Canadian National

Luanne Patterson
Senior System Manager –
Environmental Assessment

February 15, 2019

Lesley Griffiths
Review Panel Chair
160 Elgin St.
Ottawa, ON K1A 0H3

By email
Dear Ms. Griffiths:

I am writing as a follow-up to our letter from February 4, 2019 (CEAR #713) regarding the submission of the remaining IR responses. You will find enclosed with this letter two packages:

1) Responses to IR package 6
2) Responses to IRs 8.3, 8.17 & 8.20

CN has received all the necessary traffic data from the Halton Region. CN is currently assessing this information and still anticipates meeting the timeline indicated in our earlier correspondence (CEAR #711).

More specifically, traffic-related IR responses (IR 8.4 and 8.5 – CEAR #685) will be submitted no later than the week of March 18, 2019. We note that IR 8.2 pertains in part to an update to the air quality assessment and may depend on the findings of the review of the traffic data. It may be necessary and appropriate to update information pertaining to background (i.e. non-Project associated) emissions.

Similarly, we note that IR 8.9 pertains to an update of the noise assessment related to traffic volumes at the time of full terminal operation. If the results of the updated traffic assessment using new data provided by the Region result in a substantive change in the future background volumes, it may be necessary and appropriate to also update the noise assessment. For these reasons, responses to IRs 8.2 and 8.9 will also be no later than the week of March 18, 2019.

Thank you for your consideration of the IR responses submitted. Pleased be assured that CN will continue to make best efforts to finalize the remaining outstanding IR responses for the week of March 18, 2019.

Sincerely,

<Original signed by>

Luanne Patterson
Senior Systems Manager – Environmental Assessment

cc:

William G. McMurray, Review Panel Member (by email)
Isobel Heathcote, Review Panel Member (by email)
Joseph Ronzio, Review Panel Manager (by email)
Darren Reynolds, CN Project Director

CN Milton Logistics Hub ("Project")
CEAR File No. 80100

CN Response to the Review Panel's Information Request 6
Received February 6, 2018

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LIST OF TABLES

The following information is provided in response to Information Request Package 6 received from the Review Panel.

REGULATORY FRAMEWORK

IR6.1 Applicability of regulations and voluntary compliance

Rationale:

In its response to the Review Panel's information request 2.1, CN provided a list of federal, provincial and municipal laws that it had considered in developing the environmental impact statement (EIS). Tables 2.1-2 and 2.1-3 in Attachment IR2.1-1 summarize those provincial and municipal laws. CN has concluded that those laws are not applicable to the proposed Project.

It is not clear whether CN would commit to voluntarily meet any specific targets or other standards set by provincial or municipal regulations with respect to the construction and operation of the Project.

On January 23, 2018 the Halton Municipalities submitted a letter to the Review Panel (CEAR #614), which described the Regional Municipality of Halton's Access Management Guidelines (2015) and By-law 32-17 (May 2017) regarding controlled access to regional roads. However, CN did not discuss whether or how it considered the Access Management Guidelines, or later the By-Law 32-17, in the planning and design of the Project.

Information Request:

a) *Identify which targets or standards set by provincial or municipal regulations, if any, CN commits to voluntarily meet with respect to construction and operation of the Project.*

b) *Describe whether CN believes By-law 32-17 is applicable to the Project and, if not, whether CN commits, as per part a) of this information request, to voluntarily meet its requirements with respect to construction and operation of the Project.*

c) *Describe whether and how CN considered the Regional Municipality of Halton's Access Management Guidelines (2015) or By-law 32-17 in development of the EIS and responses to the Review Panel's information requests.*

d) *Identify what consultation CN has undertaken with regional or municipal authorities regarding Project access to regional roads, if any.*

CN Response:

a) *Identify which targets or standards set by provincial or municipal regulations, if any, CN commits to voluntarily meet with respect to construction and operation of the Project.*

As indicated in the responses to IRs 2.1, 2.2, and 2.3 (CEAR #592), and as is evident throughout the EIS, CN did take into account certain standards and targets identified in provincial or municipal laws and guidance documents in its assessment of the Project, where appropriate. See for example, the Air Quality TDR (EIS Appendix E.1), which used the Ontario Ambient Air Quality Criteria (AAQC) (MOE 2012) to assess air emissions – e.g., PM10, benzene, 1,3-butadiene, acrolein,

acetaldehyde, formaldehyde, and benzo(a)pyrene. Attachment IR2.1-1 (specifically Tables IR2.1-1 and IR2.1-2) summarizes how provincial and municipal laws, including standards established pursuant to those laws (such as the Ontario Drinking Water Standards pursuant to the Safe Drinking Water Act, 2002), were considered by CN in assessing the Project. Attachment IR2.2-1 (specifically Tables IR2.2-1 and IR 2.2-2) summarizes how provincial and municipal policies, plans, guidelines, and criteria (such as the Ontario Ambient Air Quality Criteria) were considered by CN in assessing the Project. While there is a material difference between using those standards/targets as assessment benchmarks, and using them as binding requirements, CN remains open to exploring any particular standard or target identified in Attachments IR2.1-1 or IR2.2-1 that the Review Panel determines may warrant further consideration.

b) *Describe whether CN believes By-law 32-17 is applicable to the Project and, if not, whether CN commits, as per part a) of this information request, to voluntarily meet its requirements with respect to construction and operation of the Project.*

Halton's By-law 32-17 would, if applicable, provide the Region the authority to determine through an approval process whether or not CN could construct and operate suitable access points into and out of the Milton Logistics Hub, which of course are essential to its operation. While CN is of the view that it is not obliged to follow that approval process, as indicated in response to IR2.3 (CEAR #592) part a), our hope is to work collaboratively with the Region to implement the required access points, in a manner which addresses the appropriate engineering, safety and transportation management considerations. As noted previously, CN's typical practice and our intention for this Project, is to consider the interests of provincial and local authorities. CN has attempted to engage in constructive dialogue for that purpose in relation to this Project, and CN continues to welcome opportunities for collaboration, including through the Review Panel process. See the answer to (d) below for a description of some of the efforts CN has made to advance the dialogue with the Region.

c) *Describe whether and how CN considered the Regional Municipality of Halton's Access Management Guidelines (2015) or By-law 32-17 in development of the EIS and responses to the Review Panel's information requests.*

CN intends to continue its efforts to work collaboratively with the Region to ensure that the access points required for the Project are designed and constructed in a manner that ensures the appropriate engineering, safety and transportation management considerations are addressed. Preliminary functional designs for the intersections at the terminal access points were provided in the Terminal Road Access Study (Figures 7 and 8 in Appendix A), provided as Attachment IR2.33-1 to the response to IR2.33 (CEAR #592). These preliminary functional designs were based on the 1999 Transportation Association of Canada Geometric Design Guide for Canadian Roads and the Ontario Ministry of Transport's Ontario Traffic Manuals, on which the intersection design elements of the Region's Access Management Guidelines (2015) were also based. Thus, the preliminary functional designs for the intersection are generally consistent with the Region's Guidelines taking available information and existing and planned road configurations into account. Should the Region wish to propose refinements to the preliminary functional designs or have any suggestions related to implementation, CN would be pleased to engage in a dialogue.

