 to overlay risks associated crack defects coincident with areas of corrosion.

Response: 1.7

- b) Please see the Pipeline Engineering Assessment ("Pipeline EA") Exhibit B1-15 for the results of the Integrity Management Program on Line 9B and specifically Adobe page 84 for discussion on the integration of data between pipe deformations and other degradation mechanisms.

As part of continuous improvement, the Integrity Management Program developed a Threat Integration process which overlays (or integrates) successive In-Line Inspection ("ILI") results to assess the condition of the line. All available ILI datasets (up to seven data sets) are compiled for overlay review. The review process has defined criteria which result in additional excavations to be performed if features meeting the overlay criteria are found. This process will continue to be applied to the 2012 and 2013 ILI reports.

- c) Please refer to response to Toronto IR 1.7.b.

**Request:** b – c) The answers do not address the concern expressed by NTSB. Enbridge’s response indicates that there is “...*integration between pipe deformations and other degradation mechanisms*” and, separately, that there is “...*a Threat Integration process which overlays (or integrates) successive In-Line Inspection (“ILI”) results to assess the condition of the line.*” However, it is not clear that the Enbridge Integrity Management Program complies with the NTSB recommendation that all threats are to be evaluated using an overlay or side-by-side analysis that would include cathodic protection, coating surveys, in-line inspection tool findings (for example, geometry, crack, and corrosion), and

previous dig reports. Please provide further details of the IMP program indicating compliance with the NTSB recommendation and procedures detailing how all threats (listed above) are integrated to ensure the integrity of its hazardous liquids pipelines.

**Response:** b – c) Please refer to response to OPLA IR 2.76.a.

## 2.8 Enbridge Integrity Management Program

**Reference:** Request: 1.8

- a) Please provide the proposed timetable for issuing status reports that describe the progress of the repairs or other remedial actions being undertaken following Line 9B start-up.
- b) Please provide the latest assessment procedures that highlight lessons learned from Line 6B that have modified Enbridge's procedures for integrity work deemed necessary on Line 9B.

Response: 1.8

- a) Please refer to response to NEB IR 3.12.
- b) The Enbridge Integrity Management Program including the Crack Management Program was enhanced following the Marshall, Michigan incident. The integrity dig criteria have been modified to include ILI tool tolerances to reported defect sizes, conservative wall thicknesses, and consideration of outliers. The Pipeline EA includes conservatism and analysis methods.

The Integrity Management Program has been updated in the following technical areas:

- Wall thickness used for Fitness For Purpose ("FFP") calculations
- Including In-line Inspection tool tolerances for FFP calculations
- Risk mitigation criteria added to analysis processes
- Tool performance validation methods
- Selection of cracks in corrosion and threat integration methods
- Probability of Detection ("POD"), Probability of Sizing ("POS") Trending
- FFP Outliers analysis
- ILI Classification of outliers
- Inclusion of outliers into dig selection
- Stress Corrosion Cracking ("SCC") growth rate comparisons

- Request:**
- a) Refers to NTSB 3.12. The answer indicates that one dig has taken place on Line 9 and that 600 are scheduled before the end of the year (i.e. 2013). Does that remain accurate, and if so, can municipalities and landowners expect that they will be notified within that period? How much advance notice will Enbridge be

providing?

- b) Were any or all the changes enumerated in the answers actually applied to the work done or "to do" on Line 9? Please specify which ones, and when.

**Response:** a) The number of digs remains at approximately 600.

The number of integrity digs required within the City of Toronto has been communicated to municipal and provincial stakeholders both through the Open Houses on June 6, 2013 and through subsequent meetings held from May 2013 through to the present time. These meetings are part of Enbridge's regular outreach efforts to ensure that political stakeholders are provided with regular updates on the Project.

When work on the pipeline is required on an affected landowner's property, an Enbridge representative will make reasonable efforts to contact the landowner a minimum of seven days in advance of any work being conducted. This includes integrity dig work.

- b) All of the modifications referenced in response to Toronto IR 1.8.b have been incorporated into the Integrity Management Program and were used to assess the 2012-2013 in-line inspection data to determine the extent of the upcoming integrity excavation program on Line 9.

## 2.9 Pipeline Performance: Leakage, Rupture and Replacement

**Reference:** Request: 1.9

- a) Please provide the following for each of the 13 leaks and ruptures listed in Table 3-2:
  - c.1) The volume of material that was spilled for each leak or rupture.
  - d.1) Copies of all investigation reports for each leak or rupture including the cause for each (external corrosion, internal corrosion, or other specific cause).
  - f.1) Copies of notifications provided to the Government, Ministry, or regulatory authorities for each leak or rupture.
- b) For leaks shown in Table 3-2 occurring on 1/26/1991 and 7/14/1993, both of which were in the City of Toronto, please provide:
  - a.1) How the leaks were identified.

**Response:** 1.9

- a.c.1) Please see attachment 1 to Ontario IR 1.8.a.
- a.d.1) Some of the information requested has been released by the NEB pursuant to an access to information request. Please see Attachment 1 to Toronto IR 1.9.a.d.1. for the information released. The redactions were made by the NEB.

With respect to investigation reports relating to the remainder of the leaks or ruptures, Enbridge objects to filing the information requested on the ground that it is confidential information and Enbridge has consistently treated it as such.

- a.f.1) Please refer to response to Toronto IR 1.9.a.d.1. Enbridge objects to filing the information requested on the ground that it is confidential information and Enbridge has consistently treated it as such.
- b.a.1) Please refer to response to NEB IR 1.27.

**Request:** a.c.1) Provides a reference to Attachment 1 to Ontario IR 1.8.a which has

some new information on Table 3.2. Note that revised Att to NEB 1.27.b (in A52577 filed June 25) has other new information relevant to Table 3.2. Please advise why the Table has not been provided in a consolidated form. In order to understand a table whose contents are provided in four different locations, will Enbridge undertake to provide a comprehensive table?

- a.d.1) As the reports were not provided until late in the review period, is Enbridge willing to consent to more time to allow for follow-up questions?

With respect to the 168 page pdf filed in lieu of a placeholder at or around July 4, 2013, please advise as follows below:

Please confirm that none of the incidents for which reports were provided were discovered by Enbridge (or IPL). In situ burning of oil is contemplated in the Emergency Response Manual (Book 7), however, the Attachment (at p. 35 of 168) states that the burning of oil is contrary to company policy? Is that the case and if so, why does the Emergency Manual contemplate it?

The reports in respect of Sainte Scholastique suggests that farmer upon whose land the oil was spilled lost a subsidy for an installation of a land drainage system as a result of concerns about contamination (see p. 89 of 168). Was this landowner compensated for that loss?

Please provide any other spill response reports in Enbridge's possession especially with respect to spills that took place in Toronto.

- a.f.1) What is the rationale for concluding that reports to governments, particularly to the City of Toronto, but also the Ontario Spills Action Centre (as required under the Ontario EPA) are confidential?
- b.a.1) Refers to Attachment 1 to NEB IR 1.27 which sets out another table with information regarding the history of Line 9. Is Enbridge prepared to file a consolidated Table and allow time for follow-up questions if necessary?

With respect to the Attachment, please advise what is a "third party aerial patrol" referred to in relation to the 8/10/99 spill? Is that an Enbridge contractor? If not, why did Enbridge not detect the spill?

Also NEB IR 1.27.a. indicates that leaks occurred at a denting feature that had previously been identified. Can Enbridge explain

how it is that even though a dent had been identified, a leak still occurred? Did Enbridge change its integrity criteria as a result of situations such as this?

- Response:**
- a.c.1) Enbridge provided this information in response to specific questions, and a consolidated version is therefore not required since the necessary evidence is on the record for this proceeding.
  - a.d.1) Enbridge filed placeholders for those attachments with a file size greater than the 5 MB limit of the Board's electronic filing repository. Normally Enbridge hand delivers a CD of the attachments to the Board on the day of filing, for uploading to the repository. However, given the flood circumstances in Calgary and resulting closures of both the Enbridge and NEB downtown offices, Enbridge was unable to deliver the CD to the Board until the week of July 2. In its cover letter to the IR responses, Enbridge invited any parties that had an immediate need for any attachments to contact Enbridge. Enbridge did not receive such a request from the City of Toronto. The placeholders were replaced by the Board with the complete attachments on July 3. As Enbridge made the reports available, it is of the view that more time for additional questions is not warranted.

Enbridge transports multiple products across the system. The Enbridge Emergency Response Plan applies to all situations. All factors need to be taken into account to determine the best course of action to take in an emergency, including in situ burning if that is the best course of action to ensure the safety of the public.

The referenced leak occurred in the Sainte Scholastique area in 1988. The owner was compensated for undefined losses, damages, spill repair and yard set-up in 1988. The owner was also compensated for losses including crop loss in following years and restoration of the dig site and drainage.

The request for additional investigation reports was included in the motion filed by Toronto on July 9, 2013. Please refer to the discussion regarding Toronto IR 1.9.a.d.1 in Enbridge's response to the motion dated July 12, 2013.

- a.f.1) This question was included in the motion filed by Toronto on July 9, 2013. Please refer to the discussion regarding Toronto IR 1.9.a.f.1 in Enbridge's response to the motion dated July 12, 2013.
- b.a.1) Enbridge provided this information in response to specific questions, and a consolidated version is therefore not required since the necessary evidence is on the record in this proceeding.

The pipeline release referenced was reported during an aerial patrol of an adjacent pipeline. Communication of potential releases between pipeline companies is a common and encouraged practice. Enbridge aerial patrols are performed at regular intervals and can identify releases when they are visible.

The dent feature referenced did not meet the excavation criteria at the time of inspection and subsequently developed a crack resulting in a release. The implementation of the threat integration processes based on the lessons learned in part from this incident has enhanced the identification and characterization of this type of integrity feature.

## 2.10 Pipeline Risk Assessment

**Reference:** Request: 1.10

- a) The initial volume out (in barrels) at 240,000 B/D flow rate.
- b) The initial volume out (in barrels) at 300,000 B/D flow rate.
- c) The increase in initial volume out (in barrels) due to the Line 9 Capacity Expansion (barrel equivalent to  $47 \text{ m}^3$ ).
- d) An explanation why the percentage increase in pipeline capacity (i.e. 25%) does not correspond or translate to a proportionate increase in volume out in a spill event which is calculated to only increase by 0.9% ( $47 \text{ m}^3$ ).
- e) The risk assessment uses a risk assessment model of 305 metre (1000 ft.):
  - b.1) Identify whether those sections are identified by Enbridge as within the highest risk rankings for Line 9. c.1) Identify the projects and expenditures Enbridge plans for mitigation of the highest risk rankings within the City of Toronto.
  - c.1) Identify the projects and expenditures Enbridge plans for mitigation of the highest risk rankings within the City of Toronto.

