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July 26, 2021

Debra Sikora
Panel Chair
Marathon Palladium Project Joint Review Panel
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Subject: Health Canada's recommended information requests (IR) for the Environmental Impact Statement (EIS) Addendum (2021) for the Marathon Palladium Project.

Dear Debra Sikora,

Health Canada is participating in the review of Generation PGM Inc's (the Proponent's) Marathon Palladium Project (the Project) as a Federal Authority under the *Canadian Environmental Assessment Act, 2012* (the Act).

As per the Panel's request on April 20, 2021, Health Canada has conducted a review of the EIS Addendum and associated documents to determine whether information on air quality, noise, drinking and recreational water quality, country foods, and human health risk assessment (HHRA) sufficiently addresses effects of the aforementioned Project on human health.

Health Canada's comments are included in Appendix A. In general, Health Canada's review has identified a number of areas where the potential risks to human health are not adequately characterized. General comments to consider monitoring and follow-up programs have been provided, along with specific requests for clarifications of the information contained in the EIS and associated technical data reports. The following highlights some areas of concern:

- The EIS does not sufficiently address the potential exposures and associated health risks that may be experienced by Indigenous and non-Indigenous Traditional Land and Resource Users (TLRUsers) near the mining site.
- Health risks associated with exposure to project-related air contaminants may be underestimated.
- It is unclear whether all contaminant sources are considered in the surface water quality predictions during the operations and post-closure phases.
- Potential accumulation of project contaminants in country foods and the associated health risks are not sufficiently considered.
- Noise-related impacts on human health are not adequately assessed and/or addressed.

Health Canada's review and associated comments assume that the environmental models predicting pollutant concentrations are accurate. Future changes to modeling results may require a subsequent review by Health Canada and revisions to the comments provided.

Suggested additional information and revisions may impact sections of the EIS and associated documents not specifically listed in the comments provided. It is assumed that any future changes made based on these comments will be appropriately reflected throughout the EIS, technical data reports and information request responses, as required.

Should you have any questions, please contact the undersigned.

Sincerely,

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Kitty Ma (A/National Director) signing for

Chantal Roberge

National Director

Environmental Health and Internationally Protected Persons Programs

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Appendix 1: Marathon Palladium Project – Technical Review of Environmental Impact Statement (EIS) Addendum (2021)

Issue #	Reference to EIS Guidelines or Panel Terms of Reference	Reference to EIS 2012, EIS Addendum 2021 and Original IR	Rationale	Information Request
HC-01	<p>EIS Guidelines</p> <p>Section 2.5.2, pdf p.33</p> <p>Section 2.6.4.3, pdf p.47</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Section 5, Appendix D10, pdf p.49</p> <p>Section 5.1.2, Appendix D10, pdf p.108-109</p> <p>Section 4.2, Appendix D10, pdf p.32</p> <p>Table 4-6, Appendix D10, pdf p.45</p> <p>5.1.3, Appendix D10, pdf p.109-111</p> <p>Section 1.5.2.1, Chapter 1, pdf p.42</p> <p>Section 1.5.6.1,</p>	<p>The EIS does not assess potential health risks associated with exposures within the property boundary.</p> <p>a) Indigenous and non-Indigenous visitors may access areas within the property boundary for Traditional Land and Resource Use (TLRU) purposes and it is unclear whether access to these TLRU locations will be limited or restricted by the Proponent.</p> <ul style="list-style-type: none"> • The EIS states that public access to the site study area (SSA) will be prohibited during all project phases and safe access in the local study area (LSA) may be provided as long as it is outside the mine’s direct zone of influence (Section 5, Appendix D10, pdf p.49). This is contradicted by a statement that safe access will be allowed to and through areas of the SSA outside of the primary areas of mining activity, to Bamooos Lake (through an existing recreational trail from Hare Lake) and Pic River (Section 5.1.2, Appendix D10, pdf p.108-109). • Biigtigong Nishnaabeg First Nation (FN), the nearest FN community, reports extensive TLRU activities (such as hunting, trapping, fishing and harvesting plants) in the general vicinity of the project area, including the SSA (Section 4.2, Appendix D10, pdf p.32). • The receptor ‘Town Entrance Park and Picnic Area’ appears to be located within the SSA/LSA (at the southeast corner of the Highway 17 and Camp 19 Road/Peninsula Road intersection) (Table 4-6, Appendix D10, pdf p.45) and it is unclear whether access to these recreational areas will be restricted during the project life. <p>b) Off-duty workers are not identified as a receptor (Sections 5.1.2 and 5.1.3, Appendix D10, pdf p.108-111). The locations of the</p>	<p>Health Canada (HC) recommends the following be requested from the Proponent:</p> <p>a) Provide the approximate locations of Indigenous and non-Indigenous TLRU activities (including country foods harvesting) within the property boundary on a map. Clarify whether the TLRUsers will be allowed access to the SSA.</p> <p>b) Clarify whether any of the currently selected modelled receptor locations are representative of off-duty workers.</p> <p>c) Provide a human health risk assessment (HHRA) of exposure to contaminated air, water and country foods as well as an assessment of potential noise impacts on TLRUsers or off-duty workers within the property boundary.</p> <p>d) Clarify whether Indigenous and non-Indigenous TLRUsers will be notified of health risks associated with land use near the mining site (including consumption of country foods harvested near the SSA).</p>

		<p>Chapter 1, pdf p.67</p> <p>Table 5-23, Appendix D10, pdf p.63-67</p> <p>Figure 11, Appendix D2, pdf p.62</p> <p>Figure 15, Appendix D2, pdf p.66</p> <p>Section 5.1.1.3.2, Appendix D10, pdf p.99</p> <p>Section 5.2.4.4, Chapter 5, pdf p.27</p> <p>Table 5.2-9, Chapter 5, pdf p.33</p>	<p>construction camp (Section 1.5.2.1, Chapter 1, pdf p.42) and mining accommodation complex (Section 1.5.6.1, Chapter 1, pdf p.67) and their associated drinking water source(s) are not confirmed yet but are anticipated to be within the general areas of the project site or near the Town of Marathon. If the camps are built near the SSA, drinking water quality of wells may be impacted by project activities.</p> <p>c) Certain modelled contaminants of potential concern (COPCs) [such as benzo(a)pyrene (B(a)P), nitrogen dioxide (NO₂), crystalline silica, fine (PM_{2.5}) and coarse (PM₁₀) particulate matter (PM), total suspended particulates (TSP)] are predicted to exceed or nearly exceed their respective short-term air quality criteria at the property boundary (Table 5-23, Appendix D10, pdf p.63-67), and concentrations of these COPCs will presumably be higher within the boundary. Project-related noise levels will also be higher near the mining site (Figures 11 & 15, Appendix D2, pdf p.62 & 66). Although the users are not expected to stay near the mining site for a prolonged period of time, short-term exposure to certain air pollutants (e.g., NO₂) and high-energy impulsive noise (e.g., blasting) can cause adverse health effects^{1,2}.</p> <p>Additionally, according to Section 5.1.1.3.1 (Appendix D10, pdf p.99): <i>“During Project construction, the predicted changes in CoPC concentrations in environmental media and therefore changes in uptake into country food items were determined to be limited to a small area around the SSA, and did not extend to the areas of the LSA and RSA where country foods are obtained.”</i> If country foods collected near the SSA are consumed by Traditional Land and Resource Users (TLRUsers) and off-site consumers, ingestion of contaminants via food can be an operable pathway of exposure. Also, it is possible that TLRUsers may consume spring water and</p>	
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¹ United States Environmental Protection Agency (USEPA). 2016. Nitrogen Dioxide (NO₂) Pollution. Available at: <https://www.epa.gov/no2-pollution/basic-information-about-no2>