In contrast to the 2015 Access Management Guidelines, which address technical standards for new entrances, By-Law 32-17 is largely procedural in nature, identifying an extensive administrative approval process for regional road access. By-Law 32-17 was put in place by the Region more than two years after the EIS was completed, after the Joint Review Panel process

had commenced, and after the Terminal Road Access Study (BA Group 2017) and the Safety Assessment of Site Accesses at the Proposed CN Logistics Hub (30 Forensic 2017) (provided as Attachments IR2.33-1 and 2.33-2, respectively, to the response to IR2.33) were completed; and accordingly was not considered during the development of those documents. Nevertheless, CN's preliminary design for access, including the proposed on-site access road to eliminate truck queuing on regional roads, is consistent with the Region's intention to ensure new entrances are planned, designed, maintained and operated for safe access and to maintain a high level of service for through traffic.

d) *Identify what consultation CN has undertaken with regional or municipal authorities regarding Project access to regional roads, if any.*

CN first reached out to the Region regarding the Milton Logistics Hub in January 2015 to present the Project to representatives of the Halton Region, Town of Milton and Conservation Halton. This presentation included an overview of CN both in North America and Ontario, CN's intermodal business, the need for additional inland container capacity in the region, the rationale for site selection, an overview of the studies CN was undertaking at the time, an initial estimate of truck volumes and an overview of the project layout. At that time, CN was contemplating access to/from Tremaine Road. Two alternative entrances were also proposed during this meeting, one alternative entrance on Britannia Road and a second further north along Tremaine Road.

A follow-up meeting was held in February 2015 to review all project components in more detail including the truck and employee access roads and access to Regional Roads. The same members of the Halton Region, Town of Milton and Conservation Halton present at the January 2015 meeting were also present at the February meeting. At that meeting, CN provided additional detail including drawings for the preliminary site plan, track design, traffic flows & stormwater management as well as the detailed existing environmental conditions reports. Among the items raised by Town and Regional officials was discussion of truck traffic generated by the terminal and potential routing of trucks. Traffic along Tremaine Road and the compatibility of the Tremaine entrance with planned upgrades of the Regional Road network was highlighted as a key consideration.

A third meeting was held in March 2015 with the same stakeholder group (Halton Region, Town of Milton and Conservation Halton). The objective of this meeting was to present an outline of the federal environmental review process, review changes to the terminal layout in response to issues identified in the previous two meetings, discuss environmental constraints and suggested mitigation measures based on the revised design. Specific discussion was held during the meeting regarding the location of the project access road and the new preferred gate entrance on Britannia Road to address truck queuing concerns on municipal roads expressed by Stakeholders (IR Response 2.20 (b) CEAR #592).

CN met again with the Halton Region, the Town of Milton and Conservation Halton in May of 2015. The purpose of this meeting was to discuss the federal review process and municipal elements, among them, access to regional roads.

In October 2015, CN met again with the Halton Region and the Town of Milton together with CN's traffic consultant, BA Group, to follow-up on an information requested of CN and to confirm/clarify several inputs required to complete BA Group's Review of Terminal Generated Truck Traffic Memorandum included in the EIS (Appendix E.17).

Since the filing of the EIS in December 2015 and its subsequent posting in January 2016, CN has reached out to Halton Region and Conservation Halton on several occasions to discuss the Project. However, in response to feedback from the earlier meetings and through consultation with the public, CN retained BA Group and Forensic 30 to further develop the gate entrance design and assess the overall traffic and safety impacts associated with the intersection design. These reports were submitted to the Review Panel in response to IR2.33 (CEAR#592).

IR6.2 Clarification of referenced studies, plans, and other resources

Rationale:

In its information request 2.2, the Review Panel requested that CN provide a table summarizing all federal, provincial and municipal (regional and town) plans as well as policies, guidelines or other resources that were taken into consideration in the planning for the Project and the development of the EIS. CN's response, primarily Tables IR2.2-1 to IR2.2-4, mentioned most documents referenced in the Review Panel's rationale section of that information request, but did not include specific reference to the following three documents:

- *Hydrogeological Studies & Best Management Practices for Groundwater protection guidelines;*
- *Technical Guidance for Private Wells: Water Supply Assessment (Procedure D 5 5); and*
- *The Ontario Building Code.*

Although not included in Table IR2.2-2, CN referred to the Ontario Building Code (Ontario Regulation 332/12) elsewhere in the information request Package 2 response, specifically with respect to estimates of daily potable water use and wastewater volume estimates, as well as recommended flow rates for fire protection water. CN did not identify whether or how the Ontario Building Code was considered elsewhere in the design of the Project or development of the EIS.

In addition, CN referred to the Bronte Creek Watershed Study (Conservation Halton, 2002) in Table 2.1-2 and throughout the information request responses in Package 2. CN also included references to this study in its responses to information request 3.19, including relevant excerpts. However, in Table IR2.2-3 CN referred to a study called the Bronte Creek Subwatershed Study (Conservation Halton, 2002). In the EIS, including in Appendices E.4, E.6, and E.15, CN referred to the subwatershed study. It is unclear whether the Bronte Creek Watershed Study is the same as the Bronte Creek Subwatershed Study, both published by Conservation Halton in 2002.