**Response:** 1.10

- a) The initial volume out (in barrels) at 240,000 bpd flow rate is 2,166.7 bbls.
- b) The initial volume out (in barrels) at 300,000 bpd flow rate is 2,708 bbls.
- c) Please refer to response to NEB IR 3.11.a.
- d) Please refer to response to NEB IR 3.11.a. The value for calculated volume out is dependent on topography and the placement of remote controlled sectionalizing valves. Calculated volume is based on the calculation: (design flow rate x the time to isolate the pipeline) + (drain down of oil that is not isolated by valves or topography). The drain down portion of the calculation

is independent of pipeline capacity or flow rate.

e.b.1) Please refer to response to Toronto IR 1.10.e.a.1.

e.c.1) Please refer to response to the Ontario IR No 1.1.c.

**Request:** a - d) The Enbridge response to Toronto IR 1.10 and NEB 3.11.a are not consistent as different design flow rates are utilized. Please provide a modification to whichever of the two that is not correct. The initial volume out calculations provided by Enbridge in response to Toronto IR 1.10 a)-d) and NEB 3.11.a do not include "drain down". Please provide the calculated volume out, including drain down, for the section of Line 9B that would spill the maximum volume of oil into the Rouge, Don and Humber Rivers, and Mimico, Etobicoke and Highland Creeks.

e.b.1– The intent of Toronto IR 1.10.e was to ascertain whether

e.c.1.) Enbridge is addressing the highest ranked 305 metre segments within the City of Toronto to ensure that the public and the environment were being properly protected. The Enbridge Reply is incomplete: 1) Enbridge did not Reply to the request in Toronto IR 1.10.e.b.1 "Identify whether those sections are identified by Enbridge a within the highest risk ranking for Line 9.", and, 2) Enbridge did not Reply to the request in Toronto IR 1.10.e.c.1 "Identify the projects and expenditures Enbridge plans for mitigation of the highest risk rankings within the City of Toronto." Please provide a response to these questions.

**Response:** a – d) The information provided in response to Toronto IR 1.10 and in response to NEB IR 3.11.a is correct. In both the response to NEB IR 3.11.a and in the Revised Pipeline Risk Assessment, Enbridge based its volume out calculations on the more conservative design flow rate of the Project, which is 333,333 bpd. In response to Toronto IR 1.10, Enbridge provided the information based on a flow rate of 300,000 bpd as requested by Toronto, which represents the annual operating capacity of Line 9.

Please see Attachment 1 to Toronto IR 2.10 for the calculated volume out using design capacity for the requested water crossings.

e.b.1 – These questions were included in the motion filed by

e.c.1) Toronto on July 9, 2013. Please refer to the discussion regarding Toronto IR 1.10.e.b.1 in Enbridge's response to the motion dated July 12, 2013. Please also refer to response to Toronto IR 1.10.e.c.1R filed by Enbridge on July 13, 2013.

## 2.11 In-Line Inspection Program

**Reference:** Request: 1.11

Please provide the following:

- e) Advise whether the raw data for the current (2012-2013) ILI program for Line 9B has been verified, reviewed and audited by a third party other than Enbridge.
- f) Provide Enbridge's or its ILI Consultant's summary and recommendations from the report respecting the ILI data from the 2012-2013 ILI runs.

Response: 1.11

- e) Enbridge has a Pipeline Integrity Department that reviews, verifies and audits in-line inspection data using established processes regulated by engineering standards and regulations. These processes have been developed and are continually improved with support from various third party expert consultants. A third party has not reviewed, audited, or verified the in-line inspection reports.
- f) Enbridge will communicate the results of the in-line inspection tool runs, including the number of digs required and where they will take place, to affected landowners and municipalities.

**Request:** e) Enbridge has indicated that it does not undertake a third party review of its in-line inspection. Enbridge relies upon engineering standards and regulations. Please advise if these are the engineering standards that Enbridge has refused to produce (see 1.1.a). Please advise whether there are instances when the recommendations of third party expert consultants on the ILI program have not been followed by Enbridge and provide particulars re each such instance since the Marshall spill. Would Enbridge consider third party review of the ILI program as a condition to the approval?

- f) When will the integrity results be reported? Specifically, how long after they are received? How long before the Line is opened?

**Response:** e) The Enbridge engineering standards and the Integrity Management Program are confidential information and Enbridge has consistently treated them as such. Various industry standards such as CSA Z662, the *National Energy Board Onshore Pipeline*

*Regulations* and ASME B31.4 form the basis for Enbridge internal standards.

In-line inspection (“ILI”) reports are developed and reviewed by the third party ILI experts such as General Electric (“GE”), NDT, and Rosen. Enbridge ensures that a detailed review of the ILI reports occurs by the ILI vendor through adherence to stringent Enbridge reporting specifications. ILI reports must meet the vendor's review specifications prior to delivery to Enbridge. Upon receipt at Enbridge, ILI reports are further reviewed to ensure they meet Enbridge reporting standards, are used to develop excavation programs and are used to establish subsequent monitoring intervals.

Enbridge has extensive in-house expertise to assess and manage the ILI program and therefore, is of the view that an additional third party consultant review is not required. Additionally, Enbridge processes are audited on a periodic basis by regulators in both Canada and the US.

The third party expert consultants referenced in Toronto IR 1.11.e aid in the development and continuous improvement of the processes used by Enbridge to manage the integrity of the pipelines, and not to assess ILI data directly.

- f) The results of the integrity digs will be communicated to municipalities and affected landowners after all integrity work has been completed, likely in 2014.

## 2.12 Temperature Control

**Reference:** Request: 1.12

Please provide the following:

- b) Location of pump discharge temperature sensors available through Enbridge's SCADA system.

Response: 1.12

- b) Temperature sensors are located throughout the Enbridge system, typically situated at locations where product is received into the pipeline and locations where product is delivered off the pipeline. Some midline pump stations locations are also equipped with temperature sensor.

**Request:** b) Please provide Enbridge's plan to add Terrebonne Station temperature sensors to SCADA. If Enbridge does not plan to add Terrebonne Station temperature sensors to SCADA, provide an explanation as to why they are not needed in SCADA.

**Response:** b) At Terrebonne the Project will install a redundant buried temperature sensor attached to the pipeline, along with a reference station ground temperature sensor (buried to the same depth as the mainline sensor) located near the electrical building. Inside the batch detection building are two temperature sensors used for temperature correction by the densitometer and viscometer. All sensors will be connected to the site programmable logic controller and will be made available to the SCADA system and the material balance system.

## 2.14 Depth of Cover

**Reference:** Request: 1.14

Please provide the following:

- d) Areas where Enbridge has had to replace cover or take other corrective actions when depth of cover was less than required on Line 9B within the City of Toronto:
  - a.1) Location (KP and longitude/latitude).
  - b.1) Planned additional mitigative and preventative measures to address concerns related to depth of cover and the scheduled dates of implementation.
- e) Enbridge's policy for installing additional pipeline markers when depth of cover is less than the current cover requirement.
- f) Enbridge's plan for the next depth of cover survey for Line 9B including:
  - a.1) The start date and completion date for the study.

**Response:** 1.14

d.a.1) Four locations within City of Toronto have had to have corrective action taken:

1. Newtonbrook Creek – KP 3080.01
2. Don River – KP 3081.70
3. Rouge River – KP 3095.35
4. HONI lands – KP 3097.95

d.b.1) 1. Newtonbrook Creek – KP 3080.01 Pipe found to be exposed in bottom of creek during slope and stream survey June 2013. A consultant has been hired to prepare remediation plan. Creek is non-navigable waterway, the pipeline is not at risk due to water traffic.

2. Don River – KP 3081.7 Enbridge is planning to replace 700 m of pipe and install the pipe several meters below the river bed. Work is scheduled to start August 2013, and be completed by December 2013.

3. Rouge River - KP 3095.35 The east bank of the river had extensive erosion exposing the Enbridge pipeline. The erosion has been repaired by installation of a live crib wall designed by a consultant; work was complete in 2011.

4. Lot 5, Con. 4 (Scarborough) Toronto – KP 3097.95 This area is a non-cultivated field which requires addition of approximately 75 yards of fill. Work is scheduled for completion in 2013.

- e) Enbridge ensures that the pipeline has sufficient depth of cover or Enbridge provides mechanical protection to protect the pipe from external damage.
- f.a.1) Enbridge's Pipeline Depth Monitoring Program has set a 10 year cycle (with the exception of pipeline crossings of watercourses). The next depth of cover survey on Line 9B will commence in 2018; however, the start and end dates have not yet been confirmed.

**Request:**

- d.a.1) Were any of the four sites identified as a result of "depth of cover" (or other) surveys? If not, how was Enbridge alerted to the potential problem?
- d.b.1) Although Enbridge has concluded that Newtonbrook Creek is non-navigable and therefore not at risk due to water traffic, what if any consideration was given to items that could be waterborne during extreme weather events, such as logs, tree stumps, or other debris? What if any consideration has been made of the potential for extreme erosion under abnormal flow conditions? What lessons, if any, does Enbridge draw from the recent 750,000 litre spill from Line 37 reported on June 22, 2013 at a time when there was heavy flooding in the area?
- e) Is Enbridge's assessment of sufficient depth of cover or mechanical protection informed by extreme weather events? If the depth of cover deemed sufficient at the time of construction would not be sufficient by 2013 standards, are these areas grandfathered so that no further steps need be taken to bring the Line up to 2013 standards?
- f.a.1) Refers to a ten year cycle for DOC surveys. Should an extreme weather event occur prior to that, would Enbridge take intermediate steps to assess DOC, or would it wait for the next cycle? What if there was an earthquake or other event that could affect depth of cover? Does Enbridge have any policies or protocols to prescribe under what conditions it would go beyond the regular cycle for DOC surveys? Please provide same.

**Response:** d.a.1) Of the four locations within the City of Toronto requiring corrective action, the Rouge River and the shallow location at KP 3097.95 were identified through the depth of cover survey conducted in 2009. The Don River site was identified in 2012 by a person walking in the area who noticed the pipe and erosion in the area.