² Health Canada (HC). 2017. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. Available at: <https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-evaluating-human-health-impacts-noise.html>

			<p>surface water (e.g., Hare Lake, Pic River, and tributaries to Lake Superior and Pic River) when visiting the SSA.</p> <p>d) The Proponent commits to consulting with Indigenous groups about safe land and resource access (Section 5.2.4.4, Chapter 5, pdf p.27) and to work with communities to maintain and/or improve access to the mine site where feasible (Table 5.2-9, Chapter 5, pdf p.33). However, it is unclear whether TLRUsers will be informed about the health risks associated with TLRU activities in the vicinity of the property boundary.</p>	
HC-02	<p>EIS Guidelines</p> <p>Section 2.7.2.1, pdf p.56</p> <p>Section 2.7.3.5, pdf p.73</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Appendix B, Appendix D1, pdf p.186-190</p> <p>Figure 5, Appendix D1, pdf p.152</p> <p>Figure 13a to Figure 14e, Appendix A, Appendix D1, pdf p.166-185</p>	<p>Some receptor locations are not identified on the 'Location of Special Receptor' map. The EIS also does not provide contour maps of total predicted concentrations for COPCs in ambient air.</p> <p>a) Appendix B (Appendix D1, pdf p.186-190) presents a summary of air quality/HHRA/TLRU special receptors (97). Some of the receptors [such as PS_7, R_10, 12, 13, 14; O_3, 5, S_2, 4, PW_4, H_1 (hospital), P_2,3,4 (parks); W_5, 28, 29 (water bodies); M1-M5 (ambient air monitoring locations); PR_1-7 (Biigtigong Nishnaabeg FN reserve)] are not identified in Figure 5 - Location of Special Receptors (Appendix D1, pdf p.152). Locations of these receptors are crucial to understanding the impact of project-related air emissions on these receptors.</p> <p>b) Figures 13a to 14e in Appendix A (Appendix D1, pdf p.166-185) present concentration contour plots for different COPCs only for the 'project alone' scenario. While this scenario may be useful to determining the study area boundaries, contour plots for 'background + project' scenario overlaid with receptor locations will identify the overall health risks from exposure to total concentrations and associated need for mitigation measures. In addition, contour plots demonstrating the pattern and intensity of the COPC deposition overlaid with a map of country food harvesting areas will further enhance understanding of exposures associated with consumption of country foods by atmospheric deposition of COPCs.</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>a) Provide an updated map identifying all selected receptors listed in Appendix B of Appendix D1.</p> <p>b) Provide contour plots for total (background + project) COPC concentrations and deposition overlaid with receptor locations and approximate country food harvesting locations in the SSA, LSA and regional study area (RSA). Should there be concerns regarding confidentiality of country food harvesting locations, provide a qualitative description.</p>

HC-03	<p>EIS Guidelines</p> <p>Section 2.6.1.2, pdf p.37</p> <p>Section 2.7.3.5, pdf p.73</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Section 4.4, Appendix D1, pdf p.33-34</p> <p>Section 5.1.1.1.4.1, Appendix D10, pdf p.73</p> <p>Section 5.1.1.1.4.2, Appendix D10, pdf p.76</p> <p>Table 5-2, Appendix D10, pdf p.66</p>	<p>Selected background air quality data may not represent project site conditions.</p> <p>Magnitude criteria for the air quality assessment are based on an increment compared to baseline and the exceedance of ambient air quality criteria. Baseline air quality was characterized based on the most recent available data from National Air Pollution Surveillance (NAPS) stations located in Sault Ste. Marie, Thunder Bay, North Bay and Winnipeg (Section 4.4, Appendix D1, pdf p.33-34). While using ambient concentration data from urban/industrial areas as baseline for a project located in a rural area is likely to overestimate the predicted COPC concentrations for the ‘baseline + project’ scenario, it can underestimate the incremental health impacts of the project (i.e., ‘project alone’ scenario) for non-threshold compounds (e.g., carcinogens). Since carcinogenic risks for non-threshold compounds are expressed in incremental terms [incremental lifetime cancer risks (ILCRs)] for the ‘project alone’ scenario, it allows for the evaluation of risks independent of background exposure.</p> <p>For example, the predicted project contribution to total (i.e., ‘background + project’) annual concentrations for benzene and B(a)P is 5% or less and 10% or less, respectively, during all project phases (Sections 5.1.1.1.4.1 & 5.1.1.1.4.2, Appendix D10, pdf p.73 & 76). However, concentrations of an annual average benzene and 24-hour and an annual average B(a)P from NAPS stations already exceed Ontario’s Ambient Air Quality Criteria (AAQC)³ (Table 5-2, Appendix D10, pdf p.66). As such, the project contribution to the associated health risk could actually be underestimated due to the artificially elevated baseline levels used in the model predictions for benzene and B(a)P.</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>If the currently proposed NAPS station data is used as baseline data, justify the use of data from urban areas as representative of the project area. Discuss the uncertainties associated with this approach, including how the use of overestimated baseline data may affect the assessment results (risks to human health) for non-threshold contaminants and identify additional mitigation measures and follow-up monitoring, if necessary.</p>
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³ Ministry of the Environment, Conservation and Parks (MECP). 2020. Ontario’s Ambient Air Quality Criteria. Available at: <https://www.ontario.ca/page/ontarios-ambient-air-quality-criteria>

