Annex A1: Note to Readers

Introduction

In April 2015, Treasury Metals Inc. (Treasury Metals) submitted an Environmental Impact Statement (EIS) for the proposed Goliath Gold Project (the Project) to the Canadian Environmental Assessment Agency (the Agency) for consideration under the Canadian Environmental Assessment Act (CEAA), 2012. The Agency reviewed the submission and informed Treasury Metals that the requirements of the EIS Guidelines for the Project were met and that the Agency would begin its technical review of the submission. In June 2015, the Agency issued a series of information requests to Treasury Metals regarding the EIS and supporting appendices (referred to herein as the Round 1 information requests). The Round 1 information requests included questions from the Agency, other federal and provincial reviewers, First Nations and other Aboriginal peoples, as well as interested stakeholders. As part of the Round 1 information request process at the request of the Agency, Treasury Metals has consolidated the responses to the information requests into a revised EIS for the Project.

In total, there were 859 questions and comments divided into 4 annexes:

- Annex 1: Questions and comments for the Agency and other government reviewers.
- Annex 2: Questions and comments from government reviewers regarding the permitting process for the Project. Treasury Metals have yet to start the formal permitting process for the Project.
- Annex 3: Questions and comments from First Nations and other Aboriginal peoples.
- Annex 4: Questions and comments from interested stakeholders.

The enclosed document provides the final responses from 1 to 265 of the Round 1 information requests included as Annex A1. For ease of cross-referencing, each information request response has been provided a unique identifier comprised of a sequential TMI reference number (from 1 to 265 of the 859 information requests) and the IR reference number provided in the packages forwarded to Treasury Metals by the Canadian Environmental Assessment Agency (the Agency). The naming convention is illustrated below.

TMI reference number

TMI_123-FH(1)-02

Agency reference number

On October 5, 2017, The Canadian Environmental Assessment Agency indicated that 287 of the 859 questions raise as part of the Round #1 Information Request process (contained in Annexes A1 to A4 of IR#1) were found to be incomplete. The enclosed document provides the original responses to the 572 responses deemed complete, and revised responses for the 287 information requests requiring additional information to be considered complete. The responses are provided in a tabular form, with each response including the original “Summary of Comment / Rationale” and the “Information Request”, for reference. Those responses initially identified as complete are indicated with “Response”, while the expanded responses for the 287 identified by the Agency are indicated by “Revised Response”. In preparing the response package, there were some requests that require the provision of figures, tables and attachments that did not lend themselves to inclusion in the response tables. This information is appended to this response package, with the information presented in the order it is cited.

Index for Annex A1 Information Request Responses

To guide the users in locating specific responses, the next section of this document provides an index of where each of the responses are located, or where the response is referenced in another response. The index makes use of the unique identifier described above.

Annex A1 Index

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
1	EA(1)-01	CEA Agency	EIS sections 5, 6 Appendix DD	Sections 2.3, 3.4.2, 7.2.1, 7.2.2, 9.1.1, 10.2, 11.2	**Summary of Comment / Rationale:** Section 2.3 of the EIS Guidelines states: "The proponent will make reasonable efforts to integrate "traditional Aboriginal knowledge" that will contribute to the assessment of environmental impacts." Potentially affected Aboriginal groups, including Wabigoon Lake Ojibway Nation, Eagle Lake First Nation, Wabauskang First Nation, Grassy Narrows First Nation, Naotkamegwanning First Nation, and Métis Nation of Ontario, as well as the Grand Council of Treaty 3 have expressed concerns that traditional knowledge in the project area has not been collected; therefore, potential effects to the environment have not been adequately characterized in the EIS and further understanding of both land and resource use and traditional knowledge in the project area is needed. All groups have expressed willingness to participate in traditional knowledge and traditional land use studies in the project area. Aboriginal traditional knowledge is held by the Aboriginal people who live in the area of a proposed project, and who have a long relationship with the lands and resources likely to be affected. As such, the integration of Aboriginal traditional knowledge into the environmental assessment (EA) process can serve to strengthen the EA. The proponent should review the Agency's reference guidance document "Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted under the Canadian Environmental Assessment Act, 2012" (http://www.ceaa-acee.gc.ca/default.asp?lang=en&n=C3C7E0D3-1). This document provides 1) principles that should be taken into consideration when collecting Aboriginal traditional knowledge from groups and 2) guidance on integrating traditional knowledge into an EA. In accordance with this guidance document, the proponent should follow existing consultation protocols. Currently, community and Aboriginal traditional knowledge has not been integrated into the effects assessment presented in section 6 (EIS). Information shared by Aboriginal groups with the Agency and the proponent prior to EIS submission is discussed in Appendix DD. In most cases, Aboriginal traditional knowledge has not been integrated into the assessment, and concerns identified in Appendix DD have not been adequately considered or addressed by the proponent. Aboriginal groups have identified that some responses provided by the proponent are not demonstrative of a respectful understanding of the cultures, views and concerns of Aboriginal groups. The guidance document includes guidance as to how the proponent should integrate Aboriginal traditional knowledge and Western knowledge. The guide states that in cases where Aboriginal traditional knowledge and Western knowledge cannot be reconciled "EA practitioners should juxtapose what is suggested by each knowledge system in their EA report and demonstrate how each type of knowledge has been considered in the EA."

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					Information Request / Comment: A. Engage Aboriginal groups to collect Aboriginal traditional knowledge, including but not limited to information related to traditional land and resource use. B. Integrate Aboriginal traditional knowledge into the baseline assessment and assessment of environmental effects, including documentation of information provided for each valued component. C. Ensure Aboriginal traditional knowledge is discussed and considered in a respectful manner which acknowledges its inherent value. As directed by potentially affected Aboriginal groups, consider engaging in cultural awareness training and seek to follow existing consultation protocols. D. If/where differences between Aboriginal and Western knowledge arise, include both information sources in the assessment.
					Revised Response: *Part A. Engage Aboriginal groups to collect Aboriginal traditional knowledge, including but not limited to information related to traditional land and resource use.* Since the time of the original EIS submission, Treasury Metals has participated in a number of meaningful engagement activities with all defined Indigenous communities. A summary of these engagement activities are provided in Section 9 and Appendix DD of the revised EIS. Logs of all engagement activities are also attached to Appendix DD of the revised EIS. Mostly notably, as of December 18, 2017 announced that it has entered into a Memorandum of Understanding (MOU) with the Métis Nation of Ontario in relation to the Project. Treasury Metals as revised the EIS substantially to reflect the traditional knowledge and traditional land and resource use information shared since the original EIS submission. For the purposes of the revised EIS, Aboriginal and Treaty Rights are defined as the historic and current uses of lands and resources for traditional purposes by members of Indigenous communities. It is Treasury Metals' understanding that Aboriginal peoples are entitled to access to their lands according to their Aboriginal and Treaty #3 (1873) Rights, and Treasury Metals is committed to working with the Indigenous communities to ensure that the effects of the project on their traditional land and resource use or alternatively referred to as aboriginal and treaty rights are appropriately considered and protected. A discussion of traditional land and resource use in terms of existing environment is provided in Section 5.13.3. An assessment of the effects of the project on traditional land and resource use is provided in Section 6.22 of the revised EIS

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					The revised EIS is substantially different than the original submission with respect to the assessment of effects on Aboriginal peoples and the traditional land and resource use of Indigenous communities. ***<u>Part B. Integrate Aboriginal traditional knowledge into the baseline assessment and assessment of environmental effects, including documentation of information provided for each valued component.</u>*** Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment) (i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); o Example in Section 5.8.5 (Aquatic Resources, Traditional Knowledge): Members of the Wabigoon Lake Ojibway Nation (WLON) identified the following with respect to their traditional knowledge of aquatic resources, “Fishing continues to be a critical activity year-round, with pike and walleye being the preferred species5, but other species taken as well” • Traditional land and resource use is discussed for each Indigenous community including MNO is located in Section 5.13.3; o From example above, in Section 5.13.3.1 (Traditional Land and Resource Use of WLON)- Refer to Table 5.13.3.1-1 Wabigoon Lake Ojibway Nation Traditional Land and Resource Use Information where it states based on primary sources via engagement activities that a traditional land and resource use of this community includes fishing of pike, walleye, baitfish and minnows (trapping) within two areas of the project footprint. • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Aboriginal peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential to the selection of Valued Components (VCs) as discussed in Section 6.1.3 of the revised EIS. • All engagement activities to date i.e. documentation regarding valued components discussion are summarized in Section 9 of the revised EIS and provided in detail in Appendix DD. Engagement logs for all indigenous communities are attached to Appendix DD. ***<u>Part C. Ensure Aboriginal traditional knowledge is discussed and considered in a respectful manner which acknowledges its inherent value. As directed by potentially affected</u>***