As a result of slope instability and erosion identified at various locations, Enbridge initiated a geohazard study across the entire Enbridge pipeline system in 2013 to verify depth of cover at slopes and streams. The geohazard study identified Newtonbrook Creek in summer 2013, and Enbridge took immediate action to assess the situation and to begin corrective action.

d.b.1) The erosion at Newtonbrook Creek was discovered in June 2013 during the geohazard study to verify sufficient cover at slopes and watercourse crossing. Enbridge has worked with environmental consultants to ensure that assessment began immediately on the site to evaluate any integrity risk from the environment such as debris and to make the situation safe until further reconnaissance work can be undertaken. This site is currently undergoing an environmental assessment and all factors will be considered.

Once Enbridge has completed the environmental assessment on the waterway, which includes the consideration of high water events, corrective action will be executed that will mitigate any risks, such as potential erosion, identified by the assessment.

The Line 37 event is still under investigation. The lessons learned from this event will be taken into consideration by Enbridge to improve the safe operation of its pipelines.

e) Where extreme weather events negatively impact the depth of cover, these matters are addressed by Enbridge to ensure that the pipeline has sufficient depth of cover or other appropriate mitigative measures are taken (for example, the provision of mechanical protection).

Enbridge manages the depth of cover for Line 9 in accordance with current standards and regulations.

f.a.1) Enbridge has established a 10 year cycle to conduct a pipeline depth monitoring program on each pipeline. If a depth of cover concern were to be raised outside the scheduled depth of cover cycle, Enbridge would take the necessary steps to correct the concern. If there appeared to be a recurring type of concern,

Enbridge would investigate further as demonstrated with the 2013 geohazard survey of slopes and waterways.

If there were to be an extreme weather event that could impact depth of cover or Enbridge were to encounter other factors affecting pipeline depth, Enbridge would take intermediate steps to assess the depth of cover. Please refer to response to Toronto IR 1.14.f.b.1 for information regarding the Enbridge depth of cover policy.

## 2.16 Pump Station Integrity Management

**Reference:** Request: 1.16

- b) Please provide details of the direct assessment plan for corrosion mitigation at pump stations and other facilities.

Response: 1.16

- b) The Enbridge direct assessment methodology utilizes a threat based inspection program (as mentioned in Table 3.15 of the Facilities EA). The program consists of identifying assets (piping sections) assessing risk based on identified threats, and performing inspections at targeted locations. For underground pipe that cannot be inspected with ILI tools, inspections generally consist of exposing the pipe, performing any repairs, reapplying the external coating and then backfilling the pipe. Research and development is ongoing into alternative assessment technologies including real-time corrosion monitoring. Inspection results determine re-inspection intervals and help to determine other actions that may minimize risk such as inspecting other locations.

**Request:** b) Refers to corrosion management for underground pipe that cannot be inspected with ILI tools, but does not respond respecting pumping stations. Is the answer applicable to pumping stations as well?

**Response:** b) The answer is applicable to piping at both pumping stations and other facilities.

## 2.17 Sediment and Water Content

**Reference:** Request: 1.17

Please provide the following:

- b) For a batch of crude, when are S&W test results available (length of time in advance of injection or length of time after the batch is injected) in relation to when the crude oil was injected into the pipeline?
- f) Enbridge's plan to sample and test S&W removed during cleaning pig runs on Line 9B.

Response: 1.17

- b) Test results are available typically 1-4 days prior to injection. However, there are some cases in which the results may not be available until one day after inspection. This depends on whether or not batches are tight line receipts or received into tankage and how the batches are scheduled.
- f) Enbridge will sample the S&W removed from Line 9B on an occasional basis to monitor for potentially problematic bacteria, and to observe changes in pipeline sediment composition.

- Request:**
- b) What percentage of batches are inserted into the system before test results are received: generally in Enbridge operations; and, specifically on Line 9?
  - f) Please advise as to what Enbridge considers is "occasional" and what are the criteria to sample the S&W. Would Enbridge consider as a condition to LTO the same requirements as Special Condition 34 applicable to the Keystone XL application as set out below? If not, what is Enbridge's opposition to such requirements?

### **Special Condition 34:**

Internal Corrosion: Keystone shall limit basic sediment and water (BS&W) to 0.5% by volume and report BS&W testing results to PHMSA in the annual report. Keystone shall also report upset conditions causing BS&W level excursions above the limit.

- a) Keystone must run cleaning pigs twice in the first

year and as necessary in succeeding years based on the analysis of oil constituents, liquid test results, weight loss coupons location in areas with the greatest internal corrosion threat and other internal corrosion threats. At a minimum in the succeeding years following the first year Keystone must run cleaning pigs once a year, with intervals not to exceed 15 months.

- b) Liquids collected during the cleaning pig runs, such as BS&W, must be sampled, analyzed and internal corrosion mitigation plans developed based upon the lab test results.
- c) Keystone shall review the program at least quarterly based upon the crude oil quality and implement adjustments to monitor for, and mitigate the presence of, deleterious crude oil stream constituents.

**Response:** b) Generally speaking, throughout the Enbridge mainline system approximately 30% of batches have the potential to enter the pipeline before S&W test results are received.

For current Line 9 operations, all batches are injected into Line 9 prior to Enbridge receiving the S&W test results. However, due to the inherent high water content of offshore crude oil versus onshore crude oil, instrumentation is used on Line 9 to alert Enbridge of the possibility of off specification material, at which point Enbridge would cease the batch injection.

For the proposed Line 9 operation with the Project, all batches will be tested for specification adherence well before injection as these will not be “tightline” receipts/injections, nor will there be third party pipelines feeding into Line 9.

- f) Enbridge conducts S&W sampling on every batch and sludge analysis on an as-needed basis as part of the Integrity Management Program, typically as part of the line cleaning program. There is no specified schedule or timeline associated with this testing regimen.

Enbridge is of the view that such a condition is not required for the Project. The crude to be transported on Line 9 is the same crude that is transported on the Enbridge Mainline. S&W is limited by the tariff at 0.5% by volume. As well, Enbridge's cleaning program and sampling analysis are set out in the Integrity Management Program.

## 2.18 Stress Corrosion Cracking - Hydro Testing

**Reference:** Request: 1.18

- a) Please provide the latest plan for hydrostatic retesting of Line 9B.
- b) Given the long period of operation of Line 9B under significantly different conditions since the last hydro test in 1997, please advise whether Enbridge is prepared to conduct a further hydro test of Line 9B to confirm the pipeline integrity prior to the reversal.
- c) If Enbridge concluded that it was important to hydro test Line 9B prior to the reversal in 1997 but does not plan to hydro test Line 9B prior to this reversal, please provide an explanation as to why a hydro test would not be in the best interest to confirm the current integrity of the pipeline.
- d) In the alternative, please advise whether Enbridge is prepared to agree to the conducting of such a hydro test within a specific time period as a condition to be imposed on any approval of this application by the NEB.
- e) Please advise whether the requirements of the NEB or Enbridge's Integrity Management Plan which would mandate a future hydro test of Line 9B.

Response: 1.18

a – e) Please refer to response to Ontario IR 1.14.a.

**Request:** a – e) Refers to Ontario IR 1.14.a., which indicates that the prior requirement that Line 9 be hydrotested was a result of its being inactive for 12 months. What constitutes "inactive" for the purpose of a hydrotest requirement and are there any portions of Line 9 that may be expected to have persisted in an "inactive" state prior to the reversal LTO being granted?

**Response:** a - e) "Inactive" as it relates to pipeline operation is a static, non-flowing condition of the pipeline. No portions of Line 9 are expected to be inactive for 12 months prior to LTO being granted in the reversed flow direction, pending Project approval from the NEB.

## 2.19 Crack Management Program

**Reference:** Request: 1.19

Please provide the following:

- a) In Section 3.4.3 System Flow Rates and Pressures, an addition to Tables 3.9 through 3.14 to include the MOP of the respective station's discharge pressure for a direct comparison between the Post Project Max./Min. and the MOP.

Response: 1.19

- a) Enbridge was unable to identify the tables noted in the request.

**Request:** a) The reference in Toronto IR 1.19.a to Tables 3.9 through 3.14 in Section 3.4.3 of Attachment 7, Pipeline Integrity Assessment, should have been a reference to Section 3.4.3.1 through Section 3.4.3.6 of Attachment 8, Facilities Integrity Engineering Assessment (Adobe pages 16 through 18 of 23), consisting of the following tables:

Table 3.9 – SA Proposed Operating Pressure and Flow Rate  
Table 3.10 – NW Proposed Operating Pressure and Flow Rate  
Table 3.11 – HL Proposed Operating Pressure and Flow Rate  
Table 3.12 – CD Proposed Operating Pressure and Flow Rate  
Table 3.13 – TB Proposed Operating Pressure and Flow Rate  
Table 3.14 – ML Proposed Operating Pressure and Flow Rate

The request in Toronto IR 1.19.a still stands. Please reply to the request now that the reference to the tables is corrected.

**Response:** a) The MOP values for the associated facilities' station discharge piping are listed in Tables 3.1, 3.2, 3.4, 3.5 and 3.6 of the Facilities Integrity Engineering Assessment (B1-18).

## 2.21 Material Balance System

**Reference:** Request: 1.21

Please provide the following:

- a) The smallest leak rate on Line 9 that will trigger an MBS alarm.
- c) MBS alarms across the Enbridge system due to DRA inconsistencies during 2010, 2011, and 2012.
- d) Leaks not detected by the MBS across the Enbridge system during the last five years due to improper adjustments of MBS settings.

Response: 1.21

- a) Please refer to response to NEB IR 3.10.c.
- c - d) Enbridge objects to the request as the information sought is not relevant to the issues in this proceeding.

**Request:** a) Please provide a timetable as to when the detailed engineering referred to in NEB IR 3.10.c (para.2) will be finished.

Also, in its response to NEB 3.10.c, Enbridge lists “*five primary detection methods*”. Please advise if the five primary detection methods are listed in the order that Enbridge expects to be the most effective at detecting leaks, or the order that Enbridge relies on the particular method for leak detection (with the highest preference listed first). In other words, is Controller monitoring (first item listed), in Enbridge’s experience, the most effective leak detection method and the most reliable, whereas is Acoustic line inspection (last item listed) the detection method which Enbridge relies on the least, and, is the least likely of the five methods to detect a leak?