<p>HC-04</p>	<p>EIS Guidelines</p> <p>Section 2.7.3.5, pdf p.73</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Table 5-2, Appendix D10, pdf p.65-66</p> <p>Table 5-34, Appendix D10, pdf p.136</p> <p>Section 5.3.5.5, Appendix D1, pdf p.86</p>	<p>The predicted COPC concentrations in air are not screened against relevant air quality criteria and the values used in the human health assessment exclude fugitive dust.</p> <p>a) The COPC NO₂ was not retained for further quantitative health risk assessment based on a comparison of predicted concentrations and the AAQC³ (Table 5-2, Appendix D10, pdf p.65). However, the 2025 Canadian Ambient Air Quality Standards (CAAQS)⁴ for NO₂ are more stringent and should also be used for screening purposes. Predicted maximum 1-hour and annual average NO₂ concentrations are expected to exceed the respective 2025 CAAQS thresholds (Table 5-34, Appendix D10, pdf p.136). HC advises that predicted concentrations be compared to the most stringent and most up to-date federal and provincial air quality objectives and presented in the same format as the regulatory criteria.</p> <p>b) Predicted concentrations of TSP, PM_{2.5} and PM₁₀ were modelled based on two methodologies that either include or exclude emissions from haul roads and stockpile wind erosion (Section 5.3.5.5, Appendix D1, pdf p.86). The HHRA uses predictions that exclude these emission sources (Table 5-2, Appendix D10, pdf p.65-66) based on the assumption that Best Management Practices implemented will control all fugitive dust. However, HC notes that expectations of 100% efficiency in dust suppression may not be realistic. Despite this assumption, the predicted maximum values at any HHRA receptor location approach the CAAQS thresholds for 24-hour and annual PM_{2.5} during construction and operation phases. If the contribution of some fugitive emissions from haul roads and stockpile wind erosion was included, the predicted TSP, PM_{2.5} and PM₁₀ values would presumably be higher and may exceed the AAQC³ and CAAQS⁴ thresholds.</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>a) Compare the predicted maximum NO₂ levels against the 2025 CAAQS⁴ thresholds, using the appropriate statistical forms. Update the assessment of human health risks and proposed mitigation measures, as applicable.</p> <p>b) Consider the efficiency of Best Management Practices in reducing fugitive dust from haul road and stockpile wind erosion in model predictions for particulates. Update the human health risk assessment, as required.</p>
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⁴ Canadian Council of Ministers of the Environment (CCME). 2021. Canadian Ambient Air Quality Standards (CAAQS). Available at: <https://www.ccme.ca/en/air-quality-report#slide-7>

HC-05	<p>EIS Guidelines</p> <p>Section 2.8.3, pdf p. 79-81</p> <p>Section 2.7.3.5, pdf p.73</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Table 7.3-1, Chapter 7, pdf p.16</p> <p>Table 6.2, Appendix D1, pdf p.103</p> <p>Table 6.4, Appendix D1, pdf p.127 & 132</p>	<p>Atmospheric Environment Monitoring Program does not provide sufficient detail to review the plan.</p> <p>The Atmospheric Environment Monitoring Program proposes to measure ambient levels of particulates, criteria air contaminants, and other COPCs (including dustfall and total metals) (Table 7.3-1, Chapter 7, pdf p.16). However, details of the monitoring program (such as list of COPCs to be monitored, sampling locations, duration and frequency) have not been included. HC recommends monitoring of air COPCs at locations where exceedances or near-exceedances of air quality criteria, standards and/or guidance values are predicted. For example, it is unclear whether ambient air quality will be monitored at special receptor locations near the rail load out facility where predicted concentrations exceed their respective AAQC³ criteria for benzene, B(a)P and nickel (Ni) (Tables 6.2 & 6.4; pdf p.103, 127 & 132).</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>Provide a detailed ambient air quality follow-up and monitoring plan identifying the COPCs to be monitored, sampling locations, duration and frequency. Provide a rationale for the selection of the COPCs and locations.</p>
HC-06	<p>EIS Guidelines</p> <p>Section 2.7.3.5, pdf p.73</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Section 5.4.2.2.2, Appendix D10, pdf p.130-135</p> <p>Table 5-34, Appendix D10, pdf p.137</p>	<p>Health risks associated with exposure to the carcinogenic components of diesel exhaust (DE) are not sufficiently characterized.</p> <p>The EIS states in relation to a Public Health Ontario (PHO, 2016)⁵ report that “(...) <i>there is currently insufficient epidemiological evidence to support the development of a quantitative exposure-response relationship for a unit risk for diesel emissions.</i>” However, in the PHO (2016)⁵ document referenced by the Proponent, the California Environmental Protection Agency (CalEPA)⁶ unit risk (3.0×10^{-4}) is identified in Table 9 as the inhalation unit risk for DE to be used in the risk assessment approach. While HC recognizes its inherent limitations and does not specifically endorse the CalEPA⁶ unit risk value, this quantitative approach provides insight as to the potential impacts a specific project would have in relation to risk associated with the DE emissions.</p>	<p>To characterize the carcinogenic risk of DE emissions from the Project, HC recommends one of the following two options:</p> <p>a) Conduct a quantitative assessment of risk, making use of the associated unit risk value published by the CalEPA⁶;</p> <p>b) Alternatively, provide a robust qualitative assessment of the carcinogenic risk of DE associated with the project, including the following elements to ensure transparency:</p> <ul style="list-style-type: none"> - identification of the main sources of DE for the project and recognition of the relative importance of DE as a source of air pollution for the project; - recognition that DE has been declared a human carcinogen by international

⁵ Cancer Care Ontario, Ontario Agency for Health Protection and Promotion (Public Health Ontario, PHO). 2016. Environmental Burden of Cancer in Ontario. Toronto: Queen’s Printer for Ontario.