Information Request:

a) *Provide information on whether and how the documents Hydrogeological Studies & Best Management Practices for Groundwater Protection Guidelines, and Technical Guidance for Private Wells: Water Supply Assessment (Procedure D-5-5) were considered in the development of the EIS.*

b) *Describe whether and how CN considered the Ontario Building Code in planning aspects of the Project other than for potable water use and wastewater volume estimates, as well as recommended flow rates for fire protection water.*

c) *Clarify whether the Bronte Creek Subwatershed Study (Conservation Halton, 2002), referred to in Table IR 2.2-3, is a separate study or the same as the Bronte Creek Watershed Study (Conservation Halton, 2002), referred to elsewhere throughout the Package 2 and 3 responses and the EIS. If there is a difference between the two studies, clarify the specific differences and whether and how CN considered the documents in its EIS.*

CN Response:

a) *Provide information on whether and how the documents Hydrogeological Studies & Best Management Practices for Groundwater Protection Guidelines, and Technical Guidance for Private Wells: Water Supply Assessment (Procedure D-5-5) were considered in the development of the EIS.*

The focus of the Hydrogeological Studies & Best Management Practices for Groundwater Protection Guidelines: Regional Official Plan Guidelines (Guideline) (Halton Region 2014) document is to provide clarification on what hydrogeological studies are required to support approvals for developments proposing individual on-site water (e.g., private groundwater supply wells) and sewage services (i.e., private sewage disposal systems). Typically, these are approvals associated with plans of subdivision (residential, commercial and industrial), condominium applications, and any official plan / zoning bylaw amendments and severance applications associated with these plans. Since the construction of private wells and/or sewage disposal systems (i.e., sewage effluent discharging to the subsurface) are not proposed for the Project, CN did not refer to this Guideline document in the design of the Project or development of the EIS.

Similarly, CN did not refer to the Ministry of Environment and Energy (MOEE) Procedure D-5-5, Technical Guideline for Private Wells: Water Supply Assessment in the design of the Project or development of the EIS, given that this document focuses on the assessment of water supplies for proposed developments that will be serviced by individual private groundwater wells, which are not proposed as part of the potential Project.

b) *Describe whether and how CN considered the Ontario Building Code in planning aspects of the Project other than for potable water use and wastewater volume estimates, as well as recommended flow rates for fire protection water.*

The Administration/Garage building will be designed during the detailed design stage. That detailed design will take into account the Ontario Building Code design and construction specifications. The same will be true with respect to the internal piping and connections to the potable water system and septic tanks proposed to service the building.

c) *Clarify whether the Bronte Creek Subwatershed Study (Conservation Halton, 2002), referred to in Table IR 2.2-3, is a separate study or the same as the Bronte Creek Watershed Study (Conservation Halton, 2002), referred to elsewhere throughout the Package 2 and 3 responses and the EIS. If there is a difference between the two studies, clarify the specific differences and whether and how CN considered the documents in its EIS.*

The "Bronte Creek Subwatershed Study (Conservation Halton 2002)" referenced in Table IR2.2-3 on page 9 of Attachment IR2.2-1 (CEAR #592) is not a separate study. The reference should read "Bronte Creek Watershed Study (Conservation Halton 2002)".

IR6.3 Core activities and provincial compliance approvals

Rationale:

In the Review Panel's information request 2.4, CN was asked to provide a description of the specific discharges for which it intends to seek Environmental Compliance Approvals from the Ontario Ministry of the Environment and Climate Change. CN had stated in subsection 1.4.3.1 of the EIS that it would apply for Environmental Compliance Approval certificates for all points of discharge from the Project. The specific types and points of discharge were not identified in the EIS.

In its response to the Review Panel's information request 2.3, CN provided context that, in its view, exclusive federal authority extends to all works and undertakings that are integrated in operation with an interprovincial railway. CN stated its view that "the construction and operation of a railway terminal falls wholly within its mandate and core activities as an interprovincial railway company and is reflected in the powers expressly granted to CN and other railway companies under the Canada Transportation Act".

In CN's view, at this stage of the Project's development, all Project components or activities are core activities and necessary to the function of CN's interprovincial railway undertaking and, consequently, there are none to which provincial or municipal legislation would apply.

In its specific response to information request 2.4, however, CN noted that its regular practice was to consider on a case-by-case, facts-specific basis whether there are one or more aspects of a particular project that may warrant seeking a provincial environmental approval at the appropriate stage of development. That consideration continues throughout the development phase, advancing as the design is refined and as the details necessary to assess permit requirements become available.

Information Request:

a) *Provide examples from other CN facilities, and in particular other intermodal container terminals, where certifications or approvals were sought from provincial authorities. Identify the specific discharges or other aspects of those projects that were certified or approved by provincial authorities, describe at what stage of the project development approvals were identified as necessary, and provide a rationale for why compliance was required in those cases.*

b) *As CN has concluded that all predicted discharges from the Project are anticipated to emanate from its core activities, describe why CN would consider applying for provincial environmental compliance approvals, given the context of exclusive federal authority over all works and undertakings that are integrated in the operation of the interprovincial railway.*

c) *Identify whether federal standards exist for the each type of discharge typically considered in an Ontario Environmental Compliance Approval, or whether CN proposes to voluntarily meet the equivalent of the provincial discharge standard. In the case of such a commitment, state clearly each discharge and standard CN voluntarily commits to meet.*

If applicable, in developing the response to part c) of this information request, consider responses to other information requests, in particular information request 6.1 (Voluntary regulatory compliance).

CN Response:

a) *Provide examples from other CN facilities, and in particular other intermodal container terminals, where certifications or approvals were sought from provincial authorities. Identify the specific discharges or other aspects of those projects that were certified or approved by provincial authorities, describe at what stage of the project development approvals were identified as necessary, and provide a rationale for why compliance was required in those cases.*

CN has a broad network of facilities across Canada, some of which have provincial approvals in place even though it is not CN's established practice to obtain them. With respect to timing, the information necessary for a provincial agency to assess the terms and conditions that might be included in a discharge approval are not available until the design has advanced to sufficient detail (and the relevant engineer-stamped drawings are available) so that the agency can assess the exact location and features of the system, and assess how the specific components would operate in practice. For the Milton Logistics Hub – as is routine with any project of its size and complexity – that level of design detail will only be completed if an EA Decision Statement is issued allowing the project to proceed, and then in accordance with the applicable conditions. If a positive EA Decision Statement is issued, CN will consult further with the MOECC on the appropriate path forward.

b) *As CN has concluded that all predicted discharges from the Project are anticipated to emanate from its core activities, describe why CN would consider applying for provincial environmental compliance approvals, given the context of exclusive federal authority over all works and undertakings that are integrated in the operation of the interprovincial railway.*

CN values a strong and collaborative relationship with provincial agencies. we recognize local sensitivities and interests, and endeavour to accommodate requests even when the applicable legal framework may not require it. Because of the variables that need to be considered with respect to each potential approval – and because we have not yet completed detailed design for the Project - we cannot provide any further clarity at this stage, except to reiterate that our intention is to continue to consult with the MOECC once the necessary detailed information has been developed, pending a federal decision that allows the Project to proceed.

c) *Identify whether federal standards exist for each type of discharge typically considered in an Ontario Environmental Compliance Approval, or whether CN proposes to voluntarily meet the equivalent of the provincial discharge standard. In the case of such a commitment, state clearly each discharge and standard CN voluntarily commits to meet.*

Table IR6.3-1 identifies the standards that were used in the EIS to assess the on-site discharges anticipated from the Project, distinguishing in each case federal standards from provincial. As noted in the response to IR6.1, although there is a material difference between using a standard as an assessment benchmark/reference point on the one hand, and elevating it to a compliance commitment on the other, CN is open to explore any specific targets/standards that the Joint Panel determines merit further consideration.