- c - d) Given the Odessa, SK spill in 2009, as referenced, there is a concern about the Enbridge "track record" on issues related to adjustments of the MBS for DRA injection. The Enbridge reply is important because the history of MBS alarms and leaks that were not detected by MBS will assist in understanding: the effectiveness of the MBS; the reliability of the MBS; and the availability of data to test MBS effectiveness. Please provide the requested data. What assurances can Enbridge provide that the statement "The Enbridge system properly models the impact of DRA" is true?

- Response:** a) The detailed engineering and associated studies for leak detection will be completed by January 31, 2014. This will further validate the estimates provided for leak sensitivity. Once the system is put into production and operation, Enbridge will perform additional performance testing to validate the actual sensitivity and reliability performance of the Line 9 computational pipeline monitoring system. Please refer to response to NEB IR 3.10.d for a description of the techniques used for ongoing effectiveness testing.

The five methods listed are not in any particular order. Although each individual technique is itself an effective means of detecting releases, the strength in the overall leak detection system is the union of different techniques that apply a different focus on timing, resources and technology. The combination of these methods provides a comprehensive means of detecting releases of all sizes without reliance on one single method.

- c - d) These questions were included in the motion filed by Toronto on July 9, 2013. Please refer to the discussion regarding Toronto IR 1.21.c-d) in Enbridge's response to the motion dated July 12, 2013.

Accurate modeling of DRA in the Enbridge Leak Detection system entails real-time measurement of DRA injection rates and correct prediction of drag reduction performance. The drag reduction is factored into the real time pressure drop calculations for the leak detection system. To ensure the Enbridge system properly models the impact of DRA accurately and reliably, various actions are taken, including:

- review and understanding of DRA injection rates, performance curves, pipeline flow rates, pipeline characteristics and transported fluid properties;
- collaboration with internal DRA experts and DRA vendors to identify appropriate DRA performance curves which are then integrated into the real-time Leak Detection System;
- assessment of field data to validate DRA performance curves;
- real-time monitoring of DRA field equipment including pump status and injection rates;
- real-time communication of relevant data to the Leak Detection system; and
- ongoing assessment of pipeline Leak Detection sensitivity and reliability performance.

## 2.23 Enbridge Safety Initiatives

**Reference:** Request: 1.23

- b) Enbridge indicated that "appropriate operational and procedural changes" were implemented in 2010, 2011. Please advise what these changes are, whether any further changes were deemed necessary as a result of the release of the NTSB report, and whether and how such further changes have been implemented.
- c) Enbridge advised it has utilized enhanced procedures for leak detection analysis. Please provide particulars on these measures.
- d) Enbridge indicated it had reviewed and strengthened its public awareness programs. Please advise what measures have been taken and how they have been implemented in Toronto and generally along the course of Line 9.
- f) Enbridge advised that \$50 Million will be spent (projected) between 2012 and 2013 to improve emergency response capabilities. Please advise what amounts have been spent and how those amounts have been spent to date.
- g) Enbridge advised that it is developing better tools and techniques for worst-case waterborne spills. Please advise what steps have been taken in relation to worst-case waterborne spills in and around Toronto and the north shore of Lake Ontario.
- h) Enbridge indicated it was conducting an emergency response preparedness assessment. Please provide a copy of that assessment. Please also advise what steps have been taken as a result of that assessment in relation to Line 9.
- i) Enbridge advised that it had a renewed focus on risk assessment and research and development. Please advise what specific steps have been taken as a result of this renewed focus, particularly with respect to the conclusions reached by the NTSB in relation to: inadequate integrity management, inadequate public awareness, and the need for further research on the properties of dilbit materials. Please also advise how Enbridge intends to incorporate the work currently underway by the National Academies with respect to the properties of dilbit in relation to this renewed focus on research.

Response: 1.23

- b) Please refer to response to Ontario IR 1.44.a.
- c) Please refer to response to Ontario IR 1.44.b.iv.
- d) Enbridge has strengthened its Public Awareness Program. These measures have been implemented enterprise-wide – within Ontario, along Line 9 and along all of Enbridge's system. Specific measures include:
- Developing an industry-leading online education tool to provide Enbridge specific information to emergency responders;
  - Improved the landowner/tenant database;
  - Developed a landowner newsletter; and
  - Established Community Relations positions in each region.
- f) Please refer to Ontario IR 1.42.b and c.
- g) Enbridge has contracted with The Response Group to develop specific detailed tactical response plans for key rivers flowing into Lake Ontario. These plans are being developed to supplement Enbridge's existing extensive library of control point maps. Tabletop exercises will be performed on tactical plans to ensure first responders are aware of the plan content and how to use that content effectively. In addition to the enhancement of its response plans, Enbridge conducts regular on water exercises to test deployment techniques for hard boom, soft boom, skimmers, weirs, and other response equipment. Through these exercises Enbridge learns how best to respond to scenarios at different locations along the pipeline.
- h) Enbridge objects to filing the information requested on the ground that it is confidential and contains safety sensitive information that Enbridge has consistently treated as confidential, the disclosure of which could reasonably be expected to result in a security risk to Enbridge and its operations. Enbridge is taking measures to enhance its emergency response program system-wide. Please refer to response to Ontario IR 1.44.a.
- i) Please refer to response to Ontario IR 1.44.a and Mississauga IR 1.11.a.
- Request:** b) In Ontario IR 1.44.a, under the sub-heading “Leak Detection”, Enbridge refers to a Leak Detection Analysis and Communication

procedure that was implemented in Q4 2011. Please advise at what stages of this procedure municipal authorities are contacted and what is the nature of the information relayed.

Under the same sub-heading, Enbridge advises that it has implemented a Leak Detection Instrumentation Improvement Program to add and upgrade instrumentation across the Enbridge system. What are the specific details of additions and upgrades that have been, and are being, made to Line 9B under this program?

In Ontario IR 1.44.a, under the sub-heading “Public Awareness”, Enbridge indicates that it has developed and deployed an industry-leading online and in-person training tool to provide Enbridge specific information to emergency responders. Please confirm that Toronto and other municipal emergency responders have been included in the deployment.

In Ontario IR 1.44.a, under the sub-heading “Emergency Response”, Enbridge advises that Regional Incident Management Teams have been identified across the system. How many of these teams have been identified for Line 9B? Where are they located? Who are on the teams? What are the qualifications of the team members? What liaison has been established between these teams in proximity of Toronto and the municipal first responders?

In Ontario IR 1.44.a, under the same sub-heading “Emergency Response”, Enbridge indicates that numerous new tools have been developed to provide resources to responders to support an effective, coordinated response. Does the distribution of these new tools extend to the City of Toronto or other municipal responders?

In Ontario IR 1.44.a, under the sub-heading “Safety Culture”, Enbridge notes that it has implemented “Lifesaving Rules” and training for its employees and contractors. Please provide details of these “Lifesaving Rules”.

- c) Enbridge refers to its response to Ontario IR 1.44.b.iv, which refers to the response to NEB IR 3.10.c, which indicates that Enbridge conducts aerial and ground line patrols of its pipeline. Please advise how often such patrols are conducted for Line 9B?
- d) Please provide copies of the newsletter as delivered on Line 9 within the last three years. How often are these newsletters published? Please advise what specific information has been provided to the public as to how they might identify odours or spills as crude, and what steps they should take. Please confirm our understanding that Enbridge makes no special information

available to the public in relation to volatiles such as naphtha associated with dilbit.

- f) Since Lake Ontario is identified as a "high consequence area" as per Enbridge response to IR 1.30.i), does Enbridge agree that it is all the more imperative that municipal first responders along the north shore of Lake Ontario be aware of the detailed site-specific plans? What other areas along Line 9 are identified as "high consequence areas"? Would Enbridge be willing to share with municipalities, on a confidential basis, information on the location of each type of equipment so that municipalities can adequately plan their response, especially at the initial stages of a spill before Enbridge personnel or contractors arrive on site?
- g) What are the "key rivers flowing into Lake Ontario" for which "specific detailed tactical response plans" are proposed? When will those plans be developed? Will they be shared with municipal authorities and emergency responders? Will Enbridge agree to defer approval pending the completion of the plans? What plans are in place or proposed for waterways that do not fall into the "key rivers" category?
- h) At a minimum, would Enbridge agree to meet with municipal emergency responders to go over site/response specific plans to assess if they meet local needs and to identify any gaps that need to be addressed?
- i) Refers to the integration of research results on dilbit. Given that the recently published NRC report on dilbit [link below] explicitly states that "the committee was not asked to or constituted to study whether pipeline releases of diluted bitumen and other crude oils differ in consequences", what if any further research does Enbridge intend to take on the properties of dilbit in the natural environment once it is spilled given its commitment in the press release to "renewed focus on risk assessment and research and development"?

<http://onlinepubs.trb.org/onlinepubs/sr/sr311.pdf>

**Response:** b) **Leak Detection**

The Leak Detection Analysis and Communication procedure is used internally to define the interactions between Leak Detection Analysts and Pipeline Controllers in the analysis of imbalance alarms. The scope of the procedure is not intended to include communication with municipal authorities. The external notification occurs during other analysis and response procedures.

In addition to the existing seven flow meters, 62 pressure transmitters, and 9 temperature transmitters, as part of the Leak Detection Instrumentation Improvement Program three ultrasonic flow meters, 24 pressure transmitters, and 14 temperature transmitters are currently being added to Line 9.

### **Public Awareness**

Yes, Toronto and other municipal emergency responders have been included in the deployment.

### **Emergency Response**

One Regional Incident Management Team is identified for the Eastern Region and is structured based on Incident Command System ("ICS") protocol. This team would be applied to an incident on Line 9B or any other pipeline segment within the Region. Although the Region has a pre-populated ICS Organization chart in place, the team members would be finalized based on the staff available to respond and the nature of a particular incident. The requirements of the team members are captured in the ICS section of the Emergency Response Manual; please refer to response to Ontario IR 1.44.b.v. The ICS Organization would also include a Liaison Officer who would be confirmed once the details of the incident and availability of staff were identified.

The new response tools that have been identified would be dedicated to company response crews; however, Enbridge has released online training for municipal emergency responders.