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					Aboriginal groups, consider engaging in cultural awareness training and seek to follow existing consultation protocols. Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment) (i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); Treasury Metals staff including personal from corporate, and on site took part in cultural awareness training on October 25, 2017. Cultural awareness staff was conducted at the request of the Nations as directed on September 19, 2017. Treasury Metals in follow up to this, reached out to Wabigoon Lake Ojibway Nation and the Nation secure Lyndon Linklater a noted speaker to deliver cultural awareness training to Treasury Metals. The cultural awareness training focused on culture, traditions, and history of the Indigenous people of Canada, and Treaty 3. *Part D. If/where differences between Aboriginal and Western knowledge arise, include both information sources in the assessment.* Where differences between Aboriginal and Western knowledge arose, it was discussed in the appropriate sub-section of Section 5. For example in Section 5.11.4 Traditional Knowledge of Species at Risk: According to the consolidated comments received from the Agency following the review of the original EIS by members of Eagle Lake First Nation, Wabigoon Lake, Ojibway Nation, and Whitefish Bay First Nation (Naotkamegwanning First Nation), someone shared that a Barn Owl had been observed in the Project area. Barn Owl are an Endangered Species and are protected provincially in Ontario, as well as federally. According to the Ontario Ministry of Natural Resources and Forestry (MNRF) website reports that there are fewer than five pairs of Barn Owls in Ontario, all of which were observed in southern Ontario in the Windsor-Sarnia corridor, Niagara Region, or Lennox and Addington County. The MNRF reports that The Barn Owl cannot tolerate severe winter temperatures, and southern Ontario is the northern limit of its range. Breeding sites in Ontario seem to be restricted to areas with the moderating effects of the Great Lakes (within 50 kilometres of the lakes). Therefore, the observation of a Barn Owl in the vicinity of the Project is highly unlikely as northern Ontario does not support a suitable habitat for this particular endangered species. It is possible that the observer may have seen another species of owl that were mistakenly identified as a Barn Owl. In all cases of discrepancy, Treasury Metals has respectfully included the traditional knowledge shared and also provided scientific rationale. Both were considered in the selection of valued components in Section 6.1.3 of the revised EIS.

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2	EA(1)-02	CEA Agency	EIS Section 6.4.1.11	Section 10.1	**Summary of Comment / Rationale:** The potential effects for the valued components in section 6 (EIS) are not characterized adequately to inform the effects assessment. For example, potential effects to wildlife and wildlife habitat are described as "The primary potential effect to wildlife and wildlife habitat will result from the physical alteration or removal of existing habitat. Constructing access roads, mine infrastructure, tailing storage, pit excavation and waste rock storage areas will require disturbance or alteration of terrestrial and wetland/riparian habitats. In total, it is expected that 242 ha of wildlife habitat will be lost due to Project activities for the duration of the Project life. Habitats are expected to recover over time following Project closure." The potential effects need to be described adequately for species at risk listed in section 6.4.1.11 (EIS), ungulates, furbearers, upland birds, and wetland birds. A more adequate characterization needs to take into consideration quantitative data and include a description of the species and habitat, what types of habitat are proposed to be impacted by which project component, and any applicable references to federal or provincial regulations or guidelines. Section 10.1 (EIS Guidelines) states that "in predicting and assessing project's effects, the proponent will indicate important details and clearly state elements and functions of the environment that may be affected, specifying the location, extent and duration of these effects and their overall impact." Descriptions, including figures and maps to provide this information are important for the Agency to analyze the effects assessment.
					Information Request / Comment: A. Provide adequate characterizations of potential effects, for all valued components listed in section 6 (EIS), taking into consideration the responses to all relevant information requests from the Agency. B. Provide detailed figures with base maps to indicate the elements and functions of the environment potentially impacted, including receptors, and to delineate the areas, locations, extent and durations of the various potential environmental effects for each project phase.
					Response: The EIS Guidelines (CEAA, 2013) provided the framework that was used in preparing the original EIS. Based on the feedback from the Canadian Environmental Assessment Agency (The Agency) and other technical reviewers provided in IR Round 1 questions, there are a number of issues related to the approach used in the original EIS for organizing and presenting the relevant information regarding the potential effects of the Project. In order to effectively address these

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					issues, Treasury Metals has prepared a revised EIS at the request of The Agency that incorporates the concerns provided by the technical reviewers of the original EIS. One of these concerns was not assessing migratory birds as its own section within the EIS. Although migratory birds were assessed in the original EIS within the wildlife section, Treasury Metals has presented migratory birds in its own section within the revised EIS. Section 6.0 of the revised EIS endeavors to set out the assessment of effects and impacts associated with the Project in a clear and traceable manner. The effects assessment is organized with the following main sections, which are directly correlated with the requirements described in the EIS Guidelines:
					
					• Assessment Methods: Describes the methods and approaches that were used to assess the effects and impacts of the Project. The methods section includes specific sub-sections describing the following:
					    o Valued Components (VCs), indicators and measures;
					    o Spatial boundaries;
					    o Temporal boundaries;
					    o Establishing the likelihood of occurrence; and
					    o Reversibility.
					• Description of Project Effects: Describes the changes to the environmental components predicted as a result of the Project. The section is organized by discipline and also includes details regarding the methods used to predict effects, and a description of aspects of the Project design that would help minimize or avoid effects. As set out in the EIS Guidelines, issues related to federal considerations under CEAA 2012 are discussed in their own sub-section.
					• Mitigation Measures: Describes the mitigation measures that are technically and economically feasible to mitigate the identified effects of the Project. This section is organized by discipline, and also includes a discussion of mitigation measures related to federal considerations under the *Canadian Environmental Assessment Act* (CEAA), 2012.
					• Residual Effects: Describes the residual adverse effects of the project that will remain after the technically and economically feasible mitigation measures described in the “Mitigation Measures” section are applied. As with the other sections, the residuals effects related to federal considerations under CEAA 2012 are discussed.
					• Cumulative Effects: Describes the potential cumulative effects associated with the Project. There are specific sub-sections describing the following:
					    o methods used to assess cumulative effects;
					    o projects included in the cumulative effects assessment;
					    o identification of cumulative effects identified, organized by discipline; and
					    o cumulative effects related to federal considerations under CEAA 2012.

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					• Determination of Significance: Describes the significance of the identified residual or cumulative effects. There are sub-sections describing the methods used for assigning significance, including how the individual impact measures (e.g., magnitude) were assigned for each discipline, and how the various measures were combined in a clear and transparent manner to establish significance. The significance determination is by discipline, with an explicit section describing significance for issues related to federal considerations under CEAA 2012. Finally, this section includes impact matrices as requested in the EIS Guidelines.
3	EA(1)-03	CEA Agency	EIS Section 6	Sections 7.2.1, 7.2.2, 13.1.1	**Summary of Comment / Rationale:** Section 6.1.3 (EIS) provides a characterization of residual effects for the Project. Publications of the Governments of Canada (http://www.ceaa-acee.gc.ca/Content/D/2/1/D213D286-2512-47F4-B9C3-08B5C01E5005/Determining_Whether_a_Project_is_Likely_to_Cause_Significant_Adverse_Environmental_Effects.pdf) and British Columbia (http://www.eao.gov.bc.ca/pdf/EAO_Valued_Components_Guideline_2013_09_09.pdf) are cited as the primary references used in developing the characterization. It is unclear how the proponent followed the methods outlined in these reference documents. Section 13.1.1 (EIS Guidelines) states: "The following elements should be used in determining the significance of residual effects: magnitude, geographic extent, timing, duration, frequency, reversibility, ecological and social context, and existence of environmental standards, guidelines or objectives for assessing the impact. In assessing significance against these criteria the EIS will, where possible, employ relevant existing regulatory documents, environmental standards, guidelines, or objectives such as prescribed maximum levels of emissions or discharges of specific hazardous agents into the environment. The EIS will contain a section which explains the assumptions, definitions and limits to the criteria mentioned above in order to maintain consistency between the effects on each VC." Section 6.1.3 (EIS) outlines magnitude as Level I (no measurable residual effect), Level II (Residual effect is measurable but within range of natural variation) and Level III (Residual effect is outside range of natural variation). Applying an across-the-board approach to defining levels of magnitude in the residual effects characterization does not allow the reader/reviewer to adequately understand the nature of the effect such that different readers/reviewers will reach the same conclusions. The definitions of magnitude will vary by VC and as such should be clearly defined on a per-VC basis. Definitions should be thorough and unambiguous to ensure that little room is left for interpretation on the part reader/reviewer. A table should be provided outlining magnitude