Table IR6.3-1 Guidelines/Standards Used in the EIS to Assess Discharges into Air and Water

Document	Authority	Summary of consideration in the EIS
Environmental Protection Act, 1990	Provincial	Emission standards for on-road equipment used to inform the calculation of assumed emissions from on-site trucks.
Safe Drinking Water Act, 2002	Provincial	The Ontario Drinking Water Standards established under this Act used to characterize existing groundwater conditions and to assess changes to the environment.
National Ambient Air Quality Objectives (NAAQOs)	Federal Guidelines/Criteria	Referenced in the Air Quality TDR (EIS Appendix E.1) to define thresholds for assessing air emissions – NO_2, CO, SO_2, PM.
Canadian Ambient Air Quality Standards (CAAQS)	Federal Guidelines/Criteria	Referenced in the Air Quality TDR (EIS Appendix E.1) to define thresholds for assessing air emissions – $PM_{2.5}$.
Guidance Document on Achievement Determination - Canadian Ambient Air Quality Standards for Fine Particulate Matter and Ozone (CCME, 2012)	Federal Guidelines/Criteria	Referenced in the Human Health Risk Assessment (HHRA) TDR (EIS Appendix E.7) to define toxicity reference values for fine particulate matter ($PM_{2.5}$).
Federal Contaminated Sites Risk Assessment in Canada, Part II: Health Canada Toxicological Reference Values (TRVs) and Chemical-Specific Factors Version 2.0 (Health Canada, 2010)	Federal Guidelines/Criteria	Referenced in the HHRA TDR (EIS Appendix E.7) to define toxicity reference values for benzene and benzo-A-pyrene (B(a)P).
Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME, 2002)	Federal Guidelines/Criteria	Used to establish water quality criteria against which anticipated changes in water quality were compared (Hydrology and Surface Water TDR, EIS Appendix E.15; CEAA IR1-16, IR1-22 and IR2-16).
Guidelines for Canadian Drinking Water Quality (CDWQ) (Health Canada 2014)	Federal Guidelines/Criteria	Criteria used to characterize existing groundwater quality (Hydrogeology TDR, EIS Appendix E.6).
Ontario Ambient Air Quality Criteria (AAQC) (MOE 2012)	Provincial Guidelines/Criteria	Provincial standards provided for reference and used in the Air Quality TDR (EIS Appendix E.1) to assess air emissions in those instances where there are no federal standards available – for example, PM_{10}, benzene, 1,3-butadiene, acrolein, acetaldehyde, formaldehyde, and benzo(a)pyrene.
Ontario Drinking Water Standards (ODWS) (MOE 2006)	Provincial Guidelines/Criteria	Additional groundwater quality criteria used to characterize existing groundwater conditions (Hydrogeology TDR, EIS Appendix E.6).
Summary of Standards and Guidelines to Support Ontario Regulation 419/05: Air Pollution – Local Air Quality (MOE 2012)	Provincial Guidelines/Criteria	Referenced in the HHRA TDR (EIS Appendix E.7) to define toxicity reference values for nitrogen dioxide (NO_2), sulphur dioxide (SO_2), coarse particulate matter (PM_{10}), 1,3-butadiene, formaldehyde, acetaldehyde, and acrolein.

Document	Authority	Summary of consideration in the EIS
Provincial Water Quality Objectives (PWQOs) (MOE 1994)	Provincial Guidelines/Criteria	Water quality parameters used to characterize existing conditions (Hydrology and Surface Water TDR, EIS Appendix E.15). Potential water quality changes were assessed against criteria.

CN Milton Logistics Hub ("Project")
CEAR File No. 80100

CN Response to the Review Panel's Information Request 8
Received September 25, 2018

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LIST OF ATTACHMENTS

The following information is provided in partial response to Information Request 8 received from the Review Panel on September 25, 2018 to address IRs 8.3, 8.17 and 8.20. These responses have been prepared based on supplemental information obtained from the Town of Milton and discussions with Health Canada. Additional information pertaining to IRs 8.1, 8.6 - 8.8, 8.10 – 8.16, 8.18 and 8.19 was provided under separate cover on December 19, 2018 (CEAR #705). Responses to the remaining traffic-related IRs (IR8.2, 8.4, 8.5 and 8.9) will be provided under separate cover.

HUMAN HEALTH

IR8.3 Other contributions to baseline exposure ratios and exposure pathways to human health effects

Rationale: *In its response to the Review Panel's information request #4.24 (CEAR #632), CN stated that although particulate matter (PM_{10} and $PM_{2.5}$) and diesel particulate matter can settle on the ground, the known toxicity of particulate matter and diesel particulate matter is related to inhalation, not to ingestion or dermal contact. CN stated in response to information request #4.27 that omitting the deposition of particulate matter and diesel particulate matter on agricultural and garden produce as a pathway in the human health risk assessment is consistent with Health Canada's Human Health Risk Assessment for Diesel Exhaust (Health Canada 2016).*

In its comments on CN's responses to the Review Panel's information request #4.24 (CEAR #672), Halton Municipalities stated that CN did not consider background exposure arising from sources other than air in its exposure ratios. In its view, CN should also have considered potential uptake by vegetation, deposition to the soil surface, and other methods of exposure.

In its comments on CN's response to the Review Panel's Package 3-5 information requests, Health Canada (CEAR #666) agreed with CN that the predominant pathway of exposure to diesel exhaust is via inhalation, but also noted that it is prudent to consider dermal contact and ingestion of diesel exhaust as potentially operable exposure pathways. Health Canada stated that while its Human Health Risk Assessment for Diesel Exhaust (Health Canada 2016) focused on the inhalation pathway, the potential exists for deposition of diesel particulate matter onto soil, garden produce and recreational waters. Health Canada also stated that diesel particulate matter has the potential to adsorb other chemicals that may settle onto soil, garden produce and recreational waters. Health Canada stated that the potential for these pathways to be operable via air deposition should be included in the human health risk assessment.