### **Safety Culture**

The Enbridge Life Saving Rules are as follows:

At Enbridge we value the safety of our communities, customers, contractors and employees, and believe that all injuries are preventable. Compliance with all policies, procedures and regulations is a requirement. Lifesaving Rules are key focus areas which will protect you – even save your life. Working for Enbridge means working safely.

Lifesaving Rules are founded on real-life incidents at Enbridge and focus on areas of high risk and high consequence. They are intrinsic to our business,

applicable to all employees and contractors, and are communicated, clarified and reinforced across all Business Units at Enbridge.

All safety rules must be followed. Violating any policy or procedure will result in appropriate disciplinary action, up to and including dismissal. Violation of a Lifesaving Rule will result in dismissal as a first consideration.

Compliance with these rules is mandatory while employed by Enbridge - if you choose not to follow the Lifesaving Rules; you are in effect choosing not to work for Enbridge.

### **Lifesaving Rule #1 - Hazard Management**

Always ensure an analysis of potential hazards has been completed and proper authorization received prior to starting the work.

### **Lifesaving Rule #2 - Driving Safety**

Only drive a vehicle or operate equipment when not under the effect of alcohol or any substances that cause impairment.

### **Lifesaving Rule #3 - Confined Space Entry**

Always follow procedures for Confined Space Entry.

### **Lifesaving Rule #4 - Ground Disturbance**

Always follow procedures for locating, positively identifying and excavating buried facilities.

### **Lifesaving Rule #5 - Isolation of Energized Systems**

Always follow procedures for Lockout / Tag-out.

### **Lifesaving Rule #6 - Reporting of Safety Related Incidents**

Always report significant safety related incidents.

- c) Enbridge conducts aerial patrol bi-weekly of the complete pipeline

system in Ontario and Quebec. Enbridge also conducts ground patrol in the Toronto area every day (5 days per week) by a third party contractor. In addition, when Enbridge maintenance personnel travel to various sites they travel the right of way (“ROW”) as part of pipeline patrol.

- d) The landowner newsletter, published twice a year, is sent out to all landowners along the Enbridge pipeline system, including Line 9. This is an initiative that was started in 2012. The newsletter was distributed in May 2012, December 2012, and May 2013; the next issue will be in Fall 2013. Copies of the newsletters are in Attachment 1 to Toronto IR 2.23.d.

In addition, the Keep in Touch brochure is hand delivered at least once every three years to landowners and occupants along the existing Enbridge pipeline ROW. A condensed version of the Keep in Touch brochure and a public awareness cover letter are mailed annually. Copies of the Keep in Touch brochures and the cover letter are in Attachment 2 to Toronto IR 2.23.d. Both versions of the brochure contain pertinent information on how the public can identify a release; the steps one should take if they suspect a release has occurred; the nature of the liquid hydrocarbons in Enbridge’s pipeline system, including the fact that hydrocarbons are flammable and potentially hazardous and explosive under certain conditions; and the 24 hour emergency number to call.

Also, each year Enbridge mails a fridge magnet with Enbridge’s emergency number; a Call Before You Dig post card (Attachment 3 to Toronto IR 2.23.d); the NEB brochure Living and Working Near Pipelines (Attachment 4 to Toronto IR 2.23.d); and a calendar that contains the pertinent safety information as described above (Attachment 5 to Toronto IR 2.23.d).

Furthermore, Enbridge is part of a joint industry pipeline group that sends out public awareness material to all landowners immediately adjacent to or tenants who may occupy land along the Hydro One Network Inc.’s corridor between Milton and Durham, ON. Line 9 is located within this corridor. Each organization takes a turn distributing the newsletter on behalf of the group. Enbridge was last accountable for its distribution in 2009 and a copy of that letter is in Attachment 6 to Toronto IR 2.23d; Enbridge is also accountable to distribute it in Fall 2013.

- f) Please refer to responses to Équiterre IR 1.3.a and 1.3.b for high consequence areas that may be impacted by a Line 9 release.

As part of the Public Awareness Program, Enbridge currently

works with emergency responders within each municipality that contains Enbridge ROW to discuss emergency response. During these sessions Enbridge shares information, on a confidential basis, regarding topics including emergency response and emergency response equipment.

- g) Tactical Response Plans have been developed for the St. Clair River, Rivière des Milles Îles, Rivière des Prairies, Ottawa River, Niagara River and Don River crossing location areas. Tactical response plans for other water courses, including the Grand River, Rideau Canal (Catarqui River), Humber River and Trent River crossing location areas, will be developed in 2013. Locations that were chosen for Tactical Response Plan development are mainly based on higher consequences to the environment, population and/or economy if a release were to happen.

Enbridge treats the Tactical Response Plans as confidential information due to their security-sensitive nature but is willing to share these Tactical Response Plans with local emergency response agencies and other response organizations that would help Enbridge respond to a release.

In addition, Enbridge has control point mapping for each of the rivers that Line 9 crosses that represent general response planning for each of those rivers. Enbridge will continue to review and enhance its control points along every river in an effort to improve its ability to respond to a release on any river that Line 9 crosses.

Tactical Response Plan development is not required by regulation but is an example of Enbridge proactively enhancing its emergency planning in key areas. Enbridge would not agree to deferring Project approval pending completion of these plans.

- h) Enbridge would be willing to, and does, meet with municipal and emergency response representatives to review emergency response procedures and information.
- i) Please refer to response to Mississauga IR 2 Question 2.8.b.

## 2.24 Financial Assurance

**Reference:** Request: 1.24

- a) What assurances can Enbridge provide that it has either insurance in place and/or the funds available to compensate the City for any/all losses and expenses, direct or indirect, arising from or related to an oil spill?
- b) Specifically:
  - i. Will Enbridge identify and describe what insurance arrangements are currently in place for operational risk associated with Line 9?
  - ii. Will Enbridge advise whether insurance coverage limits are based on individual incidents or apply to the sum of all incidents within its system in the coverage period?
  - iii. Will Enbridge indicate whether it will be varying its insurance arrangements or policy coverage for operational changes associated with the Line 9 capacity, flow reversal and tariff changes? If yes, please provide particulars in coverage changes?
  - iv. Regardless of the sufficiency of insurance coverage would Enbridge make a representation upon which the City could rely that Enbridge would make good, direct or indirect, for any spill costs or damages from Line 9 in the event of a spill?
- c) Is there a risk that costs associated with a large spill will exceed the insurance coverage Enbridge has? If so, what other financial means can Enbridge identify to cover costs arising from a possible large spill?
- d) What is Enbridge's position on compensation in the event of a pipeline spill not caused by the fault of Enbridge?
- e) What measures are in place or proposed to compensate residents and businesses or other third parties along Line 9 in the event they need to be evacuated? In relation to other costs?

Response: 1.24

- a–d) Refers to NEB 3.7
- e) No such measures are currently in place. Whether or not compensation would be paid, to whom, for what reasons, and in

what amounts would depend upon the specific circumstances in question.

Please refer to response to NEB 3.7.

- Request:** a–d) What are the relevant "standard coverage exclusions" found in most insurance policies referred to by Enbridge, and how do they apply to extreme weather events? Did Enbridge modify its insurance coverage as a result of the cost associated with the Kalamazoo cleanup? Given the announcement by Canada's Minister of Natural Resources on June 26, 2013 [see link below] that the government intends to propose a regulatory amendment to require \$1 Billion in financial capacity for crude oil pipeline operators, is Enbridge able to confirm that it will meet that standard now on a voluntary basis? Will Enbridge agree to a condition to that effect? Is Enbridge prepared to make a financial assurance that is dedicated to Line 9 and if so, in what amount?

<http://www.nrcan.gc.ca/media-room/news-release/2013/7229>

- e) Refers to NEB 3.7; however, there is no reference in NEB 3.7 to compensation for evacuees. Further, in its response to Ontario IR 1.4, Enbridge states that Enbridge will compensate "all damage sustained" with no limitation. However, in responding to Toronto 1.24.e, it states that compensation to evacuees, indeed to all claimants by virtue of the answer to 1.24.d, would "depend on the specific circumstances". Can Enbridge assure residents adjacent to Line 9 that they will not end up in costly and protracted legal action over liability if they claim for evacuation costs arising as a result of a spill?

- Response:** a - d) Enbridge's insurance policies are complex contracts between Enbridge and its insurers, and they contain various terms, conditions and exclusions. Some relevant exclusions under Enbridge's consolidated (umbrella) liability insurance program for which Enbridge may not be able to claim and recover costs are fines and penalties; methyl tertiary butyl ether ("MTBE") and nuclear energy liability; professional liability; willful misconduct and intentional injury; workers' compensation and employment practices liability.

Enbridge has renewed its comprehensive liability insurance program three times since the Kalamazoo incident with the same breadth of coverage. The current coverage limit is higher than the limit we carried when the Kalamazoo incident occurred.

Enbridge will comply with all statutory and regulatory financial

assurance requirements that are in force. Given the substantial resources of Enbridge and those upon which it could draw, as described in response to NEB IR 3.7, Enbridge is of the view that a condition of the Project approval requiring the \$1 billion in financial capacity, or a financial assurance dedicated to Line 9, is unnecessary.

- e) Please refer to response to TRCA IR 1 Question 1j - 1.

Enbridge would be responsible for the damages that are directly attributable to its operations, which could include claims for evacuation costs. Enbridge would address such claims fairly and efficiently.

## 2.26 Clean Up Response for Non-Conventional Heavy Crudes (DilBit, SynDilBit and SynBit)

**Reference:** Request: 1.26

- c) Considering difference in viscosity and temperature and presence of Naphtha, the rationale as to why specialised instructions are not provided for DilBit, SynBit or Dilsynbit on page 11 of Enbridge's "Important Safety Information for Emergency Responders Enbridge Pipelines Inc."
- d) What accounts for the difference in the behaviour of Dilbit in the SL Ross Environmental Research under controlled laboratory conditions and the behaviour of Dilbit in the open environment as noted by the NTSB in its review of the Marshall spill on page 62-63 which describes denser oil fractions sinking and incorporating into river sediment?

**Response:** 1.26

- c) Dilbit, synbit and dilsynbit are bitumen based products diluted with either diluents, synthetic oil, or a combination of the two. Once the products are mixed and brought into accordance with transmission pipeline specifications the resulting product is a heavy crude oil. The table provided in "Important Safety Information for Emergency Responders Enbridge Pipelines Inc." includes an entry for crude oil.
- d) Reference iv), the SL Ross study provides the results of a laboratory study designed to investigate the weathering of Cold Lake diluted bitumen, with the preliminary goal of investigating the density change of the diluted bitumen as it weathers under weather conditions more realistic than that simulated in standard laboratory testing. The study was designed to supplement and improve on previous testing of evaporation rates under controlled conditions in a laboratory wind tunnel, and to examine if dilbit would sink through weathering processes alone. This study was not designed to simulate all of the various processes influencing fate and behaviour in a real-world environment. The SL Ross study utilized fresh water with no sediment content.