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					definitions for each VC. Section 7.2.1 of the EIS Guidelines states: "The EIS will clearly indicate the spatial boundaries to be used in assessing the potential adverse environmental effects of the proposed project and provide a rationale for each boundary. It is recognized that the spatial boundaries for each VC may not be the same. Spatial boundaries will be defined taking into account as applicable the appropriate scale and spatial extent of potential environmental effects, community and Aboriginal traditional knowledge, current land and resource use by Aboriginal peoples, ecological, technical and social and cultural considerations. The description of the project setting will be presented in sufficient detail to address the relevant environmental effects of the project." Valued component (VC)-specific spatial scales are not defined or justified in the EIS. Therefore, the spatial scale over which the residual effect is expected to occur is unclear for the VCs. Section 7.2.2 (EIS Guidelines) states: "The temporal boundaries of the EA will span all phases of the project: construction, operation, maintenance, foreseeable modifications, and where relevant, closure, decommissioning and restoration of the sites affected by the project. Temporal boundaries will also consider seasonal and annual variations related to VCs for all phases of the project, where appropriate. Community and Aboriginal traditional knowledge should factor into decisions around appropriate temporal boundaries. If the temporal boundaries do not span all phases of the project, the EIS will identify the boundaries used and provide a rationale." It is unclear in the EIS what the basis or reasoning is for the selection of "10-years after project initiation" as a benchmark value for the characterization of temporal scale (duration). It is also unclear how this benchmark relates to the project considering that Figure 3.2.1 (EIS, page 3-6) shows the operations phase to be 11 years and the total project length to be 18 years from construction to the end of the abandonment (post-closure) phase. A clear definition for duration levels that will provide consistency across VCs is required. For example, Level 1: Effect Not measurable beyond current project phase, Level 2: Effect could persist up to project decommissioning (closure), Level 3: Effect could persist beyond project decommissioning. In addition, for many biological VCs, the most relevant duration may be relative to the organism's lifespan. Frequency has been defined in general terms for the residual effects characterization. If terms such as infrequently, intermittently, or continuously are used then relevant temporal scales should be defined for each VC. For example, "occasionally" could be defined further as: fewer than X

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					number of occurrences per unit time. Furthermore, in the case of recurrent disturbances, the proponent should discuss the ability of the VC to recover, whether it is partially or fully, between disturbances and how the extent of the recovery effects the level assigned in the residual effects characterization and final significance determination. Relevant temporal scales for each VC have not been defined by the proponent and the capacity of the VC to fully recover between recurrent causal disturbances has not been discussed. For reversibility, Level I is defined as "residual effect is readily reversible over a relatively short time period". A definition of relatively short should be provided. The definition should be based on a temporal scale that is relevant to the VC being assessed. In addition, Level II is defined as "Residual effect is partially reversible". The definition of partially reversible is unclear and should be quantified and discussed on a per-VC basis. Section 13.1.1 (EIS Guidelines) states "Where significant adverse effects are identified, the EIS will set out the probability (likelihood) that they will occur, and describe the degree of scientific uncertainty related to the data and methods used within the framework of its environmental analysis." The basis of how likelihood of occurrence was determined is unclear. No descriptions, definitions or data was provided. Qualitative terms such as "unlikely" or "reasonably" should be clearly defined, and probabilities should be assigned, leaving little room for interpretation by the reader/reviewer. More information is needed to understand the basis of the likelihood conclusions.
					<u>Information Request / Comment:</u> A. Provide definitions of each level of magnitude on a VC by VC basis. Arrange definitions in a table and include in chapter 6 of the EIS. B. Define and justify the spatial scale (aka. geographic extent, LSA/RSA) for each VC, taking into account as applicable the appropriate scale and spatial extent of potential environmental effects, community and Aboriginal traditional knowledge, current land and resource use by Aboriginal groups, ecological, technical and social and cultural considerations. C. Define and justify the indicators and measures of ecosystem health and integrity used for the analysis of each VC. D. Provide a clear definition for duration levels that will provide consistency across VCs. Provide definitions on a per-VC basis where appropriate.

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					E. Define relevant temporal scales for each VC where frequency has been described in general terms. Assess the capacity of VCs to fully recover between recurrent causal disturbances. F. Clearly define and quantify "relatively short period" and "partially reversible" as they relate to reversibility. Complete this on a per-VC basis where necessary. G. Provide a clear and comprehensive basis for the determination of likelihood of occurrence. Clearly define any qualitative terms used in describing likelihood of occurrence. H. Revise the environmental effects assessment based on the newly defined magnitude, geographic extent, duration, frequency, reversibility, and likelihood levels.
					Response: The EIS Guidelines (CEAA, 2013) provided the framework that was used in preparing the original EIS. Based on the feedback from CEAA and other technical reviewers provided in IR Round 1 questions, there are a number of issues related to the approach used in the original EIS for organizing and presenting the relevant information regarding the potential effects of the Project. In order to effectively address these issues, Treasury Metals has prepared a revised EIS at the request of the Agency that incorporates the concerns provided by the technical reviewers of the original EIS. Section 6.0 of the revised EIS sets out the assessment of effects and impacts associated with the Project, including a discussion and justification for VCs and VC / discipline specific assessment criteria, in a clear and traceable manner. The spatial and temporal extents of the identified VCs utilized the traditional knowledge gained from Indigenous communities in the vicinity of the Project. The traditional knowledge gained by Indigenous communities is included in Section 9.0, and Appendix DD of the revised EIS (the Aboriginal Engagement Report)
4	EA(1)-04	CEA Agency	EIS Section 6.4, Figure 6.1.1, Tables 6.4.1 – 6.4.8	Section 3.2	**Summary of Comment / Rationale:** Section 3.2 (EIS Guidelines) states: "In describing methods, the proponent will document how it used scientific, engineering, traditional and local knowledge to reach its conclusions. Assumptions will be clearly identified and justified. All data, models and studies will be documented such that the analyses are transparent and reproducible. All data collection methods will be specified. The uncertainty, reliability and sensitivity of models used to reach conclusions must be indicated." Very little information is given in the EIS regarding the methodology followed to create the decision tree presented in Figure 6.1.1 (EIS, page 6-4) or the scientific or technical suitability of the tree for use in determining the significance of residual effects.