Information Request:

a) *If the Project may result in contaminants settling onto soils, garden produce or recreational waters, assess the Project's risk to human health based on other applicable exposure pathways and chemicals of potential concern, including the deposition of particulate matter and diesel particulate matter, and subsequent oral or dermal contact.*

CN Response:

Air emission sources associated with the operation of the Project are primarily limited to discharge emissions from the combustion of fuels (i.e., diesel engine exhaust). The main exposure route for airborne contaminants is inhalation; however, airborne particulate matter may settle onto surfaces. Based on a review of the contaminants of potential concern (COPC) associated with

these emissions, particulate emissions are characterized by diesel particulate matter and polycyclic aromatic hydrocarbons (PAHs). The potential for health effects associated with deposition of these particulates is described below. Further details regarding the selection of the COPCs are provided in the Milton Logistics Hub Technical Data Report - Air Quality (Appendix E.1 of the EIS).

Diesel Particulate Matter

In their 2003 toxicological assessment, the US EPA did not provide an oral toxicity reference value (TRV) for diesel engine exhaust because all available studies at the time focused on inhalation exposure (US EPA 2003). More recently, effects from diesel engine exhaust have been documented after multiple routes of exposure, including oral exposure (Müller et al. 2004, Danielsen et al. 2008, IARC 2014).

Although an oral TRV (i.e., oral slope factor) has not yet been developed for oral exposures to diesel engine exhaust, Vermeulen et al. (2014) conducted a meta-regression of lung cancer mortality and cumulative exposure to elemental carbon, a proxy measure of diesel engine exhaust, based on relative risk estimates reported by three large occupational studies. From these works, Vermeulen et al. derived a meta-exposure–response curve for diesel exhaust and lung cancer mortality that can be applied to occupational and environmental exposure scenarios. More recent work by Vermeulen and Portengen (2016) further support this original exposure response curve.

The exposure-response curve for diesel exhaust and lung cancer mortality was based on the relationship between concentrations of diesel engine exhaust (as represented by elemental carbon) and cancer mortality. Because the deposition of diesel engine exhaust is directly related to the concentration of diesel engine exhaust in air (US EPA 2005), the exposure-response curve developed by Vermeulen et al. (2014) would therefore include incidental oral, dermal and inhalation exposures to diesel engine exhaust. The exposure-response curve was used by CN in their assessment of relative risk (RR) associated with exposure to diesel engine exhaust and is provided in CN's submission to the Review Panel dated May 14, 2018 entitled "Assessment of Cancer Risk Associated with Diesel Exhaust – Supplemental Submission in Response to IR3.7" (CEAR #643). In brief, the conclusion of the assessment of relative risk was that increased relative risk above baseline from the CN contribution is very low. Health Canada and provincial agencies have not established a negligible risk threshold for interpreting the results of a relative risk calculation. However, the concentrations of elemental carbon calculated for the CN contribution are similar to, or lower than, other urban areas. Given that the assessment from the EIS results in a conclusion of negligible risk and the assessment of relative risk indicates exposure and risks that are similar to other urban areas, results from these two lines of evidence indicate that risk from exposure to potential Project-related emissions of diesel exhaust is very low.

Polycyclic Aromatic Hydrocarbons

As noted in Appendix E.7 of the EIS, the health risks associated with exposure to PAHs were assessed in terms of benzo(a) pyrene (and specifically, benzo(a)pyrene total potency equivalents (B(a)P TPE) in the response to IR 3.11). The deposition rate associated with PAHs was estimated using US EPA (2005) equation as shown below:

$$Q = C_{air} \times V_d$$

Where Q = surface atmospheric deposition rate (g/cm²/yr)
C_{air} = concentration of B(a)P TPE in air
= 4.5E-05 µg/m³ (4.50E-17 g/cm³), based on Project alone maximum predicted annual average concentration as reported in CN's response to IR 3.11
V_d = 0.5 cm/s (1.58E+07 cm/yr), based on recommendations in US EPA (2005) for organics, and supported by Zhang et al. (2015) which suggested range of 0.01 to 0.5 cm/s for PAHs

The calculated deposition rate (Q) of 7.1E-10 g/cm²/yr for B(a)P TPE is considered low; however, to evaluate whether these secondary pathways represent a potential risk to human health, a review of the maximum potential Project related effects to soil chemistry, alone and in combination with background concentration, were evaluated. The maximum potential increase in soil concentration for carcinogenic PAH was predicted based on maximum deposition rates, using the following equation from Drivas et al. (2011):

$$C_S = \frac{QT}{\rho \cdot Z_d} \times 10^6$$

Where

Cs = Predicted change in soil concentration, mg/kg
Q = Surface atmospheric deposition rate of 7.1E-10 g/cm²/yr for B(a)P TPE (see above)
T = Time of deposition of 40 yr (based on operational life of Project)
ρ = Bulk density of soil of 1 g/cm³ (conservative, based on typical ranges of 1.0 to 1.8 g/cm³)
Z_d = Mixing depth of 10 cm after Drivas et al. (2011), which suggests 10 cm mixing depth after 20 years of deposition
10^6 = Conversion factor (g/g to mg/kg)

As shown in Table 1, the estimated maximum change in soil chemistry as a result of the Project (expressed as B(a)P TPE) is 0.0028 mg/kg. Predicted concentrations were also compared to the CCME soil quality guideline of 5.3 mg/kg. The CCME guideline is based on direct contact to B(a)P TPE in soil (i.e., incidental ingestion, dermal contact, and inhalation of re-suspended particulate from soil).

Table IR8.3-1 Summary of B(a)P TPE Concentration in Soil (mg/kg)

Baseline[1]	Project Alone (Cs)	Baseline + Project	CCME Soil Quality Guideline for Human Health
0.05	0.0028	0.0528	5.3

Notes:
1 - Baseline concentration reflects reported background concentration of B(a)P for agricultural soils in Ontario (OMOE 2011).

Plants grown on PAH-contaminated soils have only a limited ability to take in through the roots, and PAHs tend to have a limited ability to bioaccumulate in most terrestrial mammals, and very limited if any ability to biomagnify (CCME 2010). As the change in soil concentration is small (less

than 0.05% of the CCME guideline), uptake of PAHs into food is limited and country foods ingestion is considered a negligible pathway.

As the maximum change in soil chemistry is far below federal human-health based guidelines, the potential risk to human health from settling of particulates (i.e., PAHs) is negligible.