**Request:** c) Given that dilbit generates volatiles, the volatilization of which resulted in evacuation notices to about 50 houses in Marshall (see p. 18, NTSB report), would Enbridge agree to developing additional information to assist with evacuations resulting from

dilbit spills? If not, why not?

- d) Given that sediment and water turbulence play a significant role in sinking of oil products and given that the factors that contribute to whether or not oil sinks are "complex, can change rapidly"? (see Citoyens au courant IR 5.37) and given that the NRC report explicitly did not deal with the properties dilbit demonstrates after it has been spilled, what commitment is Enbridge prepared to make to develop a better understanding of the way dilbit behaves under various environmental conditions?

**Response:** c) All crude oils (including dilbit) release vapours when exposed to the environment. The vapour concentration in air depends on site-specific variables which include among other things, product type, the weather and time of year, the volume released, the location, and the duration and nature of the event. As the behaviour of dilbit aligns with heavy crude oils, dilbit specific evacuation information is not required.

- d) Please refer to response to Mississauga IR 2 Question 2.8.b.

## 2.27 Emergency Response Book

**Reference:** Request: 1.27 Emergency Response Book

- d) Book 7 refers to emergency exercise documentation (p. 5 of 173) and reports (p. 20 of 173). Please advise: iv) Who was provided a copy of the exercise results and were municipalities or conservation authorities provided with results? Please provide a copy of any materials so provided.
  - iv) Who was provided a copy of the exercise results and were municipalities or conservation authorities provided with results? Please provide a copy of any materials so provided.
- e) Book 7 refers to an "incident command system" and an "incident commander" at pages 5 and 8 of 173. The Public Safety and Emergency Management Unit of the Toronto Police Service (TPS) also uses an incident management system. Please advise how "command" roles have been coordinated between Enbridge forces and the TPS, Toronto Fire Service, the Office of Emergency Management, and other City Divisions, as well as Ministry of Environment (Ontario), and Environment Canada, on site. Have City Divisions been made aware of any expectation that they will have a role? What role would they have?
- f) Book 7 refers to cooperative agreements to provide Enbridge with additional emergency response equipment and services (p. 11 of 173). Please advise whether such arrangements or agreements are in place on Line 9 currently, or are proposed to be put in place?
- j) Book 7 contemplates that evacuation may be required "if necessary" (p. 25 of 173). Please advise that constitutes a condition of "necessity" for the purposes of evacuation? Who makes that decision? What plans are in place to liaise and cooperate with local emergency responders such as Police, Fire, the Office of Emergency Management or the Mayor's Office and/or the Ontario Ministry of the Environment or Environment Canada, in relation to any needed evacuation?
- l) Book 7 refers to "liaison officers" to provide contact with Police, Fire and other government officials (p. 37 of 173). Please advise who this person is on Line 9. What if any, protocols or procedures are in place in relation to this officer? Please provide a copy. What is Enbridge's view on who the relevant "government officials" are?

- m) Book 7 warns that prompt first aid treatment is crucial for people exposed to breathing hazards, noting that "treatment varies according to materials" and stresses the need to be "aware of the proper first aid treatment" (p. 88 of 173). Please advise what information has or will be provided to municipal emergency responders on breathing hazards associated with dilbit, synbit and dilsynbit and particularly the volatile diluent components of these products.
- o) Book 7 refers to stormwater sewer runoff collection systems in relation to spills on land (p. 106 of 173) and redacts portions of text immediately thereafter as "security information". Please advise of the basis for the security concern. Please also advise of information available to Enbridge of the location of such storm sewer collection points through the City of Toronto in proximity to Line 9, and what steps have been taken by Enbridge to ensure that spilled material does not enter the City stormwater system. Does Enbridge have similar information for all of Line 9?
- p) Book 7 refers to procedures to be used in wetlands (p. 113 of 173) and rivers (p. 122 to 173). The NTSB report investigating the Marshall spill of 2010 was critical of Enbridge for having failed to ensure that proper underflow damming equipment was in place to deal with spills in fast flowing waters (pp. 105-108).
  - i) Please advise what measures are in place to ensure that equipment and training are in place to permit the installation of such equipment at major water crossings.
  - ii) Please also advise whether locations for spill collection points, underflow dams, contaminant dams and booms for major watercourses flowing along the north shore of Lake Ontario have been identified. If yes, please provide details for each containment measure. If no, why not?
- q) Book 7 contemplates an alternative water supply in the event that a spill contaminates drinking water (p. 147 of 173). Please advise what if any, alternative measures could or would be taken in the event of contamination of drinking water drawn from Lake Ontario. Please advise what, if any, discussions have taken place with Toronto Water or other water authorities drawing drinking water from Lake Ontario's north shore.

Response: 1.27

- d.iv) Results of the Don River Exercise, including the results of the exercise objectives, were discussed orally with representation from

all involved stakeholders during the review sessions held at the end of the exercise.

Please refer to Attachment 1 to Toronto IR 1.27.d.i.

- e) In the case of an incident such as the one exercised on the Don River and Incident Command Structure ("ICS") would be established as part of the response. The ICS organizational structure would be identified which would lay out each of the positions involved with the response and the party or person responsible to fulfill that role. As part of this structure Toronto Police Service and Toronto Fire Service would be providing a support role in order to protect the public and assist in achieving the response objectives. A Liaison officer would also be in continuous communication with all other agencies to receive and provide information concerning the response.

A Unified Command Structure might be established if the response required it. The Unified Command would have representation from Enbridge, the NEB and most likely the Ontario Ministry of Environment and/or Environment Canada. It could also have representation from Toronto Fire Services, Toronto Police Services, Office of Emergency Management and/or other city divisions. The Unified Command would establish objectives, commit agency/company resources, agree on the incident response organization, etc.

An ICS organization structure was established for the Don River exercise but a Unified Command was not included in the scope. Enbridge Emergency Responder Public Awareness documentation also describes the roles of local emergency responders during an incident. During an actual event, ICS roles would be established based on the agencies involved and personnel available through the means described above.

- f) Please refer to response to Ontario IR 1.45.a. Enbridge currently has emergency response agreements in place with various entities including ECRC/SIMEQ or subcontractors to ECRC/SIMEC. These agreements would apply to responses on all Enbridge pipelines within Ontario and Quebec including Line 9.
- j) Wind condition and atmospheric monitoring would be performed as part of any spill response. The extent of elevated readings of hydrocarbon vapour or substances of concern such as benzene would dictate areas of required evacuation. Enbridge would work in conjunction with regulatory agencies in deciding to execute required evacuations. Enbridge would coordinate with local

emergency responders as well as local/regional emergency management agencies by way of the designated Liaison Officer, Environment Officer and/or Incident Commander to identify air contaminant levels that would potentially result in recommendation for evacuation, and to establish and execute a plan for public evacuation if required.

- l) The Liaison Officer is the contact for all responding resources and outside groups. The Liaison Officer will work with the Federal, Provincial or Municipal agencies that respond to the incident. The Liaison Officer is not established until an incident occurs.
- m) Please refer to response to Les Citoyens au Courant IR 5.17b.
- o) Please refer to response to Ontario IR 1.44.b.v.

Enbridge does not have detailed knowledge of stormwater sewer systems in any municipality and instead relies on its relationships with municipalities and their knowledge of their own systems. Enbridge has met with Toronto Water numerous times to discuss Enbridge's pipeline operation and the location of facilities.

- p.i) Containment using the underflow dam technique is effective and sound; however, safety of responders must first be considered when dealing with fast moving water and hazards associated with a hydrocarbon release. Enbridge has the resources required as part of initial response equipment caches to construct underflow and culvert weir dams. Please refer to Attachment 1 to Toronto 1.27.p.i. The Emergency Response Bulletin was sent out in October 2012 to remind Enbridge first responders of this response tactic and the resources required.

Please refer to response to Ontario IR 1.44.b.v. for Enbridge's Emergency Response Plan which discusses Dikes and Containment Weirs in Section 04-02-04, page 124 of 173 as part of the River Response Procedures.

- p.ii) Yes. Enbridge has developed a number of spill collection points along each river/creek the pipeline crosses for use in the event of an incident. The details around each collection point is confidential for security reasons.
- q) Enbridge would work with local municipalities regarding implementation of their emergency management plans concerning drinking water supply. If drinking water sources were to be impacted, Enbridge would provide a safe temporary supply of drinking water to residents and take all necessary actions to restore

drinking water supplies as soon as practicable.

- Request:** d.iv) Can Enbridge advise why written reports of the emergency exercises were not provided to municipal staff in view of the reference to written reports in Book 7 (as provided to Toronto in Enbridge's response of February 5, 2013 to a City informal request for information) as "essential" (p. 5 of 173) and given that the manual also notes that "verbal instruction are unreliable" and "documents form a permanent record"?

Attachment 1 to Toronto IR 1.27.d.i – what was the "stakeholder confusion leak site location" as noted on p. 2? What if any further discussion or instruction has been provided to Toronto Fire Service re the Toronto Fire Service "improvising using our equipment until [Enbridge] get there" as noted on p. 2, particularly as the response time is stated to be between 1.5 and 4 hours (in that case it was actually 1 hour 45 minutes)? What are "EMS" and "TCC" referred to on p. 2? Was there any further discussion with Water re protection of sewer vaults in the event of an incident as noted on p. 2?

On p. 3 of the Attachment, it is stated that "the bank was narrow if it had been winter it would have been very challenging" – what if any modifications has Enbridge made to its emergency response procedures to account for winter conditions or extreme weather events such as that experienced in Toronto on July 8, 2013?

Have the control points along the Don River been modified as noted on p. 3?

On p. 4, it is noted that the Emergency Management Specialist (NEB) would provide "a few pointers ... to Enbridge in a written summary later on". Please provide a copy of the written summary provided by the Emergency Management Specialist. Was a "package" respecting the exercise made available as noted on p. 4? Please provide a copy if so, and if not, why not?