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					There are numerous inconsistencies in how the decision tree was applied and how effects/impact levels were described in section 6.4 (EIS), for example: - Table 6.4.1 (EIS, page 6-54), under the VC Ungulates, lists magnitude level 2, geographic extent level 3, duration level 1, frequency level 3, reversibility level 2 and goes on to list significance as “not significant”. Following the decision tree listed in Figure 6.4.1 (EIS) this should be considered a significant effect. Other examples include but may not be limited to: Table 6.4.1 Furbearers, Table 6.4.2, Groundwater, Fish. - The effects assessment of air quality presented in section 6.4.1.5 (EIS) does not align with Table 6.4.2 (EIS, page 6-61). The table shows magnitude and geographic extent at Level 2, and frequency at Level 3 while section 6.4.1.5 (EIS) deems these all to be Level 1 in determining an overall magnitude Level 1.
					<u>Information Request / Comment:</u> A. Provide the procedures and rationale used to create the decision tree presented in Figure 6.1.1 (EIS, page 6-4). Provide clear explanation and justification of how different paths through the decision tree were determined to result in significant or non-significant outcomes. B. Using the revised residual effects characterization (see EA(1)- 03), and any revisions made to the decision tree, repeat the residual effects significance determination for all VCs. Based on the revised significance determination, revise mitigation and follow-up programs as required for all VCs. Revise EIS section 6 and correct any inconsistencies between the section 6 tables and the text in the section.
					<u>Revised Response</u> A. As part of the process for responding to the Round 1 information requests, Treasury Metals have prepared a revised EIS. As part of the revisions to the EIS, changes and refinements were made to the approach used for assigning assessment measures and for determining significance. In the revised EIS, two separate approaches were used for determining the significance of residual and cumulative effects. One approach uses a “reasoned argument”, where a hypothesis of what would constitute significant effects is put forward, and used to test the predicted residual adverse effects of the Project. The other approach uses the same decision tree from the original EIS, applied using the using the refined assessment measures as described in Section 8.1 of the revised EIS and TMI_003-EA(1)-03.

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					The decision tree, which was retained unchanged from the original EIS, is based on similar decision trees used in comparable projects in Ontario (e.g., IAMGOLD Côté Gold Project). The rationale behind the decision tree is as follows: • If the magnitude of the effect is assigned as Level I (i.e., the effect of the Project will be comparable to baseline conditions or would not be noticeable) then irrespective of spatial extent or reversibility, the effect would be classified as "not significant". • If the magnitude of the effect is clearly distinguishable but meets guidelines or is within the environment's adaptive capabilities (magnitude = Level II), then: o If the spatial extent of the effect is limited to the Project site or local study area (extent = Level I or II), then: ▪ If the effect is reversible, the effect would be classified as "not significant". ▪ If the effect is not reversible, the effect would be classified as "significant". o If the effect extends far beyond the Project site into the RSA (extent = Level III), then: ▪ If the duration of the effects is relatively short-term (duration = Level I) and the effects are infrequent or intermittent (frequency = Level I or II), the effect would be classified as "not significant". ▪ If the duration of the effects is relatively short-term (duration = Level I) and the effects are continuous (frequency = Level III), the effect would be classified as "significant". ▪ If the duration of the effects extent through the life of the Project (duration = Level II) and the effects are infrequent (frequency = Level I), the effect would be classified as "not significant". ▪ If the duration of the effects extent through the life of the Project (duration = Level II) and the effects are intermittent or continuous (frequency = Level II or III), the effect would be classified as "significant". ▪ If the duration of the effect extends more than 10 years beyond the life of the Project, the effect would be classified as "significant". • If the magnitude of the effect exceeds guidelines or is beyond the environment's adaptive capability (magnitude = Level III), then: o If the spatial extent of the effect is limited to the Project site (extent = Level I), and the duration of the effects would not persist more than 10 years beyond

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					the life of the Project (duration = Level I or II), the effect would be classified as "**not significant**". o If the spatial extent of the effect is limited to the Project site (extent = Level I), and the duration of the effects extend more than 10 years beyond the Project life (duration = Level III), the effect would be classified as "**significant**". o If the spatial extent of the effect extends into the local study area (extent = Level II), and the effects are reversible, the effect would be classified as "**not significant**". o If the spatial extent of the effect extends into the local study area (extent = Level II), and the effects are not reversible, the effect would be classified as "**significant**". o If the spatial extent of the effect extends into the regional study area (extent = Level III), the effect would be classified as "**significant**". B. As part of the process for responding to the Round 1 information requests, Treasury Metals have prepared a revised EIS. As part of the revisions to the EIS, changes and refinements were made to the assessment measures used for each of the disciplines, as described in the response to TMI_003-EA(1)-03, and detailed in following sections of the revised EIS: • Section 8.1.1: magnitude; • Section 8.1.2: geographic extent; • Section 8.1.3: timing; • Section 8.1.4: duration; • Section 8.1.5:frequency; • Section 8.1.6: reversibility; and • Section 8.1.7: likelihood. In the revised EIS, two separate approaches were used for determining the significance of residual and cumulative effects. The first approach made use of the same decision tree from the original EIS (as described in part A), using the refined assessment measures as described in the above sections. The second approach uses a "reasoned argument" approach, where a hypothesis of what would constitute significant effects is put forward, and used to test the predicted residual adverse effects of the Project.
5	EA(1)-05	CEA Agency	EIS Section 6	Section 11.1.1	**Summary of Comment / Rationale:** Section 11.1.1 of the EIS Guidelines state: "The [environmental] impact statement will also present an assessment of the effectiveness of the proposed technically and economically feasible mitigation measures. The reasons for determining if the mitigation measure reduces the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					significance of an adverse effect will be made explicit.” The mitigation measures identified in section 6 (EIS) are not assessed for their effectiveness, nor are reasons presented for determining if the measures reduce the significance of the potential effects.
					Information Request / Comment: A. For each proposed mitigation measure: - assess and describe the effectiveness of the measure; - explain the criteria used to evaluate effectiveness with respect to the implementation of the measure to address potential effects caused by the Project; and - provide the rationale for determining the measure will reduce the significance of the potential effects caused by the Project.
					Response: The EIS Guidelines (CEAA, 2013) provided the framework that was used in preparing the original EIS. Based on the feedback from CEAA and other technical reviewers provided in IR Round 1 questions, there are a number of issues related to the approach used in the original EIS for organizing and presenting the relevant information regarding the potential effects of the Project. In order to effectively address these issues, Treasury Metals has prepared a revised EIS that incorporates the concerns provided by the technical reviewers of the original EIS. The revised EIS sets out the assessment of effects and impacts associated with the Project in a clear and traceable manner. Section 13 of the revised EIS presents the follow-up monitoring programs developed to verify the effects assessment of the revised EIS, as well as determine the effectiveness of the presented mitigation measures. Mitigation and residual effects are described for each discipline used in the effects assessment provided in Section 6.0 of the revised EIS.
6	EA(1)-06	CEA Agency	EIS Sections 12, 13, Tables 6.4.1 – 6.4.8	Section 11.4	**Summary of Comment / Rationale:** Section 11.4 of the EIS Guidelines includes the following statements: - “A Follow-up Program is designed to verify the accuracy of the effects assessment and to determine the effectiveness of the measures implemented to mitigate the adverse effects of the project”; - “The EIS will describe the proposed Follow-up Program in sufficient detail to allow independent judgment as to the likelihood that it will deliver the type, quantity and quality of information required to reliably verify predicted effects (or absence of them), and to confirm both the assumptions and the effectiveness of mitigation”; - “The Follow-up Program will include specific commitments that clearly describe how the proponent intends to implement them”;