⁶ California Environmental Protection Agency (CalEPA). 1998. The Report on Diesel Exhaust. Available at: <https://ww2.arb.ca.gov/sites/default/files/classic/toxics/dieseltac/de-fnds.htm>

			The qualitative assessment (Table 5-34, Appendix D10, pdf p.137) provided for DE states that “Components of diesel exhaust (fine particulates, criteria PAHs including B(a)P, and semi volatile and volatile organic compounds including benzene) were below levels associated with health risks.” This approach does not address the carcinogenicity of the full diesel exhaust mixture [complex mixture of particulate and gaseous components (including PM ₁₀ , PM _{2.5} , PM _{<2.5} , NO ₂), polycyclic aromatic hydrocarbons (PAHs), and semi-volatile and volatile organic compounds], which would be better represented by diesel particulate matter.	agencies including CalEPA ⁶ , HC ⁷ , US EPA ⁸ , and International Agency for Research on Cancer (IARC) ⁹ ; and - the rationale for not undertaking a quantitative analysis of DE carcinogenic risk for the project.
HC-07	EIS Guidelines Section 2.7.3.5, pdf p.73	EIS Addendum 2021 (Vol 2) Table 6-2, Appendix D11, pdf p.53 Section 7, Appendix D10, pdf p.144 Table 6-1, Appendix D11, pdf p.52	Potential impacts of treated effluent, including mining by-products and metal processing chemicals, on water quality of Hare Lake may not be sufficiently assessed. During operations, treated mine effluent will be discharged to Hare Lake. Concentrations of all water quality contaminants are predicted to be below Canadian Drinking Water Quality Guidelines (CDWQG) or Ontario Drinking Water Quality Standards (ODWQS) and only concentrations of nitrate (NO ₃ ⁻) and sulfate (SO ₄ ²⁻) are predicted to increase above baseline levels (Table 6-2, Appendix D11, pdf p.53). Although the predicted changes are not likely to cause substantial human health effects (Section 7, Appendix D10, pdf p.144), it remains unclear whether the following was considered when predicting the surface water quality: a) The EIS does not provide information on the mining by-products of platinum group metals (PGM) and the chemicals that will be used for on-site processing of PGM, and on their potential impacts on surface water quality and human health. Water quality assessments should consider water quality parameters that are specific to the project ¹⁰ .	HC recommends the following be requested from the Proponent: a) Provide the list of mining by-products and chemicals that will be used for metals processing. Compare the treated effluent quality for these substances against the CDWQG or ODWQS and consider as COPCs further in the HHRA, if deemed necessary. b) Clarify whether the water quality predictions for Hare Lake considers potential impacts of hotspots (i.e., areas of elevated levels of water quality contaminants).

⁷ HC. 2016. Human Health Risk Assessment for Diesel Exhaust. Prepared by the Fuels Assessment Section, Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch.

⁸ US EPA. 2002. Health Assessment Document for Diesel Engine Exhaust. Prepared by the Office of Research and Development.

⁹ International Agency for Research on Cancer (IARC). 2014. Monograph Volume 105: Diesel and Gasoline Engine Exhausts and Some Nitroarenes. Available at: <https://publications.iarc.fr/129>

¹⁰ HC. 2016. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Drinking and Recreational Water Quality. Available at: <https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-evaluating-human-health-impacts-water-quality.html>

		EIS 2012 Additional Information Request (AIR) #19, pdf p.1	b) Hare Lake water quality predictions are based on an assumption that the mine effluent (Table 6-1, Appendix D11, pdf p.52) will be completely mixed with lake water before potential use by the cottage residents and TLRUsers. The excess Process Solids Management Facility (PSMF) water will be discharged to Hare Lake through an offshore, submerged, multiport diffuser that is located approximately 10 m offshore in approximately 3 m of water (AIR # 19, pdf p.1). However, depending on the location of drinking water intakes in relation to the effluent discharge point, drinking water may be collected from local 'hotspots' of Hare Lake before complete mixing occurs.	
HC-08	EIS Guidelines Section 2.7.3.5, pdf p.73	EIS Addendum 2021 (Vol 2) Section 2.1.2, Appendix D11, pdf p.20 Section 6.3, Appendix D11, pdf p.64-65 Section 5.0 of Appendix D10, pdf p.49	Potential impacts of contaminated surface waters on human health in the post-closure phase are not sufficiently assessed. a) As part of the site closing plan, a portion of the Type 2 process solids (i.e., potentially acid-generating, or PAG, rock) will be stored in the open pits (Section 2.1.2, Appendix D11, pdf p.20). During the post-closure phase, project-impacted water will be diverted to and stored in the open pits until the water overflows to Pic River within about 17 years (Section 6.3, Appendix D11, pdf p.64-65). The EIS mentions that open pit water may be contaminated, but does not provide information on the predicted quality of released water or clarify whether the potential impacts are considered in the water quality predictions for Pic River and HHRA. b), c) Public access to the open pits will be limited by a perimeter berm after site closure (Section 5.0, Appendix D10, pdf p.49). However, it is unclear whether human access will be restricted to the decommissioned PSMF and Wastewater Management Pond (WMP), or whether the perimeter berm can effectively restrict wildlife access to the open pits. In the absence of physical barriers, the decommissioned PSMF and WMP could be accessed by visitors on foot for various purposes, including an accidental or intentional immersion in natural waters during recreational uses. The closed	HC recommends the following be requested from the Proponent: a) Provide the predicted quality of open pit water and receiving waters accessible to human receptors during the post-closure phase. Update the assessment of human health risks and proposed mitigation measures, as applicable. b) Provide a detailed site management plan for the post-closure phase. Explain how access to the decommissioned open pits and other areas of the mining sites will be restricted to human and wildlife. c) Provide a water quality follow-up and monitoring plan for the post-closure phase identifying the COPCs to be monitored, sampling locations, duration and frequency. Include a rationale for the selection of the COPCs and locations. Consider potential mitigation measures that could be