At what location(s) for the Don River exercise were the crew(s) deployed? Specifically, were crews dispatched to the mouth of the River?

- e) Please provide a copy of the Enbridge Emergency Responder Public Awareness documentation referred to in the response. The City is unclear whether municipal emergency responders such as Fire Services would be included in the Unified Command structure or just recognized to be in a supportive role and therefore dealing through a Liaison Officer. Given the role that a municipal Fire

Services would have relative to the protection of life and property, does Enbridge not agree that it would be imperative that Fire Services be directly included in the unified command structure, particularly when considering the statement that describes the function of the Unified Command: "The Unified Command would establish objectives, commit agency/company resources, agree on the incident response organization, etc."? How can Toronto Water water treatment plan operations be integrated into the "Incident Command Structure"?

- f) Where are the emergency contractors referred to located and what is their response time to a Toronto spill?
- j) Given that Enbridge has indicated that it anticipates a response time of 1.5 to 4 hours, are local emergency responders expected to wait for Enbridge personnel or contractors to arrive to make a decision on evacuation? If local emergency responders make the decision to evacuate on their own, will Enbridge be willing to fund any associated costs since they were not part of the decision process?
- l) Refers to the Liaison Officer as not being established until an incident occurs. Given that Enbridge response may take up to 4 hours, what relationship exists between Enbridge and emergency responders that may arrive on site hours earlier? Please advise who is the Liaison Officer for Line 9. At what time during an incident is the Liaison Officer established/informed of the emergency? How is the Liaison Officer identified to municipal first responders? Who are the relevant "government officials", including City of Toronto officials, that would be engaged by the Liaison Officer?
- m) The requested information appears to have been created on June 23-24. When was it posted on the NEB inbox? Why was it not produced on June 25? Has this information previously been made available to Toronto Fire etc. as a matter of course?
- o) If City of Toronto provides mapping of manholes, will that be integrated by Enbridge into its maps? Is there any procedure for how to deal with manholes so as to prevent contamination of storm sewers and sewage treatment plants? What, if any, follow-up has been carried out or proposed with Toronto Water staff?
- p.i) Would Enbridge be willing to share with municipal first responders, on a confidential basis, the amount, location of the caches and most importantly the time it will take to put the equipment into service? If there is a spill in the presence of "fast moving water and hazards associated with a hydrocarbon release" does this preclude the construction of underflow dams, and if so,

what response would Enbridge undertake to contain the spill, particularly if fast moving water persists for an extended period of time?

- p.ii) Given that Enbridge assumes up to 4 hours before its responders arrive on site (see response to 1.28.i), is Enbridge prepared to share details regarding collection points in advance, rather than after a problem has occurred?
- q) The three City of Toronto water treatment plants with intakes in the near shore zone of Lake Ontario have a combined capacity of 2,365 ML per day. Please advise how Enbridge commits to providing a safe temporary supply of drinking water to 2,365 MLD.

**Response:** d.iv) The references to written as opposed to verbal instructions relate to Enbridge internal communications. Enbridge considers the detail within its internal emergency exercise reports as confidential.

Emergency response exercises are carried out so personnel can practise using equipment they would need in a response situation as well as to assess the control point location and determine if the location is suitable for accessing a waterway in the event of an emergency. Findings from an exercise are used to determine if other locations need to be identified for access points, and to identify additional needs in the event of an emergency for personnel, access, equipment, etc.

In September 2011, Enbridge held an emergency simulation emergency response exercise at the West Don River. The questions noted are in reference to the debriefing notes documented after the exercise, which appear as the referenced attachment.

As a result of the Don River exercise, Enbridge has worked with an emergency response consultant to establish a tactical response plan for the Don River, which was completed in early 2013. Through this developed response plan the East and West Don River have been divided into sections with multiple recovery/staging areas identified that could be established depending on the specific emergency response required. At this time, Enbridge has not reviewed the tactical response plan with the emergency responders in Toronto.

Please see Attachment 1 to Toronto IR 2.27.d.iv for the NEB Exercise Evaluation of the Don River exercise and Attachment 2 to Toronto IR 2.27.d.iv for the Enbridge response to the NEB Evaluation.

For the Don River exercise, crews were deployed at three locations, including the mouth of the Don River, which were determined to be accessible strategic locations along the river based on assessments completed by environmental and response specialists.

- e) Please see Attachment 1 to Toronto IR 2.27.e for the Enbridge Emergency Responder booklet. Municipal emergency responders such as Fire Services would be included in the Unified Command structure if warranted by the specific situation. In an emergency, the expectation would be that emergency responders would be responsible for keeping the public safe while Enbridge trained personnel would respond to the pipeline emergency. In the event of an emergency, Enbridge would work closely with the Toronto water treatment plant operators to determine the required course of action.
- f) Enbridge submits that it fully and adequately responded to Toronto IR 1.27.f by way of reference to response to Ontario IR 1.45.a.
- j) In the unlikely event of a release, Enbridge would be supportive of early evacuation should it be deemed necessary by emergency response officials prior to the arrival of Enbridge personnel. On arrival at the site, Enbridge personnel would verify the extent of the evacuation.

Please refer to response to Toronto IR 2.24.e.

- l) Enbridge completes an annual Public Awareness Program with emergency responders in all municipalities that are crossed by Enbridge ROW. It is through these meetings and annual response exercises that Enbridge provides local emergency responders with an understanding of the Enbridge emergency response process and develops a relationship with the responders.

The Liaison Officer is confirmed when an emergency is identified. The designated Liaison Officer would begin to reach out to local municipal officials and responders soon after the Liaison Officer was identified in the position. Initially the Liaison Office would communicate with contacts identified in the Enbridge Emergency Response Plan as well as key contacts established through the Public Awareness Program. Eventually designated representatives from the impacted municipalities would be the key points of contact for the Liaison Officer.

- m) Please refer to the discussion regarding the placeholders in response to Toronto IR 2.9.a.d1.

The Enbridge Emergency Response Plan has not been previously made available to the Toronto Fire Department.

- o) In the unlikely event of a release, Enbridge responders would work closely with municipal water department representatives to identify manholes, intakes and other drainage/water system features that would need to be protected. Emergency responders would then apply the appropriate protection techniques to those systems. Enbridge has included municipal water departments in its exercises in the past, including in the Toronto tabletop exercise in 2010 and the Don River full scale exercise in 2011.

- p.i) Enbridge is willing and has shared emergency response details in the past with municipal responders related to locations of response equipment and estimated time to deploy.

The conditions of each response are unique, and therefore Enbridge response crews would evaluate if appropriate conditions existed to construct underflow dams for a release in a creek or small river as part of the response techniques selected.

- p.ii) Please refer to response to National Farmers Union IR 1 Question 5.a and 5.b. Although the Enbridge control point information is confidential, Enbridge shares control point information with municipal emergency responders on an as-needed basis as part of the annual response exercises that Enbridge completes. Enbridge is also prepared to share control point information with municipal/emergency response representatives as part of emergency/river response meetings.

- q) In the unlikely event that a release reached Lake Ontario and impacted any of the City of Toronto's water intakes, Enbridge would work with the City of Toronto to establish a safe, temporary supply of drinking water to manage the shortfall in volume and take all necessary actions to restore drinking water supplies as soon as practicable.

## 2.28 Emergency Response and Control Measures

**Reference:** Request: 1.28

- a) Existence and location of all control valves/stations on Line 9B North Westover to Montreal, how they function/operate. How often are these control valves tested?
- c) Please advise whether Enbridge has advised all municipal emergency service or fire personnel about the location of emergency shut off valves. Please also advise under what circumstances or conditions it would be appropriate for municipal staff to operate this equipment rather than waiting for Enbridge personnel to arrive. Please advise what, if any, discussions have been held with Toronto Fire or other municipal staff regarding these valves.
- e) Please advise whether Enbridge has provided municipalities with specific – as opposed to general - emergency plans to deal with pipeline rupture or spills.
- j) Please provide details on the location, type and quality of spill control equipment/resources that are readily available along Line 9B and the time within which these resources could be mobilized to reach the major water-ways in Toronto. Please advise how or whether these times are affected by flow rates in these major waterways. Please also advise whether Enbridge has given any consideration to siting resources based on population density around major waterways.

**Response:** 1.28

- a) Please refer to Attachment 1 to NEB IR 2.7 (revised) for the location of all mainline valves. There are 51 valves in total between North Westover Station and Montreal Terminal. Of these valves, 43 are automated and 8 are manual. All valves in the GTA are automated.
- c) Enbridge meets annually with emergency response personnel and reviews procedures to be followed in an emergency situation including expectations of response personnel. During the meetings Enbridge reviews the location of Enbridge facilities within the area of coverage, including valves, stations and pipeline locations.
- e) In the unlikely event of a release, Enbridge would coordinate

closely with all impacted municipalities and the local emergency responders when developing and executing area response plans based on the specific scenario that had occurred. No detailed response plans have been provided to municipalities.

- j) Please refer to response to Ontario IR 1.45.a for response times and resource locations. Both Enbridge and emergency response contractors have response equipment stored at their base locations. Water way flow rates will not impact response time but are considered when determining the boom deployment strategy and location.

**Request:**

- a) How many valves are there in Toronto and how do they relate to major watercourses? Is there any contemplation of increasing the valves so that all major watercourses are protected?
- c) Given that Enbridge requests non-Enbridge personnel not touch valves in the event that automated valves fail, how long with Enbridge staff take to arrive and what steps should be taken in the interim? Toronto Fire advises that at the last meeting with Enbridge, there was no mention of valves (numbers, locations, mode of operation) or of the specific location of the pipeline (the reference was general). How is Enbridge prepared to provide more detailed information to Fire Services on these issues?
- e) Given the up to 4 hour wait that may be expected, would Enbridge agree to develop response plans for training municipalities how to react in the interim?

To ensure that a spill response is managed effectively, would Enbridge consider providing municipal first responders, on a confidential basis, an opportunity to become familiar with Enbridge's specific emergency plans in advance and then have an opportunity to integrate Enbridge's plan into the local operations as appropriate?

- j) Does each equipment cache have all the required equipment to address all contingencies? Specifically, does the site closest to Toronto (i.e. North Westover) have excavation, underflow dam and culvert/weir dam equipment available?