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					- "The description of the Follow-up Program will include any contingency procedures/plans or other adaptive management provisions as a means of addressing unforeseen effects or for correcting exceedances as required to comply or to conform to benchmarks, regulatory standards or guidelines"; - "The Follow-up Program will also be designed to monitor the implementation of mitigation measures resulting from Aboriginal consultation…" Tables 6.4.1 to 6.4.8 identify follow-up monitoring for certain valued components; however, the EIS does not provide sufficient detail to evaluate whether the proposed monitoring is appropriate. The objectives outlined in sections 12 and 13 of the EIS do not reflect the intent of the EIS Guidelines. These sections describe an environmental management plan and monitoring program, respectively, developed to meet anticipated regulatory permit requirements only. Neither the plan nor the program indicates the main purpose of the follow-up program, which is to verify the predictions of the environmental effects and determine the effectiveness of the mitigation measures.
					Information Request / Comment: A. Develop and describe a follow-up program to verify the accuracy of the effects assessment and to determine the effectiveness of the measures implemented to mitigate the adverse effects of the Project on all relevant valued components (VCs). For any identified VC excluded from the follow-up program, provide a rationale for the exclusion. B. Describe the follow-up program which includes, in accordance with the EIS Guidelines: - specific, achievable, measurable and verifiable commitments that clearly describe how they will be implemented; - baseline data, compliance data (e.g. established benchmarks, regulatory documents, standards or guidelines), and real time data (e.g. observed data gathered in the field) incorporated in the program design and implementation; - reporting methods to be used, including frequency, methods, and format; - field-testable monitoring objectives that reflect the effects predictions, assumptions, and mitigation actions; - a schedule indicating the frequency and duration of effects monitoring; and - program elements designed to monitor the implementation of mitigation measures resulting from Aboriginal engagement and where appropriate, public concerns.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					<u>Revised Response:</u> Section 13 of the EIS has been re-titled as “Environmental Follow-up Programs and Monitoring”. The text has been revised to indicate to the reader that the main purpose of the follow-up program is to verify the accuracy of the EIS findings, to determine the effectiveness of applied mitigation measures, and the need, if any, for further adaptive measures. For each VC grouping (e.g., terrain and soils; surface water quality; wildlife and wildlife habitat) where follow-up assessment and/or monitoring is required, the following subsection headings are now used (or similar) to better reflect the requirements of a follow-up program: • EA prediction, and overview and objectives of proposed monitoring • Rationale for inclusion in the follow-up program • Follow-up program commitments • Verification / assessment methods and schedule • Proposed mitigation measures (including where applicable mitigation measures resulting from Indigenous consultation) • Criteria for considering adaptive management measures • Applicable regulatory instruments • Responsibilities • Reporting. Table 13.22-1 has been expanded to reflect the additional information required. In preparing the follow-up program, it is recognized that additional detail regarding monitoring requirements will result from the environmental approvals phase.
7	EA(1)-07	CEA Agency	EIS Sections 6.4.1.4, 6.4.1.7, 6.4.1.11, 6.4.1.12, 12, 13	Section 11.1, 16	**<u>Summary of Comment / Rationale:</u>** An Environmental Management Plan (EMP) is referred to throughout the EIS as a mitigation measure for impacts to several valued components. The EIS also refers to section 12 for the EMP; however, section 12 describes the monitoring plan for the valued components. Details of measures contained in an EMP will assist the Agency in better understanding how the environmental effects are proposed to be mitigated.
					<u>Information Request / Comment:</u> A. Describe the general content of an EMP to ensure that proper measures and controls will be in place in order to decrease the potential for effects on air quality, surface water quality, Aboriginal peoples, wildlife and wildlife habitat, and fish and fish habitat.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Response: The EIS Guidelines (CEAA, 2013) provided the framework that was used in preparing the original EIS. Based on the feedback from CEAA and other technical reviewers provided in IR Round 1 questions, there are a number of issues related to the approach used in the original EIS for organizing and presenting the relevant information regarding the potential effects of the Project. In order to effectively address these issues, Treasury Metals has prepared a revised EIS that incorporates the concerns provided by the technical reviewers of the original EIS. Section 6.0 of the revised EIS sets out the assessment of effects and impacts associated with the Project in a clear and traceable manner. Section 12.0 of the revised EIS outlines the environmental management plan framework for the Project. The individual environmental management plans will be developed and finalized through consultation with government agencies, Aboriginal peoples and stakeholders.
8	EA(1)-08	CEA Agency	EIS Section 6.4.3.3	Section 10.1.2, 10.1.3	**Summary of Comment / Rationale:** Section 6.4.3.3 (EIS) does not describe the changes to the environment linked or necessarily incidental to the provision of an authorization for the serious harm to fish by Fisheries and Oceans Canada, an approval for the deposit of deleterious substance in a fish frequented waterbody by Environment Canada and a licence for the explosives manufacturing and storage facilities by Natural Resources Canada. Based on section 10.1.2 of the EIS Guidelines, "the proponent shall describe any change that may be caused by the project on the environment, which is defined as the components of the Earth, including: − Land, water and air, including all layers of the atmosphere; − All organic and inorganic matter and living organisms; and − The interacting natural systems that include the components described above. These descriptions will be integrated into the effects assessment sections of each VC included in the EIS". Section 10.1.3 of the EIS Guidelines also state that the proponent shall describe the effects of these changes on health and socio-economic conditions, physical and cultural heritage, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, other than as they pertain to Aboriginal peoples.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Information Request / Comment: A. Where matters may fall within the scope of subsection 5(2) of CEAA 2012, i.e. effects in relation to a federal authority's exercise of a power or performance of a duty or function, describe in a stand-alone section the effects to additional receptors, not just air quality, surface water quality, Aboriginal peoples, wildlife and wildlife habitat, and fish and fish habitat, and identify mitigation measures, the significance of residual effects, and any follow-up monitoring that may be required. Additional receptors can include, but is not limited to: a. Furbearers and their habitat b. Amphibians and their habitat c. Reptiles and their habitat d. Ungulates and their habitat e. Species at risk and their habitat f. Water quality and quantity g. Non-migratory birds and their habitat h. Riparian vegetation i. Non-Aboriginal people j. Air quality B. Provide a map that shows the ecosystem habitats (e.g. riparian zones, waterbodies, wetlands) within the geographic areas that may fall within the scope of subsection 5(2) of CEAA 2012. C. Provide the sizes of the geographic areas and habitats that may fall within the scope of subsection 5(2) of CEAA 2012 in hectares.
					Revised Response: Part A: Effects in relation to a federal authority's exercise of a power or performance of a duty or function The original TMI_EA(1)-08 Information Request asks Treasury Metals to provide a stand-alone section on environmental effects linked to a federal authority's exercise of a power or performance of a duty or function, in relation to subsection 5(2) of the Act. Subsection 5(2) of the Act specifies that effects to be considered pursuant to subsection 5(2) are in "addition to" those considered pursuant to subsection 5(1). Section 14 "Federal Considerations" is a newly included section in the revised EIS which serves as a stand alone summary of the effects of the project or changes to the environment that may fall under federal jurisdiction.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Section 14 of the revised EIS summarizes information from Section 6 of the revised EIS and describe the effects of these changes on health and socio-economic conditions, physical and cultural heritage, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, other than as they pertain to Aboriginal peoples. In total the EIS considered 65 VCs, using a total of 136 indicators from 20 disciplines, in the revised effects assessment in Section 6 of the revised EIS. Table 6.1.3.21-1 of the revised EIS provides a summary of all disciplines valued components, and indicators assessed as part of the revised EIS. Table 7.3.1-1 of the revised EIS presents a summary of all disciplines, valued components, indicators and if residual effects were identified as part of the effects assessment presented in Section 6 of the revised EIS. Table 7.3.1-1 has been attached to this IR response for reference as TMI_008-EA(1)-05_Table 1 The revised Section 6 of the revised EIS considers environmental effects linked to Project development and operation for a broad list of VCs, including several VCs that are beyond the scope of subsection 5(1) requirements, where subsection 5(1) requirements are defined specifically those related to the following Acts: • *Fisheries Act*; • *Species at Risk Act*; • *Migratory Birds Convention Act*; and • Those related to Aboriginal peoples as defined in subsection 5(1)(c) of the Act. The exercise of a power or performance of a duty by a federal authority, in relation to the Project, is limited to those potentially associated with application of the: • *Fisheries Act;* • *Species at Risk Act;* • *Migratory Birds Convention Act;* • *Navigation Protection Act*; and • *Explosives Act*. <u>*Fisheries Act*</u> With respect to the exercise of powers under the ***Fisheries Act**,* Section 6 of the revised EIS considers effects to the following VCs: • Stream-resident fish populations; • Migratory fish populations; • Lake-resident fish populations; and

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• Fish Species-at-Risk. The assessment of effects in this regard, considers effects defined by habitat loss, habitat adversely affected and fish mortality, including aspects relating to water quality and surface water flows (Section 6.14 of the revised EIS). In providing Authorizations (or other functions) pursuant to or linked to the *Fisheries Act*, other aspects of the environment dependent upon, or linked to, the aquatic environment could also potentially be affected by any such decision. These other aspects could potentially include the following groups of organisms that might use the relevant aquatic habitats: • Reptiles and amphibians; • Aquatic furbearers; • Ungulates (moose aquatic feeding areas); • Aquatic and riparian plant communities (including wild rice communities); • Migratory and non-migratory birds that use wetland habitats; and • Aquatic-related Species-at-Risk. Any use of these organisms could also potentially result in an associated additional indirect effect on human health or socio-economic conditions, depending on the mode of use, if any. The following table summarized the location of each topic in this IR in the Revised EIS. A detailed summary discussion of each follows:

Summary Table of Location of IR in Revised EIS	
Topic	Location in Revised EIS
Habitat Loss, habitat and fish mortality, water quality, surface water flows	6.14
Species at Risk	Table 6.1.3.11-1: Wildlife and Wildlife Habitat VCs, Indicators and Measures Table 6.12.4.5-2: Predicted Adverse Effects on Wildlife and Wildlife Habitat Table 6.12.6-1: Residual Adverse Effects on Wildlife and Wildlife Habitat
Hunting and Land Use	6.16
Potential Effects (Residual Effects)	

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response	
					Aquatic and Riparian Plants	6.15.4.1 through 6.15.4.4
					Non-Migratory Birds (residual effects)	6.12.4.1 through 6.12.4.4 (6.13.6)
					Wetlands	6.13.4.1 through 6.13.4.4 (6.12.6)
					reptiles and amphibians	6.12.4. through 6.12.4.4
					Aquatic Furbearers	6.12.4.1 through 6.12.4.4, 6.12.5, 6.12.6
					Vegetation Communities	6.15.4.1 through 6.15.4.4
					Wildlife	subsections 6.12.4.1 through 6.12.4.4 and, respectively
					Migratory Birds	6.13.4.1 through 6.13.4.4
					Mitigation Measures	
					Non-Migratory Birds	13.12
					Wetlands	13.12
					reptiles and amphibians	6.12.5 (6.12.6)
					Aquatic and Riparian Plants	6.12.5
					Vegetation Communities	6.15.5
					Wildlife	6.12.5
					Migratory Birds	6.13.5
					Follow-up Program and Monitoring	
					reptiles and amphibians	13.12
					Aquatic and Riparian Plants	13.14 and 13.15
					Vegetation Communities	13.15
					Aquatic Furbearers	13.12
					Wildlife	13.12
					Migratory Birds	13.13
					Stand Alone Federal Considerations Summary	

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Changes to Components of the Environment within Federal Jurisdiction — 14.1.1 Changes to the Environment on Federal or Transboundary Lands — 14.1.2 Changes to the Environment Directly Linked or Necessarily Incidental to Federal Decisions — 14.1.3 Effects of Changes to the Environment on Aboriginal (Indigenous) Peoples — 14.2.1 Changes to the Environment Directly Linked or Necessarily Incidental to Federal Decisions — 14.2.2 Part B: . Provide a map that shows the ecosystem habitats (e.g. riparian zones, waterbodies, wetlands) within the geographic areas that may fall within the scope of subsection 5(2) of CEAA 2012. The following "maps" or figures show the areas used in the EIS to evaluate the effects of the project on the environment. Justification for the chosen areas are described in detail in Section 6.1.4 of the revised EIS. These have been attached to this IR as TMI_008-EA(1)-08_Attachment_1 Figure 6.1.4.1-1: LSA for Terrain and Soils Figure 6.1.4.2-1: Regional Geology Goliath Gold Project Figure 6.1.4.2-2: Bedrock Geology, Goliath Gold Project Figure 6.1.4.3-2: Location of Sensitive Noise Receptors Figure 6.1.4.4-1: Location of Light Receptors and the Light LSA Figure 6.1.4.5-1: Air Quality LSA Figure 6.1.4.5-3: Air Quality RSA Figure 6.1.4.7-1: Surface Water Quality RSA and LSA Figure 6.1.4.8-1: Surface Water Quantity Study Areas Figure 6.1.4.9-1: Effects Assessment LSA and RSA for Hydrogeology

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Figure 6.1.4.11-1: Wildlife and Wildlife Habitat Study Areas Figure 6.1.4.13-1: Fish and Fish Habitat Study Areas Figure 6.1.4.14-1: LSA for Wild Rice Figure 6.1.4.14-2: Vegetation and Wetlands Study Areas Figure 6.1.4.15 1 Land and Resource Use (Terrestrial) Study Areas Figure 6.1.4.15-2 Land and Resource Use (Aquatic) Study Areas Figure 6.1.4.16-1: Socio-economic Study Area Figure 6.1.4.19-1: Heritage Resources Local Study Area (LSA) Figure 6.1.4.20-1: Study Areas Used for Aboriginal Peoples VCs Part C: Provide the sizes of the geographic areas and habitats that may fall within the scope of subsection 5(2) of CEAA 2012 in hectares As described In Part A of this IR response, changes in geographic areas and habitats were one of the measures used for each of the wildlife and wildlife habitat, migratory birds, and fish and fish habitat indicators. The changes to habitat in ha for each indicator is described in Section 6 and 7 of the revised EIS and summarized below. Wildlife:

Valued Components (VCs)	Indicators	Measures	Site Preparation and Construction	Operations	Closure	Post-closure
			Goliath Gold Project	Goliath Gold Project	Goliath Gold Project	Goliath Gold Project
Wildlife SAR	Common Nighthawk	Habitat loss (ha)	300	300	300	—
	Northern Myotis/ Lit	Habitat loss (ha)	16	16	16	—
	Barn Swallow	Habitat loss (ha)	Several	Several	Several	—
Ungulates	Moose	Habitat loss (ha)	84	84	84	—
Furbearers	American Marten	Habitat loss (ha)	62	62	62	—
	American Beaver	Habitat loss (ha)	< 4	< 4	< 4	—
Upland Birds	Upland Birds	Habitat loss (ha)	95	95	95	—
Wetland Birds	Marsh Birds	Habitat loss (ha)	33	33	33	—
Small mammals	Small Mammals	Habitat loss (ha)	—	—	—	—
Reptiles and Amphi	Reptiles and Amphi	Habitat loss (ha)	162	162	162	—
Invertebrates	Terrestrial Invertebi	Habitat loss (ha)	—	—	—	—

Birds and Migratory Birds

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

Valued Components (VCs)	Indicators	Measures	Site Preparation and Construction	Operations	Closure	Post-closure
			Goliath Gold Project	Goliath Gold Project	Goliath Gold Project	Goliath Gold Project
Upland Birds	Upland Birds	Habitat loss (ha)	95	95	95	—
		Potential for Mortalit	Medium	Medium	Medium	—
Wetland Birds	Marsh Birds	Habitat loss (ha)	33	33	33	—
		Habitat alteration or	2.9	7.5	0.7	—

Wetlands and Wetland Habitat

Valued Components (VCs)	Indicators	Measures	Site Preparation and Construction	Operations	Closure	Post-closure
			Goliath Gold Project	Goliath Gold Project	Goliath Gold Project	Cumulative Effect
Wetlands	Wetland extent	Change in area (ha)	33	47 [1]	47 [2]	— [3]
Vegetation Communities	Predominantly coniferous forest	Change in area (ha)	95	95 [3]	95 [3]	— [3]
	Predominantly deciduous forest	Change in area (ha)	43	43 [3]	43 [3]	— [3]
	Successional areas	Change in area (ha)	70	70 [3]	70 [3]	— [3]
	Potential berry harvesting areas	Change in area (ha)	260	260 [3]	260 [3]	— [3]

Notes:

The "—" symbol indicates there were no predicted adverse effects

(1) The increase in wetland extent reflects the effects of dewatering on WLD5

(2) The effects due to dewatering are expected to persist until the open pit floods and groundwater returns to near pre-development levels

(3) The areas lost during the site preparation and construction phase will not recover until post-closure

Fish and Fish Habitat

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

Valued Components (VCs)	Indicators	Measures	Site Preparation and Construction	Operations	Closure	Post-closure
Stream-resident fish population	Direct loss or alteration of habitat	Stream length (km)	0	0	0	0
		Pond area (ha)	0	0	0	0
Migratory fish populations	Direct loss or alteration of habitat	Stream length (km)	0	0	0	0
		Pond area (ha)	0	0	0	0
Lake-resident fish populations	Direct loss or alteration of habitat	Lake area (ha)	0	0	0	0
Fish species-at-risk	Direct loss or alteration of habitat	Stream length (km)	0	0	0	0
		Pond or lake area (ha)	0	0	0	0

Relative to any human use, or the potential use, of the above groups of organisms, outside of those that pertain to use by Aboriginal peoples (addressed, or to be addressed in Section 6.21), are those limited to the harvesting of moose and waterfowl for consumptive purposes (i.e., hunting). These aspects are addressed in Section 6.16 of the EIS.