NOISE AND VIBRATION

IR8.17 Low frequency noise

Rationale: *In its submission to the review panel on the sufficiency of the EIS (CEAR #533), Health Canada stated that in Table 4.5 of Appendix E.10, CN did not account for noise sources that may contain strong, low frequency content, and noted that receptors may experience stronger annoyance reactions to these kinds of sources.*

The Canadian Transportation Agency's Noise and Vibration from Idling Locomotives publication states idling locomotives create low frequency noise. Noise from low frequencies can travel over long distances with little attenuation or reduction in strength. The noise can penetrate through buildings, even when windows are closed, and cause objects to resonate or rattle. Also, as a building's sound insulation tends to reduce the impact of higher frequencies, it may exacerbate the effect of low frequency sounds inside the building. Airborne noise at low frequencies can also induce the vibration of lighter elements of a building, and may be incorrectly perceived as ground-borne vibration.

In its response to information request #4.79 (CEAR #652), CN considered low frequency noise in the 31.5 Hz and 63 Hz octave bands and concluded that the annoyance at the nearest residences is expected to be minimal. CN concluded that predicted noise impacts for operational noise remained unchanged and would not warrant additional mitigation. CN also indicated that humans do not hear noises below 20Hz and therefore noise measurements below 31.5 Hz are typically not collected. Further, CN indicated that noise propagation modelling in CadnaA is not available for frequencies below 31.5Hz.

In its submission to the Review Panel on the sufficiency of CN's Package 4 responses (CEAR #666), Health Canada noted that according to the American National Standards Institute's Quantities and Procedures for Description and Measurement of Environmental Sound Part 4: Noise Assessment and Prediction of Long-Term Community Response (2005), annoyance associated with rattles from these low-frequency noise (LFN) sources may be prevented if the sound levels in the 16-, 31.5- and 63-Hz octave are less than 70 dB.

Health Canada also stated that low frequency noise is not generally well perceived by the human ear. However, this type of noise may induce vibrations in lightweight structures in residences or sleeping quarters that may be perceptible or cause a "rattle." The properties of low frequency noise allow it to travel farther distances with less atmospheric attenuation than higher frequencies. Studies indicate that low frequencies (below 100 Hz) are only attenuated by 3 dB per doubling of distance downwind of noise sources for distances of 0.3 to 20 km, and attenuated by 6 dB per doubling of distance upwind of noise sources from 0.4 to 3 km. Low frequency noise is also less susceptible to conditions that mitigate the transfer of noise from outdoors to indoors including structural barriers, environmental conditions, and topography. Research indicates that annoyance related to noise is greater when low frequency noise is present (ISO 1996-1:2016)

because of the rattling effect. In addition, very little change in the sound pressure level at lower frequencies is needed to have a disproportionate increase in subjective loudness. This annoyance may result in increased complaints from nearby residents.

Health Canada further stated that to prevent rattles from low frequency noise and the associated annoyance from this effect, the American National Standards Institute (ANSI) indicates that the (energy) sum of the sound levels in the 16-, 31.5- and 63-Hz octave bands should be less than 70 dB. If the "rattle criterion" exceeds 70-dB, Health Canada advised that proponents should implement feasible mitigation measures. ANSI S12.9-2005 indicates that there is evidence that noise-induced rattles are very annoying, and this annoyance may be independent of the number or duration of events. Additionally, ANSI S12.9-2005 provides a more sophisticated mathematical procedure for assessing percentage highly annoyed (%HA) when low frequency noise is present. Health Canada advises using this procedure when the C-weighted Ldn exceeds the A-weighted Ldn by more than 10 dB. This is further outlined in Appendix D of the American National Standards Institute Quantities and Procedures for Description and Measurement of Environmental Sound Part 4: Noise Assessment and Prediction of Long-Term Community Response (ANSI S12.9-2005/Part 4), Standards Secretariat Acoustical Society of America.

Health Canada also states that the correct interpretation of the ANSI S12.9-2005/Part 4 standard has been applied for the project. Although 16 Hz estimates are not available, the low frequency noise estimates show 31.5 Hz is lower than 63 Hz. To ensure there is no strong 16 Hz fundamental component it should be confirmed whether locomotive idling speeds fall within the 16 Hz octave band.

Information Request:

a) *Confirm whether locomotive idle speeds are expected to be within a revolution per minute (rpm) range that could result in elevated low frequency noise (LFN) in the 16 Hertz (Hz) octave-band. If they are, update the noise assessment for change in %HA as per ANSI (2005). Describe any additional mitigation measures that might be required if noise exceeds acceptable levels as a result of this analysis.*

CN Response:

Based on the known rpm of idling locomotives (i.e., between 516 and 970 rpm, depending on the locomotive), the harmonic content of locomotive engine noise could be within the 16Hz frequency range. A review of on-site measurements that were conducted for the Project identified idling noise measurements of four idling locomotives for 63Hz, 31.5Hz and 16Hz[1].

During the course of our review of low-frequency noise from idling locomotives, we identified the following issues with determining the % change in %HA based on the ANSI 2005 standard:

- Based on the locomotive measurements (including 16Hz, 31Hz and 63Hz), we noted a large discrepancy (i.e., range of 7dB variation at 16Hz) in the low frequency noise depending on the locomotive measured.
- A review of the outdoor propagation standard ISO 9613-2 notes that propagation predictions are only valid for 63Hz, although CADNA/A provides predictions down to 31.5Hz. A 16Hz

[1] CN acknowledges that in the response to IR4.79 we noted that measurements were not available below 31.5Hz, and were incorrect in stating that measurements were not collected.

propagation prediction is only possible based on a regression analysis of the 63Hz and 31.5Hz bands, and not on the specific attenuation effects (including ground absorption, distance, barrier effects, ground absorption) provided in the ISO standard.

- The ANSI 2005 is referenced by CTA Railway Noise Measurement and Reporting Methodology (CTA 2011). However, the CTA 2011 guidance on low-frequency noise only identifies the noise-induced rattles criterion, and notes that the ANSI 2005 is preferable for noise sources that are farther away.

- A review of ANSI (2005) Item 1.1 Note states "The long-term period is typically one year. However, the user of this Standard can employ these methods for shorter periods of time, but they should report this change and not attempt to predict highly annoyed using Clause 8.3 or Annex F, since the Annex F data all represent long-term situations" (ANSI 2005). The locomotives associated with the Project are expected to idle for only short periods of time (*i.e.*, 15min idling times, 4 times a day at a given idling location); this does not constitute a long-term continuous exposure to low-frequency noise.

Given these issues, we are of the opinion that it would not be appropriate to apply ANSI 2005 to evaluate low-frequency noise from the short-duration idling of locomotives associated with the Project. Further, the prediction required to assess % change in %HA (even if the ANSI 2005 were to be applied) would likely not be representative of the actual low-frequency impact from idling locomotives.