**Response:** a) There are two pipeline valves located within the City of Toronto. Please see Attachment 1 to NEB IR 2.7 (Revised) for the location of these valves. Please refer to response to NEB IR 2.7.a for details on the Enbridge Intelligent Valve Placement program. There are two additional valves being installed in 2013 at the Don River, at KP 3083.5 and KP 3080.6.

c) As indicated in response to Toronto IR 1.28.a, all the valves on Line 9 located within the GTA are automated.

In the event of an emergency, when a valve is shut, the system pumps also shut down. If the closing of a valve failed, the control centre would close the next nearest valve in the system and an Enbridge representative would be dispatched to check the valve. Enbridge personnel would arrive onsite within 1.5 to 4 hours.

In the interim, Toronto Fire should keep the public away from the area and make the area safe and accessible when Enbridge personnel arrive onsite. If necessary, Toronto Fire could begin evacuation of people nearby.

Emergency responders have been provided with maps showing the routing of the pipeline through their respective geographic area. Valve location was not included with the map data.

e) Relevant information, including Enbridge's expectations of emergency responders, is reviewed with emergency responders annually.

j) The Enbridge Westover location has the equipment and access to contractors necessary to address all contingencies including excavation, underflow dam, and culvert weir dam.

## 2.30 Source Water Protection

**Reference:** Request: 1.30

Please provide the following:

- a) A copy of documentation showing Enbridge's Environmental Protection Program as it relates to water bodies and crossings and riparian areas.
- d) A table listing depth of cover surveys at stream crossings where follow up remediation action is taken and including information on the type of remediation action taken, the rationale for the specific action and the expected outcome.
- e) Identify the sources and resources that Enbridge uses to assess erosion and flood risk on stream crossings.
- f) An indication whether Enbridge has "site specific emergency response and spill containment plans" for stream crossings and whether these plans are tailored to each crossing and conditions at the time, or are generic?
- i) Modelling undertaken or commissioned by Enbridge which predicts product spill extent and magnitude across surface water under different river flow rates. What is the estimated time it would take for oil spilt as a result of a rupture in Line 9 near a stream to reach Lake Ontario, including assumptions underlying the estimate?
- j) Provide spill maps for Toronto waterways.

Response: 1.30

- a) Please refer to response to NEB IR 1.10a)a.1 and response to NEB IR 1.10a)b.1.
- d) Please see Attachments 1 and 2 to Ontario IR 1.12.b.
- e) Please refer to response to TRCA IR 2.e.
- f) Enbridge has boom deployment locations (control points) established along all water ways that Line 9B crosses. These control points are specific to each water way.

Please refer to response to Ontario IR 1.44.b.v for Enbridge's Emergency Response Plan.

- i) Lake Ontario is identified as being a High Consequence Area. High Consequence Area analysis was performed to determine which segments of the pipe could potentially impact Lake Ontario via water transport; however time to reach Lake Ontario is not included in this analysis.

In the unlikely event of a release, Enbridge would immediately implement its emergency response procedures to contain released product and mitigate the impacts. These plans includes processes for assessing resources at risk, spill trajectories, and travel times based on the circumstances of the incident and using flow rate information applicable at the time of the incident.

- j) Enbridge has performed High Consequence Area analysis for Toronto to determine which segments of pipe could impact waterways located within Toronto in the event of release via overland or water transport; however the time required for the product to reach these waterways is not included in this analysis.

In the unlikely event of a release, Enbridge would immediately implement its emergency response procedures to contain released product and mitigate the impacts. These plans includes processes for assessing resources at risk, spill trajectories, and travel times based on the circumstances of the incident and using flow rate information applicable at the time of the incident.

- Request:**
- a) How does Enbridge "ground truth" the documented environmental conditions in is mapping?

Please explain how "reduced cover depth" is determined as referred to in NEB IR 1.10.a)a.1. What remediation actions does Enbridge take? Please advise of the locations along Line 9 in the City of Toronto and in proximity to the City of Toronto where Enbridge has identified increased susceptibility to exposure during potential flooding events (other than the locations identified in 4.4.6.2 River Crossing Management of the Pipeline Integrity Engineering Assessment). What are the specific criteria/metrics that are evaluated to determine when remediation should occur (i.e. establish remediation priorities and timelines)? Please advise the scope and details of any risk assessment that is undertaken to determine remediation priority.

- d) The list of crossings cover depths is missing Toronto stream crossings; please provide. Furthermore, there was no information

included in "type of remediation action taken". Please provide. NEB 1.10.a.b.1 notes that there are surveys carried out on "navigable waterways" every 5 years (major crossings in Tab 7 of the Application at p. 93). Would Enbridge consider monitoring all waterways on a 5 year cycle?

- e) What are the watercourse crossing locations of the site reconnaissance referred to in IR 2.e referenced in the response to Toronto and how were these locations chosen? What were the results of the evaluation of the performance of past depth of cover remediation actions? How have the results of the evaluation been used to inform ongoing depth of cover policies and procedures and remediation strategies?
- f) Does Enbridge have control points both immediately downstream of a pipeline crossing as well as at the mouth of the watercourse? How does Enbridge conduct deployment operations if the watercourse is at flood stage, without endangering the safety of in-water responders?
- i) How and where is a "High Consequence Area" as referred to, defined? How many such areas were determined to have potential impact on Lake Ontario? Where? Can Enbridge provide an example of such a plan applicable to Lake Ontario? Does Enbridge have, or is it prepared to provide, spill response plans and maps for waterways crossed by Line 9 which drain into Lake Ontario? Is Enbridge prepared to consider modeling that would let Enbridge and others know how long materials would take to reach Lake Ontario?
- j) The response does not answer the request. The request is repeated; please provide spill maps for Toronto waterways.

**Response:** a) Enbridge utilizes third party environmental professionals to confirm or "ground truth" the environmental conditions that are recorded within Enbridge or published sources.

Reduced cover over the pipeline is determined through a manual site review. If cover is less than the minimum required, further action is taken. Remediation depends on the specific situation and the risk to pipeline integrity. The situation is evaluated for potential third party damage, erosion or other external forces that would impact the pipeline. Remediation can include adding fill, adding a protective barrier or lowering the pipeline. Enbridge has not identified any additional sites with increased susceptibility to exposure during flooding events.

- d) Please see Attachment 1 to Toronto IR 2.30.d for depth of cover information for Toronto major waterways and the Rouge River.

During the 2009 depth of cover survey there were no Toronto stream crossings that required remediation. The pipeline crossing of the Don River showed signs of erosion but the pipeline was not exposed. It was then monitored for further erosion.

The pipeline crossing of the Rouge River was exposed prior to the depth of cover survey, and Enbridge was already working with an environmental consultant to develop a remediation plan. The bank of the Rouge River was reconstructed by applying a “live crib wall”.

Depending on the depth of cover concern it can be remediated by adding fill, adding a protective barrier such as pipe casing, lowering of the pipeline, or replacement of the pipeline. Each situation is assessed and the best method of remediation is carried out.

Enbridge is conducting a depth of cover survey on all streams and slopes (geohazard survey) that it crosses in 2013. If the 2013 survey identifies areas of concern Enbridge will determine an appropriate frequency for monitoring those areas more frequently than the 10 year depth of cover survey.

Newtonbrook Creek location was identified by the 2013 geohazard survey. This depth of cover issue is currently being reviewed to establish the proper means of mitigation.

- e) Within the City of Toronto as part of the site reconnaissance cited, the slope of the Don River and the Rouge River were assessed by an engineering specialist.

The slope erosion at the Don River area was discovered in 2012. At the time of the depth of cover survey there had been sufficient cover in this area. The Don River site was chosen for reconnaissance due to slope erosion that was impacting the integrity of the pipeline. Enbridge is currently working on detailed design and permitting to replace the section of pipeline in this area.

The Rouge River piping was known to be exposed prior to the depth of cover survey and, at the time of the 2012 reconnaissance, was waiting for detailed design and permitting to repair.

The last depth of cover analysis was completed in 2009. Since 2009, additional watercourse crossings and slopes have been

discovered with cover deficiencies. As a result of these additional findings Enbridge has initiated a geohazard study to determine if there are other watercourse crossings or slopes experiencing erosion that require reconnaissance work. This study is taking place in 2013.

The results of the 2009 depth of cover survey also helped to form the Enbridge Pipeline Depth Monitoring Program ("PDMP"). The PDMP program sets the parameters for the depth of cover survey including but not limited to the frequency of the survey, minimum depth requirements, data collection methodology, the equipment used and the evaluation process.

- f) Enbridge uses a number of criteria to develop control point mapping that identify product containment and recovery sites (control points) downstream on a watercourse crossed by the pipeline (point-of-entry) or any drainage areas that outlet to a watercourse. Control point selection criteria considerations include establishing several control points far enough downstream from the point of entry to account for differences in flow velocities that may be encountered due to river stage fluctuations. Other selection criteria include good public road access with bridges and/or nearby boat launch; existing workspace and access to the stream channel; potential for natural or manmade anchors for booms; potential for natural collection points such as a pool or backwater; road crossings where responder safety is not at risk; and locating control points where the stream has a low velocity and the main current is adjacent to the most accessible bank.

If the watercourse were to be at flood stage during deployment operations, responder safety would be of primary concern so control points would be selected downstream as close as possible to the release source considering river velocities without compromising responder safety. A written pre-job hazard assessment must be conducted by the Incident Commander prior to any work activity. Personal protective equipment ("PPE") and safety equipment requirements for this work must comply with the ICS – 208 Site Safety Plan and the hazard assessment. Any individual working over, in or immediately next to water must wear a personal flotation device in addition to PPE requirements. Depending on the hazard assessments, other safety measures would be implemented to mitigate risk as required.

- i – j) The Revised Pipeline Risk Assessment, section 3.1 "High Consequence Areas" defines high consequence areas.

Although it is unlikely that a release would reach Lake Ontario,

Attachment 1 to Toronto 2.30.i identifies sections of Line 9B that may impact Lake Ontario in the event of a release. These sections of pipe are incorporated into the assessment of consequence for the Enbridge pipeline risk assessment (see the Revised Pipeline Risk Assessment).

Please refer to response to Ontario IR 1.44.b.v for a description of the emergency response plan.

Enbridge does not have spill maps for Toronto waterways. Please refer to response to Ontario IR 2.7.a.

Enbridge welcomes the opportunity to discuss the possibility of performing a spill analysis, and sharing the results with the City of Toronto, provided the appropriate Enbridge and municipal personnel, including first responder representatives, are part of the discussion.