			<p>site, including open pits, could also be accessed by wildlife (e.g., waterfowl and small mammals) that is consumed by off-site human receptors. However, the EIS does not consider these exposure scenarios in the HHRA or provide a water quality follow-up and monitoring plan for the post-closure phase to determine whether mitigation measures (e.g., physical barriers) are required.</p>	<p>implemented in the event that follow-up and monitoring results determine they are needed.</p>
HC-09	<p>EIS Guidelines</p> <p>Section 2.7.3.5, pdf p.73</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Section 5.1.1.1.5 Appendix D10, pdf p.84</p> <p>Table 6-8, Appendix D11, pdf p.63</p> <p>Table 6-9, Appendix D11, pdf p.64</p> <p>Table 6-6, Appendix D11, pdf p.60</p> <p>Section 5.1.1.2.2, Appendix D10, pdf p.85</p> <p>Table 6-4, Appendix D11, pdf p.58</p>	<p>Potential accumulation of project contaminants in country foods and the associated health risks are not sufficiently considered.</p> <p>In the absence of guidelines/standards/criteria available for screening contaminants in country foods, HC recommends that COPCs be carried forward into a quantitative risk assessment to identify whether there may be health risks associated with the predicted concentrations, particularly where background levels or project contributions are high.</p> <p>a) <u>Atmospheric Deposition</u> Section 5.1.1.1.5 (Appendix D10, pdf p.84) states that “(...) <i>screening did not identify any CoPCs (e.g., PAHs, metals) in Project-related air emissions that are likely to deposit to soil and/or accumulate in biota (country foods) at levels of concern to human health.</i>” However, the selected air quality screening criteria appear to be protective of human health from exposures via the inhalation pathway [e.g., PM_{2.5}, PM₁₀, PAHs, metals] or soiling effect (e.g., dustfall), which do not necessarily represent safe exposure levels via country foods consumption.</p> <p>b) <u>Receiving Water Quality</u> The HHRA does not retain the country food consumption pathway from Pic River and the Stream 106 sub-watershed for the post-closure phase, with no rationale provided.</p> <ul style="list-style-type: none"> • Biigtigong Nishnaabeg FN indicated that Pic River and its sub-watersheds represent (an) important community value(s), and expressed concerns over the anticipated discharge of project-impacted water to the river. The EIS also acknowledges that local waterbodies, especially Pic River, have been actively used for fishing by local 	<p>HC recommends the following be requested from the Proponent:</p> <p>a), b) and c) Assess human health risks from the consumption of contaminated country foods (including vegetation, wildlife and fish). If this is an operable pathway, either through direct deposition of COPCs onto food surfaces or via uptake and bioaccumulation into foods through soil, water, sediments and predation, consider the following exposure scenarios:</p> <ul style="list-style-type: none"> • Consumption of contaminated vegetation and wildlife. Include COPCs (e.g., PM_{2.5}, PM₁₀, PAHs, metals, and dustfall) whose levels are predicted to increase in the air during any project phases; • Consumption of contaminated fish in Pic River and the Stream 106 sub-watershed, at minimum during the post-closure phase. Include COPCs (e.g., As, Cr, Cu, Hg, Mn) whose levels are predicted to increase in these waterbodies during any project phases; • Consumption of contaminated fish and crayfish in Hare Lake, at minimum during the operation phase. Include COPCs (e.g., As, Cr, Cu, Hg, Ni) whose levels are

		<p>Appendix C, Appendix D11, pdf p.197</p> <p>Table 4-5, Appendix D10, pdf p.44</p>	<p>community members and Indigenous groups. During post-closure, levels of water quality contaminants, such as arsenic (As), chromium (Cr), copper (Cu), manganese (Mn), vanadium (V), and zinc (Zn), are predicted to increase above baseline levels (Tables 6-8 & 6-9, Appendix D11, pdf p.63 & 64) in Pic River. Additionally, concentrations of certain water quality contaminants, such as As, NO₃⁻, and SO₄²⁻, are predicted to substantially increase above the baseline levels in the Stream 106 sub-watershed during the post-closure phase (Table 6-6, Appendix D11, pdf p.60).</p> <ul style="list-style-type: none"> The predicted levels of surface water quality contaminants are screened against the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQG-PAL) and Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses (CWQG-PAWU), in addition to the GCDWQ and ODWQS (Section 5.1.1.2.2, Appendix D10, pdf p.85). The CWQG-PAL and -PAWU are designed to protect the health of aquatic life (e.g., invertebrates and fish) or livestock (e.g., mammal and avian species), and the protective effects cannot be extended to human consumers of contaminated country foods species. <p>c) <u>Sediment Quality</u> The HHRA does not consider the bioaccumulation of contaminants in aquatic country foods from water and sediments in Hare Lake. Human receptors may be exposed to elevated levels of the contaminants upon consumption of contaminated aquatic country food species of Indigenous interest, such as bottom feeding fish (e.g., sturgeon and sucker) and invertebrates (e.g., crayfish), that may accumulate contaminants from sediment. During operations, concentrations of certain contaminants, such as As, Cu, Ni, molybdenum (Mo), and V, are predicted to increase from baseline levels in Hare Lake sediments (Table 6-4, Appendix D11, pdf p.58 and Appendix C, Appendix D11, pdf p.197).</p> <p>d) <u>Bio-accumulation and Bio-magnification in the Food Chain</u> Concentrations of surface water quality contaminants are not necessarily reliable indicators of contaminant levels in country food</p>	<p>predicted to increase in the lake sediment during any project phases.</p> <p>d) Include in the site management plan specific measures that minimize the project's potential to increase mercury concentrations in receiving water bodies, including Pic River and Hare Lake, as well as an adaptive management plan.</p>
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			<p>species. For example, although the predicted increase of mercury (Hg) levels in Pic River is not substantial, fish can accumulate mercury in their tissues mostly from their diet, rather than directly from water^{11, 12}. Therefore, predatory fish at the top of the food chain tend to contain much higher levels of mercury than the levels expected from direct absorption from water alone. There is an existing fish consumption advisory¹³ relating to mercury in northern pike and walleye in Pic River. These species are also of interest to Indigenous groups (Table 4-5, Appendix D10, pdf p.44).</p>	
HC-10	<p>EIS Guidelines</p> <p>Section 2.6.4.2, pdf p.47</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Section 4, Appendix D10, pdf p.36-44</p> <p>Section 5.1.3.3, Appendix D10, pdf p.111</p> <p>Table 5.2-9, Chapter 5, pdf p.30-33</p> <p>Table 5-2.11, Chapter 5, pdf p.36-37</p>	<p>Information on the collection of country food consumption patterns and communication plan are insufficient.</p> <p>a) The EIS includes lists of animal, fish, and plant species of interest to Indigenous communities based on consultation activities (Section 4, Appendix D10, pdf p.36-44). However, the EIS does not clarify whether community-specific country foods consumption information (e.g., portion sizes, frequency, seasonality, method of preparation) was or will be collected.</p> <p>HC Country Foods Guidance¹⁴ recommends characterization of local Indigenous and non-Indigenous people's consumption of country foods as part of the baseline assessment. Country food consumption data can be acquired by undertaking site-specific dietary/consumption surveys or derived from surrogate data of reference sites [e.g., First Nations Food, Nutrition & Environment Study (FNFNES)¹⁵ results from Ontario (2011/2012)].</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>a) Include community-specific country food consumption patterns (e.g., through the completion of traditional food consumption surveys) in an exposure/risk assessment for country foods. Should the FNFNES¹⁵ or any other reference data be used as a surrogate, include a discussion on uncertainties related to the use of regional aggregate data in the risk assessment for country foods.</p> <p>b) Consider developing a communication plan outlining/detailing how country food monitoring reports will be shared with the communities and feedback from the communities on the results as well as any other country food related issues will be</p>

¹¹ Government of Canada. 2019. Mercury in Fish. Available at <https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/chemical-contaminants/environmental-contaminants/mercury/mercury-fish.html>

¹² CCME. 2007. A Protocol for the Derivation of Water Quality Guidelines for the Protection of Aquatic Life 2007. Available at: <https://ccme.ca/en/res/protocol-for-the-derivation-of-water-quality-guidelines-for-the-protection-of-aquatic-life-2007-en.pdf>