Species at Risk Act

With respect to the exercise of powers under the ***Species at Risk Act***, Section 6 of the EIS considers effects to the following VCs: wildlife SAR, fish species SAR, and vegetation SAR. The only Federal SAR species that have been identified as occurring at the site and having the potential to be adversely affected by Project development are: Common Nighthawk, Barn Swallow, Little Brown Myotis and Northern Myotis. Effects to these species are discussed in subsections 6.12.4.1 through 6.12.4.4 of the revised EIS. Mitigation measures designed to limit adverse effects to SAR are described in Section 6.12.5. Residual effects are described in Section 6.12.6. Follow-up measures area described in Section 13. There are no other additional effects to Federal SAR species that could reasonably be expected to result from a consideration of subsection 5(2) of the Act from the exercise of a power or performance of a duty by a federal authority in relation to the *Species of Risk Act*.

Migratory Birds Convention Act

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					With respect to the exercise of powers under the *Migratory Birds Convention Act*, effects to migratory birds are considered in subsections 6.13.4.1 through 6.13.4.4 of the revised EIS. Mitigation measures designed to limit adverse effects to migratory birds are described in Section 6.13.5. Residual effects are described in Section 6.13.6. Follow-up measures area described in Section 13.12. There are no other additional effects to migratory birds that could reasonably be expected to result from a consideration of subsection 5(2) of the Act from the exercise of a power or performance of a duty by a federal authority in relation to the *Migratory Birds Convention Act*. *Navigation Protection Act* There is no anticipated requirement for an approval pursuant to the Navigation Protection Act for any aspect of the Project. *Explosive Act* The development of explosives facilities has the potential to displace terrestrial habitats (and their associated wildlife) associated with facility construction, although it is a relatively small facility. The detonation of explosives for mineral extraction also has the potential to disturb wildlife that are sensitive to noise disturbance. The location selected for construction of explosives facilities is within currently disturbed commercial nursey habitat. There are no other additional effects to vegetation or wildlife that could reasonably be expected to result from a consideration of subsection 5(2) of the Act from the exercise of a power or performance of a duty by a federal authority in relation to the *Explosives Act*.
9	EA(1)-09	CEA Agency	EIS Section 9, Table 9.0.1	Section 11.5	**Summary of Comment / Rationale:** Section 11.5 of the EIS Guidelines states: "Proponent commitments identified in the EIS should include environmental mitigation measures to address public and Aboriginal peoples concerns and Follow-up Program elements". The guidelines also state: "Each commitment will be specific, achievable, measurable and verifiable, and described in a manner that avoids ambiguity in intent, interpretation, and implementation." The commitments listed in Table 9.0.1 (EIS, pages 9-1 to 9-7) do not have sufficient detail to comply with the EIS Guidelines and to permit the Agency to evaluate the effectiveness of mitigation measures and the follow-up program in addressing environmental effects or uncertainty. Details for each commitment should include, but not be limited to, description of the mitigation measure or follow-up program element, where the measure or element will be applied, what phase(s) of the project life the measure or element will be applied, and which organizations will be involved. The proponent should consider SMART (specific, measurable, attainable, relevant, time-bound) measures to guide the development of the commitments. Also, the commitments should indicate to whom the commitments are made.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Also, section 9.0 (EIS) states: "Treasury has made a series of the key commitments as identified in the EIS report in accordance to the Federal EIS Guidelines (Table 9.0.1). Reference numbers have been attached to commitments as they appear in the report. Regulatory and legislative requirements have been identified where applicable." Table 9.0.1 (EIS, pages 9-1 to 9-7) does not include reference numbers.
					Information Request / Comment: A. Update Table 9.0.1 of the EIS with descriptions of the mitigation measures and follow-up program elements, where the measures and elements will be applied, what phase(s) of the project life the measures and elements will be applied, and which organizations will be involved. Provide details on these commitments that reflect the SMART approach, avoid ambiguity, and indicate to whom the commitments are made. B. Update Table 9.0.1 with additional mitigation measures and follow-up program measures or elements in response to comments from government, public and Aboriginal peoples. Provide details on these commitments that reflect the SMART approach, avoid ambiguity, and indicate to whom the commitments are made. C. For each commitment in Table 9.0.1, provide the reference numbers.
					Revised Response: The EIS has been revised so substantially such that any reference to the original section numbers or table numbers is no longer valid. A new Table, Table is numbered 6.23-1 through 6.23-20 summarizes the disciplines, valued components, indicators, measures, predicted effects, mitigation measures and residual adverse effects of the project. The residual adverse effects of the project on Aboriginal peoples is Table 6.21.6-1 in the revised EIS. Tables 6.23-1 through 6.23-20 of the revised EIS (Summary of Mitigation Measures) has been updated reflect the SMART approach, avoid ambiguity and include the requested information by the Agency. This table now includes: • the mitigation identifier; • description of mitigation measure; • applicable discipline(s); • applicable VC(s); • applicable indicator(s); • effect(s) it mitigates; • project phase(s); • comment from government, public or Aboriginal peoples it addresses; and

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• regulatory/legislative authority or addressee. The same approach has been taken for the Commitments for the Project table in Section 10 of the revised EIS. This table now includes: • the commitment identifier; • description of commitment; • applicable discipline(s); • applicable VC(s); • applicable indicator(s); • effect(s) it addresses; • project phase(s); and • comment from government, public or Aboriginal peoples it addresses; and • regulatory/legislative authority or addressee. The linkage between mitigation measures and commitments for the Project has been identified in Section 10.0 of the revised EIS. This section states: "*… commitments have been limited to specific measurable items that are relevant, and will stand up over the life of the Project. Once commitments are made, they cannot be easily withdrawn or adapted to reflect changing conditions. Therefore, specific mitigation measures incorporated into the assessment of Project effects have not been identified individually as commitments to ensure the flexibility within the Project for incorporating new and evolving technologies. These mitigation measures are listed separate from the commitments listed in Table 10.0-1, as the mitigation measures (Table 6.22-1) establish a level of control to be achieved, while affording flexibility to adapt to the conditions encountered as the Project advances, as well as adapting to allow the adoption of new technologies and standards as they become available. This approach allows for adaptive management within the Project, which can pursue the concept of continuous improvement. A complete list of the commitments for the Project is provided in Table 10.0-1.*"
10	AC(1)-01	CEA Agency	EIS Section 8 Appendix DD	Sections 2.3, 3.3, 7.1.1, 7.2.19.2, 10.2, 11.2	**Summary of Comment / Rationale:** The EIS guidelines detail Aboriginal engagement requirements for the proponent in relation to specific components of the EIS, including the identification of valued components, impacts from the Project on Aboriginal and Treaty rights, and proposed mitigation or accommodation measures. The EIS does not clearly identify or document how the Aboriginal engagement requirements