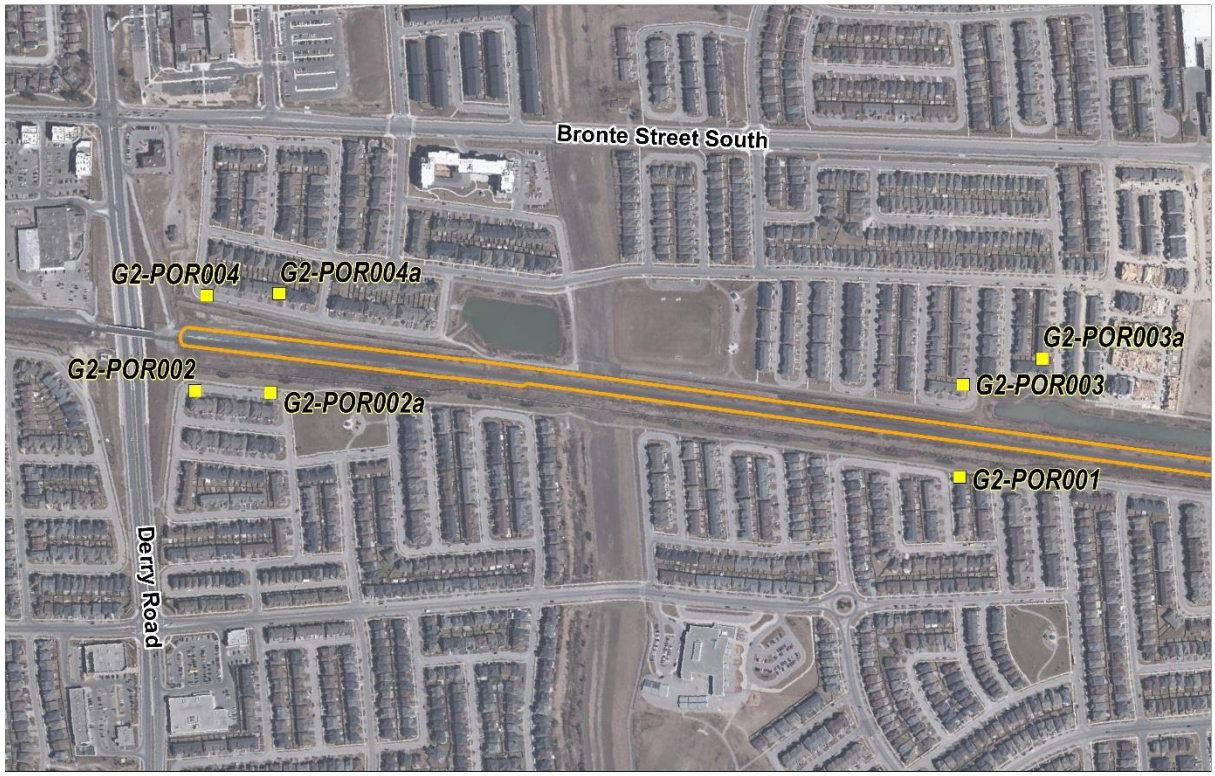
Therefore, in response to this IR, we have adopted the outdoor criterion for low frequency noise suggested by Broner (2011). Broner (2011) identifies a C-Weighted noise level for community annoyance from low frequency noise sources, with different thresholds applying in different circumstances based on the frequency (intermittent or continuous) of low frequency noise. For this situation, Broner (2011) identified a maximum allowable dBC level of 65 to 70 dBC for residential receptors subject to intermittent (1-2 hours in duration) low frequency noise to minimize low frequency noise and vibration problems.

To address potential low frequency noise associated with idling locomotives adjacent to the subdivisions north of Louis St. Laurent, CN has calculated the corresponding C-Weighted noise level predicted at the adjacent receptors, as presented in **Table IR8.17-1** below. Additional receptors (POR002a, POR003a, POR004a) to those identified in the Noise Effects TDR (EIS Appendix E.11) have been added closer to the location where idling locomotives are anticipated, for the purposes of this assessment, as illustrated in **Figure IR8.17-1**.

Table IR8.17-1 Low Frequency Noise from Idling Locomotives

POR	Noise Level (dBC)
G2-POR001	43
G2-POR002	57
G2-POR002a	63
G2-POR003	51
G2-POR003a	50
G2-POR004	57
G2-POR004a	61

Figure IR8.17-1 Low Frequency Noise PORs for Train Idling



The results show that the low-frequency noise levels from idling locomotives are expected to be below the 65 dBC criterion for the area. Further, additional intermediate receptors adjacent to the mainline were considered closest to the anticipated location of idling engines, and these are also shown to be below 65 dBC. Based on the predicted dBC levels for low frequency noise, we expect that idling locomotives will not result in elevated low frequency noise (LFN) in the 16 Hz octave-band beyond these limits for the area.

To ensure concerns regarding low frequency noise are addressed if they arise in the future, CN proposes to implement confirmatory noise monitoring for low frequency noise from idling locomotives (refer to the response to IR4.82; CEAR #652). This would involve completing noise monitoring measurements at the idling location. If complaints are received, the noise data can be verified to review whether exceedances occurred. If this were to occur, CN will investigate applicable low frequency noise mitigation (for example administrative controls, idling speed modifications to reduce rpm such that they do not generate low-frequency noise, and implementing new technologies, such as Automatic Engine Start-Stop (AESS) Control Technology, Auxiliary Power Unit (APU) Technology, or Shore Power Plug-In Technology).

WILDLIFE

IR8.20 Consideration of potential species at risk at the South Milton site

Rationale: *In its responses to the Review Panel's information request #1.3 (CEAR #561 and #574), CN considered Western Chorus Frog to be absent from the local assessment area. In its responses to the Review Panel's information request #5.8 (CEAR #647), CN noted that Western Chorus Frog may occur in the regional assessment area but predicted that potential adjacent habitats would not be disturbed by operations with the proposed noise mitigation in place.*

In its comments on CN's response to the Review Panel's information request #2.12, Halton Municipalities (CEAR #667) indicated that data from the Town of Milton (2014 and 2016) documented Western Chorus Frog immediately adjacent to the CN tracks. It is unclear exactly where the species was documented in relation to the Project and whether CN has considered this information.