¹³ MECP. 2017. Eating Ontario Fish 2017-18. Available at: <https://www.ontario.ca/page/fish-consumption-report?id=48378617>

¹⁴ HC. 2018. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Country Foods. Available at: <https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-evaluating-human-health-impacts-country-foods.html>

¹⁵ Laurie Chan, Olivier Receveur, Malek Batal, William David, Harold Schwartz, Amy Ing, Karen Fediuk, Andrew Black and Constantine Tikhonov. 2014. First Nations Food, Nutrition and Environment Study (FNFNES): Results from Ontario (2011/2012). Available at: http://www.fnfnes.ca/docs/FNFNES_Ontario_Regional_Report_ENGLISH_2019-10-16.pdf

		Table 5.2-14, Chapter 5, pdf p.44	b) Several Indigenous communities have expressed their concerns about background levels of contaminants in country foods (Section 5.1.3.3, Appendix D10, pdf p.111) and project-related impacts on fish and vegetation (Tables 5.2-9, 5-2.11, 5.2-14, Chapter 5, pdf p.30-33, 36-37 & 44). The Indigenous communities would benefit from the implementation of a communication plan that would inform the communities about any changes in levels of potential contaminants in country foods and related impacts on human health. The plans should also include a formalised means of receiving and responding to concerns regarding country foods quality raised by the local communities to support effective and efficient communication between the Proponent and communities.	addressed. Include the steps that will be taken if there are any exceedances of established benchmarks.
HC-11	EIS Guidelines Section 2.7.3.5, pdf p.73	EIS 2012 AIR # 16(3), pdf p.5-10 Table 3.21, Supporting Information Document (SID) # 1, pdf p.182 Section 3.5.15, SID # 1, pdf p.117	The proposed types of foods and COPCs to be selected for the country food monitoring program may not adequately represent the local Indigenous diet or potential country foods contaminants. a) The country food monitoring plan proposed in AIR #16(3) includes sampling for blueberries, moose tissues and fish. Moose have a very large home range and therefore can be exposed to contaminants from a variety of other sources besides project emissions. When sampling migratory wildlife, it is important to also consider sampling consumed species that may be more reflective of year round COPC exposure as a result of the project (e.g., beaver, rabbit). Additionally, the selected fish species for the monitoring plan (i.e., yellow perch in Hare Lake and walleye in Pic River) do not reflect the baseline findings. Northern pike and spottail shiner were collected from Hare Lake in the 2009 baseline study (Table 3.21, SID # 1, pdf p.182), and mean mercury concentrations in both northern pike muscle and liver tissues were above the threshold for consumption restrictions (Section 3.5.15, SID # 1, pdf p.117). There is also an existing consumption advisory ¹³ for northern pike in Pic River. Therefore, it is prudent to include northern pike for both Hare Lake and Pic River in the monitoring program. b) The country food monitoring plan in AIR # 16 (3) proposes to verify metal concentrations in country food samples, but does not clarify which metal species will be monitored.	HC recommends the following be requested from the Proponent: a) Sample representative species of commonly consumed animals that are harvested by trapping and hunting in or near the project area year-round (e.g., beaver, rabbit) in addition to moose. Include northern pike from Hare Lake and Pic River in the country food monitoring program, in addition to yellow perch and walleye, respectively. b) Provide the complete list of metals that will be analyzed in the country food samples. Provide a rationale for excluding any COPC from the monitoring plan. Include an adaptive management approach that considers results from environmental media monitoring when reviewing the country food monitoring program (i.e., when measured COPC concentrations are above predicted levels).

			For more information about country food monitoring, HC recommends that the proponent review HC Country Food Guidance ¹⁴ .	
HC-12	EIS Guidelines Section 2.7.3.5, pdf p.73	EIS Addendum 2021 (Vol 2) Section 6.5.1, Appendix D2, pdf p.39-45 Section 5.7.1, Appendix D2, pdf p.28	<p>The estimated change in Percent Highly Annoyed (%HA) does not consider the combined impacts of all project-related noise sources and calculation details have not been provided.</p> <p>a), b), c) The EIS concludes that project-related noise is not likely to cause significant adverse health effects as the calculated change in %HA is below the threshold value of 6.5%. However, the approach does not consider the combined noise impacts from all project-related noise sources, including all facility construction-/operation-related activities (e.g., equipment, blasting, jack-hammering), road traffic and rail load out facility operations (e.g., rail car shunting, back up alarms from trucks and/or rail cars) (Section 6.5.1, Appendix D2, pdf p.39-45). Therefore, the assessment may underestimate the total effects from noise exposures that sensitive receptors may experience.</p> <p>HC recommends using International Organization for Standardization (ISO) 1996-1:2003¹⁶ to estimate the project-related change in %HA². When multiple noise sources are present, the total annoyance from all sources related to project activities (e.g., equipment, traffic, rail, blasting) should be considered during each phase of the project. The noise from all project activities can be combined into a single yearly rating level (L_{Rdn}) to estimate annoyance (%HA) for a typical community (Annex E.2 of ISO 1996-1:2003¹⁶ or Annex G.2 of ISO 1996-1:2016¹⁷).</p> <p>d) Section 5.7.1 (Appendix D2, p.28) mentions that “(...) <i>though Ldn noise levels were not presented, they have been extrapolated from the information provided to determine effective baseline noise levels</i></p>	<p>HC recommends the following be requested from the Proponent:</p> <p>a) Update the calculation of change in %HA to consider the combined impacts of all project-related activities in each phase of the project at representative sensitive receptors, including all facility construction-/operation-related activities, road traffic and rail load out facility operations. Justify why any project activities are excluded.</p> <p>b) Provide mitigation measures if combined noise impacts from all project-related activities exceed 6.5% increase in %HA.</p> <p>c) Consider follow-up monitoring at any sensitive receptors where combined noise impacts from all project-related activities exceed 6.5% increase in %HA.</p> <p>d) Provide a worked example of the step-by-step calculation for change in %HA as per Appendix F, HC Noise Guidance².</p>

¹⁶ International Organization for Standardization (ISO). 2003. ISO 1996-1:2003 Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures. Available at: www.iso.org/iso/catalogue_detail?csnumber=28633

¹⁷ ISO. 2016. ISO 1996-1:2016. Acoustics- Description, measurement and assessment of environmental noise- Part 1: Basic quantities and assessment procedures. Available at: <https://www.iso.org/standard/59765.html>

			<p><i>for the purpose of assessing community annoyance as per HC NOISE.” The EIS uses L_{dn} (day-night level) in Equation (3) to calculate %HA instead of using L_{Rdn} (day-night rating level) as per HC Noise guidance² (Equation F4, Appendix F, pdf p.4). Based on the information provided, it is unclear how L_{dn} was calculated and whether L_{Rdn} was derived for use in Equation (3).</i></p>	
HC-13	<p>EIS Guidelines</p> <p>Section 2.7.3.5, pdf p.73</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Section 6.5.2, Appendix D2, pdf p.45</p> <p>Section 6.1.1, Appendix D2, pdf p.31</p> <p>Section 6.2.1 Appendix D2, pdf p.33)</p>	<p>Sleep disturbance is not assessed against all the standards recommended by Health Canada.</p> <p>In Section 6.5.2 (Appendix D2, pdf p.45), the Proponent does not anticipate any potential sleep disturbance based on the World Health Organization (WHO)’s recommendation¹⁸ of a “60 dBA L_{max} criteria for any Project-related instantaneous noise level has a frequency limit of no more than 10-15 exceedances per night”. In Sections 6.1.1 and 6.2.1 (Appendix D2, pdf p.31 & 33), the noise assessment does not identify any exceedances when comparing steady-state facility construction/operation noise to Ministry of Environment, Conservation and Parks (MECP)’s Noise Pollution Control (NPC)-300 nighttime criteria [45 dBA (A-weighted decibels) for HWY 17 corridor and 40 dBA for Hare lake area].</p> <p>However, HC Noise Guidance² also states that, to limit sustained changes in sleep that may cause long-term adverse health effects, the annual average nighttime levels (L_n) should not exceed 40 dBA outdoors at the most exposed façade (WHO, 2009¹⁹).</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>Provide the predicted outdoor annual average nighttime sound levels (L_n) at all receptor locations. Consider additional mitigation measures and monitoring if annual average L_n exceeds 40 dBA at any noise receptor locations.</p>
HC-14	<p>EIS Guidelines</p> <p>Section 2.7.3.5, pdf p.73</p>	<p>EIS Addendum 2021</p> <p>Table 8.1, Chapter 8, pdf p.18</p>	<p>Insufficient detail is provided regarding the noise complaint response protocol.</p> <p>The Proponent commits to establishing a “<i>formal complaints procedure for nuisance noise [...] for stakeholders and Indigenous peoples during the construction, operation, and decommissioning phases of the Project</i>” and a “<i>response protocol [...] so that appropriate follow up occurs</i>” (Table 8.1, Chapter 8, pdf p.18).</p>	<p>HC recommends the following be requested from the proponent:</p> <p>a) Provide a formalized complaint response plan that describes how complaints will be received (e.g. website, telephone #, etc.), response time, and method(s) for resolution,</p>

¹⁸ World Health Organization (WHO). 1999. *Guidelines for Community Noise*. Berglund, B., Lindvall, T. and Schwela, D.H (Eds.). Available online at: www.who.int/docstore/peh/noise/guidelines2.html

¹⁹ WHO. 2009. Night Noise Guidelines for Europe. Hurtley, C. (Ed). Available online at: www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2009/night-noise-guidelines-for-europe

			<p>However, insufficient detail is provided as to how complaints will be received and addressed. A complaints response protocol should include a formalised means of receiving and responding to complaints in a timely fashion with additional monitoring and mitigation measures defined in the event of noise-related complaints. In addition, multiple methods of communication (e.g., telephone, mail, signage, websites) can support effective and efficient communication between the Proponent and community.</p> <p>Furthermore, the Proponent may consider developing a communication plan to inform nearby residents of upcoming project-related activities that may cause notable changes in sound levels (e.g., blasting) as a way to mitigate noise-related complaints. Previous experience has shown that a community is more likely to be understanding and accepting of project noise, and more likely to make appropriate adjustments to limit noise exposure if it has been engaged/consulted prior to noisy project activities².</p>	<p>including additional mitigation measures if required.</p> <p>b) Consider developing a communication plan outlining/detailing how the schedule of noisy activities (including impulsive or highly impulsive noises, such as blasting or jackhammering) prior to their occurrence will be shared with nearby residents (Indigenous and non-Indigenous) so they are aware of these activities in advance.</p>
HC-15	<p>EIS Guidelines</p> <p>Section 2.7.3.5, pdf p.73</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Section 6.5.1, Appendix D2, pdf p.39-46</p> <p>Figure 19, Appendix D2, pdf p.70</p> <p>Figure 20, Appendix D2, pdf p.71</p> <p>EIS 2012</p> <p>CEAR#545, pdf p.5</p>	<p>The noise assessment does not consider all applicable adjustments for sound characteristics.</p> <p>The EIS does not provide sufficient details to confirm whether appropriate adjustments were applied to baseline, construction and operational noise sources. The only adjustment mentioned is +10 dB for quiet rural acoustical environment for both North and South Hare Lake Cottages (Section 6.5.1 Appendix D2, pdf p.39-46).</p> <p>When adjustments to baseline or project noise are necessary, HC prefers that adjustments be made by following ISO 1996-1:2003¹⁶. Details of how to apply adjustments are given in Section 6 of ISO 1996-1:2003. Examples of recommended adjustments include, but are not limited to:</p> <ul style="list-style-type: none"> • +5 dB adjustment to tonal noise sources (e.g. backup alarms on trucks, rail wheel squeal). • +5 dB adjustment to regular impulsive noise sources (e.g. truck tailgate). • +12 dB adjustment to highly-energy impulsive noise sources (e.g. blasting, shunting of rail cars). 	<p>HC recommends the following be requested from the Proponent:</p> <p>Consider all applicable adjustments to baseline and project noise levels and change in %HA calculations as per ISO 1996-1:2003¹⁶ and CTA²⁰. Provide a description when they have been used or a rationale when they are deemed not applicable in a given scenario.</p>