Information Request:

a) *Clarify whether and how CN considered the Town of Milton's 2014 and 2016 data that documented the presence of Western Chorus Frog near the existing CN mainline tracks. If CN has not yet considered this information, discuss whether the information changes any of the effects predictions in the EIS or whether additional mitigation would be necessary for Western Chorus Frog.*

CN Response:

While the Halton Municipalities' submission (CEAR#667) suggested the Town of Milton has information from 2014 and 2016 regarding the presence of Western Chorus Frog in proximity to the CN mainline, the submission did not provide any details as to the location of the occurrence. Therefore, to support the response to this IR, CN requested the location data from the Town of Milton (**Attachment IR8.20-1: Western Chorus Frog Data Request**). The Town of Milton provided the data pursuant to a confidentiality agreement with CN and Stantec. CN and Stantec are not at liberty to disclose the specific location of the occurrence, but can confirm that the data from the Town of Milton pertain to observations adjacent to the mainline within the LAA for the Project. This new information has been reviewed in relation to the Project location, assessment of potential effects and mitigation commitments identified in the EIS.

While Western Chorus Frog has not been identified within the PDA (either during CN field surveys or considering the data from the Town of Milton), the EIS has conservatively assumed and considered the potential for this species to occur within proximity of the proposed Project (i.e., within the LAA) through an assessment of potential impacts and identification of mitigation measures (EIS Section 6.5.3.9).

Based on this new information, the only project component located in proximity to these new observations is a new track along the mainline and corresponding replacement / extension of a culvert. Disturbance to this species and its habitat has the potential to occur during construction; however, the implementation of mitigation measures already proposed in the EIS (i.e., exclusion fencing, sediment and erosion control, timing windows) is expected to mitigate potential adverse

effects on Western Chorus Frog, such that no significant residual adverse effect on Western Chorus Frog is expected to occur.

As a result, the new data received from the Town of Milton do not change the conclusions of the EIS or the mitigation measures proposed. During detailed design, specific attention will be paid to ensure that the mitigation measures proposed in the EIS are specifically incorporated into the Environmental Management Plan and implemented during construction in the vicinity of this occurrence.

REFERENCES

American National Standards Institute (ANSI). 2005. Quantities and Procedures for Description and Measurement of Environmental Sound Part 4: Noise Assessment and Prediction of Long-Term Community Response (ANSIS12.9-2005/Part 4). Standards Secretariat Acoustical Society of America.

Broner, N., 2011. A Simple Outdoor Criterion for Assessment of Low Frequency Noise Emission. Acoustic Australia, Vol. 39 April (2011) No.1.

Canadian Transportation Agency. 2011. Railway Noise Measurement and Reporting Methodology.

CCME (Canadian Council of Ministers of the Environment). 2010. Canadian Soil Quality Guidelines Carcinogenic and Other Polycyclic Aromatic Hydrocarbons (PAHs) (Environmental and Human Health Effects). Scientific Criteria Document (revised). PN 1445, ISBN 978-1-896997-94-0 PDF

Danielsen, P.H., L. Risoma, H. Wallin, H. Autrup, U. Vogel, S. Loft, P. Møller. 2008. DNA damage in rats after a single oral exposure to diesel exhaust particles. Mutation Research, Vol. 637, pp. 49–55.

Drivas, P., T. Bowers, and R. Yamartino. 2011. Soil mixing depth after atmospheric deposition. I. Model development and validation. Atmospheric Environment. Vol. 45, pp. 4133-4140.

International Agency for Cancer Research (IARC). 2014. Diesel and Gasoline Engine Exhausts and Some Nitroarenes, Volume 105, IARC Monographs on the Evaluation of Carcinogenic Risks to Humans.

International Standards Organization (ISO). 2017. Acoustics – Attenuation of sound during propagation outdoors – Part 2: General Method of Calculation (ISO 9613-2).

Müller, K.A., E. O. Farombi, P. Møller, H. N. Autrup, U. Vogel, H. Wallin, L. O. Dragsted, S. Loft, M. L. Binderup. 2004. DNA damage in lung after oral exposure to diesel exhaust. Mutation Research, Vol. 550, pp. 123–132.

Ontario Ministry of the Environment (OMOE). 2011. Rationale for the Development of Soil and Ground Water Standards for Use at Contaminated Sites in Ontario, Standards Development Branch, Ontario Ministry of the Environment, PIBS 7386e01.

United States Environmental Protection Agency (US EPA). 2003. Integrated Risk Information System (IRIS) Chemical Assessment Summary – Diesel Engine Exhaust. Accessed on-line October 2018: https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0642_summary.pdf#nameddest=rfd

United States Environmental Protection Agency (US EPA). 2005. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities. Office of Solid Waste and Emergency Response. September 2005. EPA530-R-05-006.

Vermeulen, R. and Portengen, L. 2016. Is diesel equipment in the workplace safe or not? Occup Environ Med 2016;73:846–848. doi:10.1136/oemed-2016-103977.

Vermeulen, R., Silverman, D.T., Garshick, E., Vlaanderen, J., Portengen L., and Steenland K. 2014. Exposure-response estimates for diesel engine exhaust and lung cancer mortality based on data from three occupational cohorts. Environ Health Perspect 2014;122:172–7.

February 15, 2019

ATTACHMENT IR8.20-1
WESTERN CHORUS FROG DATA REQUEST

Canadian National

Luanne Patterson
Sr System Manager - EA
Environment

Canadian National
Box 8100
Montreal, Quebec Canada
H3C 3N4

October 31, 2018

Barbara Koopmans
Commissioner of Planning and Development
Town of Milton
150 Mary Street
Milton, Ontario
L9T 6Z5

By email
Dear Ms. Koopmans:

Please accept this request for information regarding the Town of Milton data from 2014 and 2016 documenting Western Chorus Frog and/or their habitat immediately adjacent to the CN tracks, as identified in the Halton Municipalities' correspondence to the Joint Review Panel dated July 16, 2018 (CEAR #667).

As you are aware, the Project is undergoing a review by a Joint Review Panel (the Panel) established under the Canadian Environmental Assessment Act, 2012, and the Canada Transportation Act. In response to the Panel's review of the information submitted by CN and project stakeholders, CN has been requested by the Panel to consider the Town of Milton's 2014 and 2016 data in our assessment of potential effects from the CN Milton Logistics Hub.

In order to do so, we request that the Town of Milton provide such information, including relevant information regarding the identified habitat and the location, frequency, and call-count intensity of observations of Western Chorus Frog in proximity to the CN mainline.

We request this information be provided as soon as possible and no later than November 9, 2018.

Should you have any questions regarding the above, please do not hesitate to contact me.

Sincerely,

<Original signed by>

Luanne Patterson
Senior System Manager – Environmental Assessment

cc: Curt Benson, Halton Region
Darren Reynolds, CN
Andrew Taylor, Stantec