		IR 5.3	<ul style="list-style-type: none"> + 10 dB adjustment to night sounds. <p>Additionally, CEAR#545 (pdf p.5, original IR 5.3) requests information on coupling speed for rail car shunting but this information has not yet been provided by the Proponent. HC recommends that any applicable adjustment based on coupling speed be considered in the noise assessment as the rail load out facility is located near multiple receptors in the Town of Marathon (Figures 19 & 20, Appendix D2, pdf p.70-71). The Canadian Transportation Agency (CTA, 2011)²⁰ suggests an approximate adjustment of +3 dB (for every 1 mph increase in speed) if the coupling speed exceeds CTA's speed limit of 1 mph.</p>	
HC-16	EIS Guidelines Section 2.7.3.5, pdf p.73	EIS Addendum 2021 (Vol 2) Section 5.2, Appendix D2, pdf p.20-21 EIS 2012 Section 2.3.2, SID #17, pdf p.27 IR 11.5	<p>The updated noise assessment does not explain the use of different ground absorption coefficients.</p> <p>The noise assessment in the EIS Addendum 2021 uses ground absorption coefficients of 0.3 to represent the compacted and reflective ground in the Town of Marathon and 0.7 to represent the combination of vegetation, forested areas, waterbodies and compacted ground at the project site (Section 5.2, Appendix D2, pdf p.20-21). The coefficients applied in the EIS 2012 were comparatively lower at 0.0 for areas of reflective surface and 0.6 for all other surface areas (Section 2.3.2, SID #17 pdf p.27 & IR 11.5). A coefficient that is too high can reduce the predicted sound levels at receptors. No rationale is provided for using higher absorption factors in the EIS addendum.</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>Justify the choice of ground absorption coefficients in the noise assessment, including implications on the level of uncertainty in the findings.</p>
HC-17	EIS Guidelines Section 2.7.3.5, pdf p.73	EIS Addendum 2021 (Vol 2) Section 5.6, Appendix D2, pdf p.25-26	<p>The noise assessment does not consider human health-relevant guidance for assessing impacts from blasting.</p> <p>a) The EIS contains an updated assessment of potential effects on the acoustic environment from blasting using the MECP publication NPC-119: Blasting (Section 5.6, Appendix D2, pdf p.25-26). However, NPC-119 is primarily designed to prevent structural</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>a) Provide a noise assessment following HC Noise Guidance² to assess blasting-related health impacts.</p>

²⁰ Canadian Transportation Agency (CTA). 2011. Railway Noise Measurement and Reporting Methodology. Available at: https://otc-cta.gc.ca/eng/railway_noise_measurement

		<p>damage, and is not appropriate to assess human health effects from blasting-related noise.</p> <p>b) The EIS does not provide details of the blasting schedule to enable the selection of a high annoyance criterion for blasting to which the sound levels can be compared. High annoyance from blasting can depend on the number of blasts per day, the frequency of blasting over a year and the number of years that blasting is planned to occur.</p> <p>c), d) The EIS reports blasting-related noise levels as dB. HC Noise Guidance² recommends to use Z-weighting (dBZ) and C-weighting (dBC) for blasting lasting less or more than one year, respectively.</p> <p>d) For mitigating blasting noise lasting less or more than one year, HC suggests following the recommendations in the US EPA (1974)²¹ and ISO 1996-1:2003¹⁶ (Appendix E and Appendix F, HC Noise Guidance²), respectively.</p>	<p>b) Provide the approximate blasting schedule with the planned number of blasts per day, blasting frequency and the number of years over which blasting will occur.</p> <p>c) Characterize blasting levels as peak C-weighted sound levels (dBC) for blasting lasting longer than a year, or as Z weighted (i.e., unweighted) sound levels (dBZ) for blasting lasting less than a year.</p> <p>d) Provide mitigation measures and consider monitoring if blasting-related noise exceeds relevant thresholds/standards/criteria as per HC Noise guidance².</p>
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²¹ US EPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Report No. 550/9-74-004).

Minor Comments:

Issue #	Reference to EIS Guidelines or Panel Terms of Reference	Reference to EIS 2012, EIS Addendum 2021 and Original IR	Rationale	Information Request
HC-18	EIS Guidelines Section 2.7.3.5, pdf p.73	EIS Addendum 2021 (Vol 2) Table 5-24, Appendix D10, pdf p.110 Tables 5.27-30, Appendix D.10, pdf p.125-129.	<p>The HHRA uses an incorrect benzene inhalation unit risk (UR).</p> <p>a) Table 5-24 (Appendix D10, pdf p.110) lists an inhalation unit risk (UR) for benzene of $0.0022 \text{ (mg/m}^3\text{)}^{-1}$. The more recent HC Federal Contaminated Site Risk Assessment in Canada: Toxicological Reference Values (TRVs), Version 3.0²² has updated the benzene UR to $0.016 \text{ (mg/m}^3\text{)}^{-1}$.</p> <p>b) Inhalation UR should be expressed as $(\mu\text{g/m}^3)^{-1}$, instead of (mg/m^3) as seen in Tables 5.27-30 of Appendix D.10 (pdf p.125-129).</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>a) Update the ILCR assessment for benzene using the more conservative TRV.</p> <p>b) Correct the UR units in Tables 5.27-30 of Appendix D10.</p>
HC-19	EIS Guidelines Section 2.4.3, pdf p.29	EIS Addendum 2021 (Vol 2) Section 1.3, Appendix D10, pdf p. 23	<p>The impact of the proposed alternative method of concentrate transportation is not considered in the assessment.</p> <p>The EIS mentions two options are being considered for concentrate delivery to an existing third-party facility: i) transport by truck to rail load out facility then by train; ii) transport by truck only (Section 1.3, Appendix D10, pdf p. 23). However, only the first option was considered in the EIS predictions.</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>Discuss the implications of selecting the alternative option of concentrate transportation (delivery of concentrate material only via transport truck) for the human health assessment findings.</p>

²² HC. 2021. Federal contaminated site risk assessment in Canada: Guidance on human health preliminary quantitative risk assessment (PQRA), version 3.0. Available at: <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/contaminated-sites/federal-contaminated-site-risk-assessment-canada-part-health-canada-toxicological-reference-values-trvs-chemical-specific-factors-version-2-0.html>

<p>HC-20</p>	<p>EIS Guidelines</p> <p>Section 2.8.3, pdf p.79-81</p>	<p>EIS Addendum 2021 (Vol 2)</p> <p>Section 7.3, Chapter 7, pdf p.16-19</p>	<p>Follow-up and monitoring programs cannot be confirmed to be protective of human health as relevant information is not well organized.</p> <p>The EIS (Section 7.3, Chapter 7, pdf p.16-19) provides an overly succinct summary of follow-up and monitoring programs that will be developed and implemented for various valued ecosystem components (VECs) to verify the accuracy of predicted effects and effectiveness of proposed mitigation measures. More relevant information was scattered across the original EIS (2012), responses to IRs, SIRs, and AIRs, and updated information is distributed in multiple appendices of the EIS Addendum (2021). Reviewing the follow-up monitoring information is challenging.</p>	<p>HC recommends the following be requested from the Proponent:</p> <p>Update Section 7.3 of the EIS with the details located in the various supporting documents, including monitoring locations, parameters and timing.</p>
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