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					described in the EIS Guidelines are met. Further, while a detailed log of proponent efforts is provided in Appendix DD, it is not clear how the efforts align with the environmental assessment (EA) milestones, what information related to the EA was shared for engagement, and when the information was shared. In Appendix DD, the responses to specific concerns are not substantiated by information in the EIS, nor is it clear how comments have been incorporated into EIS or the project design. For example, a key concern from Eagle Lake First Nation was the effect of the project on Lola Lake Nature Reserve (table in section DD.7.9, Appendix DD, page 119). The proponent response states: “Lola Lake Nature Reserve is located 2 km. to the northeast of the project site and upstream from the project site. The area between the project site and Lola Lake Nature Reserve will not be developed as part of the Project. As such, the project is expected to have no impact on the Lola Lake reserve area.” This conclusion is not substantiated by any scientific or technical information. Further, the response includes a reference to Appendix J, which is the air quality study, without rationale for the reference.
					Information Request / Comment: A. Provide a summary of the information presented, including a reference list and sample of the materials used and distributed at Aboriginal engagement events, as well as meeting notes, and written comments provided by participants, to demonstrate how each potentially affected group was engaged on each of the following topics: - baseline conditions, including potential or established Aboriginal and Treaty rights that may be affected by the Project; - alternatives assessment; - project components and related activities; - effects assessment, including valued components, spatial and temporal boundaries for the assessment, and adverse impacts to potential or established Aboriginal and Treaty rights; - mitigation measures, including Aboriginal accommodation measures to address impacts on Aboriginal and Treaty rights; - residual effects, including identification of outstanding Aboriginal issues; and - the follow-up monitoring program. B. Provide a table with a summary of Aboriginal concerns by valued component, the proponent responses (including the extent to which this information was incorporated in the design of the Project as well as in the EIS, and the resultant changes), references to specific sections of the EIS and/or appendices that detail how the concerns has been addressed, and the proponent’s

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					commitments to address concerns. C. Demonstrate how Aboriginal groups were provided access to timely and relevant information required to identify impacts to Aboriginal and Treaty rights. D. Align engagement activities with each of the EA milestones, and provide a record of information presented. Information provided need to demonstrate that the proponent held and facilitated meetings by making key EA summary documents (baseline studies, EIS and key findings) available, including plain language summaries. E. Demonstrate that the engagement requirements were met during the development of the EIS. Where requirements were not met, conduct additional Aboriginal engagement activities in consultation with the Agency. Any concerns or information gathered from additional engagement activities will need to be documented and included in the table requested in item B above. The proponent must also describe how the additional information was incorporated into the effects assessment.
					<u>Revised Response:</u> A. Treasury Metals has made overtures to each community, and collated all biophysical and traditional values/land and recourse use information within the EIS to date. This information in turn has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. All information received via engagement has been formally captured within the Stakeholder Engagement Report which is included in the revised EIS as Appendix DD and summarized in Section 9 of the revised EIS. Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing/Baseline Environment) i.e. 5.1 climate, 5.2 air quality, 5.3 noise and light, 5.4 geology, 5.5 terrain and soil, 5.6 hydrogeology, 5.7 surface hydrology, 5.8 aquatic resources, 5.9 terrestrial resources, 5.10 migratory birds,5.11 species at risk, and 5.12 human environment; • Traditional land and resource use is discussed for each Indigenous community including in Section 5.13.3;

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Aboriginal peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential to the selection of valued components (VCs) as discussed in Section 6.1.3 of the revised EIS. • All engagement activities to date are summarized in Section 9 of the revised EIS and provided in detail in Appendix DD. Engagement logs for all indigenous communities are attached to Appendix DD. • The executive summary has been updated to reflect the meaningful engagement activities In addition, to ensure that Indigenous communities most affected by the Project have input into the effectiveness of the Environmental Management Plans and Follow-up Programs, Treasury Metals proposes to form an Environmental Management Committee (Section 12.22 of the revised EIS). This committee would be made up of members from Indigenous communities and would meet with representatives from Treasury Metals on a to-be-determined basis, possibly quarterly or at least semi-annually. Treasury Metals would present any reportable information on the management plans as well as the results of the follow-up programs. If exceedances or issues arise that show mitigation measures have not been as effective as expected, the potential for further actions would be discussed with the committee. The Environmental Management Committee would also provide a forum for discussing other environmental matters with the potentially affected Indigenous communities such as upcoming permits, additional TK that might have been collected since completion of the EA process, and any other environmental matters of relevance to the committee including financial support for operation of the committee. B. The baseline conditions including traditional knowledge and traditional land and recourse use information shared with Treasury and presented in Section 5 of the revised EIS were essential to the assessment of the effects of the project on Indigenous communities in Section 6 of the revised EIS. The traditional knowledge and traditional land and resource use was also essential to the selection of valued components in Section 6.1.3 of the revised EIS. Aboriginal peoples are specifically assessed in Section 6.21 of the revised EIS, and a discussion of the effects of the project on WLON is provided in Section 6.22 of the Revised EIS. The following valued components were assessed part of Section 6.21 of the revised EIS-Description of Project Effects, Aboriginal Peoples: • Human health • Gathering pf plant materials • Hunting and trapping

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• Fishing • Cultural and spiritual activities • Socio-economic effects. The potential effect on each one of these VCs was considered for members of indigenous communities both on and off official first nation reserves. The methods used for the effects prediction are explained in detail in Section 6.21.2 of the revised EIS. In the revised EIS, a summary of the potential effects of the project including on traditional land and resource use for each indigenous community i.e there is a subsection specific to WLON which is provided in Section 6.22 of the revised EIS. Attachment TMI_010-AC(1)-01 presents a summary of engagement information shared and provides a general overview of where that information was incorporated into the various section of the revised EIS. Treasury has linked each piece of information to the VCs used to assess potential impacts on Aboriginal Peoples as described in Section 6.1.3 and performed in 6.21 of the revised EIS. C. As presented within the Indigenous Engagement Report (Appendix DD of the Revised EIS), Treasury made available all documentation associated with the Project. This has been completed from baseline activities, to submittal of review EIS documentation in September 2017. Treasury Metals further invited all comments on all Project facets, and offered funding for 3rd party review to ensure information was suitable for community members. Further to this Treasury has spoken to the materials presented at numerous in-person meetings, and has reached out to all communities to speak to the Project. D. As presented within the Indigenous Engagement Report (Appendix DD of the revised EIS), Treasury made available all documentation associated with the Project. This has been completed from baseline activities, to submittal of review EIS documentation in September 2017. Treasury Metals further invited all comments on all Project facets, and offered funding for 3rd party review to ensure information was suitable for community members. Further to this Treasury has spoken to the materials presented at numerous in-person meetings, and has reached out to all communities to speak to the Project. Records of documentation are provided as part of Appendix DD.

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Community	Number of Engagement Activities to-date	Summary of Milestone deliveries
WLON	521	Delivered original EIS – October 21, 2014 (V1) April 22, 2015 (Final) Letter received Regarding WLON Concerns – March 4, 2014 IRs received by Treasury – June 30, 2015 Responses returned – May 29, 2017 Presentation of Project effects and impacts – September 19, 2017 Cultural training for companywide Treasury Personnel – October 25, 2017 MOU Discussion - Ongoing
ELFN	288	Delivered original EIS – October 21, 2014 (V1) April 22, 2015 (Final) Community Open House to discuss project and EIS results – May 5, 2015 IRs received by Treasury – June 30, 2015 Responses returned – May 29, 2017

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

		Presentation of Project effects and impacts – September 19, 2017 MOU Discussion - Ongoing
MNO	326	Meeting at Goliath Project Site – Feb 11, 2014 Delivered original EIS – October 21, 2014 (V1) April 22, 2015 (Final) IRs received by Treasury – June 30, 2015 Presentation of Project and Effects – May 23, 2017 Responses returned – May 29, 2017 Signing of MOU – December 11, 2017
WBFN	248	Presentation of Project Overview – July 25, 2013 Delivered original EIS – October 21, 2014 (V1) April 22, 2015 (Final) Presentation of Project Overview – June 3, 2014 IRs received by Treasury – June 30, 2015 Presentation of Project Overview – July 25, 2013 Presentation of EIS results – October 27, 2015 Responses returned – May 29, 2017

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		Presentation of Project effects and impacts – September 19, 2017 Community Introduction at WBFN – November 22, 2017
164	164	Presentation of Project Overview – September 10, 2013 WFN Site Visit to Project – April 30, 2014 Delivered original EIS – October 21, 2014 (V1) April 22, 2015 (Final) Presentation of Project Overview – September 19, 2014 IRs received by Treasury – June 30, 2015 Responses returned – May 29, 2017 Presentation of Project effects and impacts – September 19, 2017 Community Presentation – February 20, 2018

E.

Since the time of the original EIS Treasury Metals has participated in a large number of engagement related activities and revised the EIS to more clearly show the amount of meaningful engagement information shared by the various indigenous communities. Full record of engagement are located in Appendix DD of the revised EIS. Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing/Baseline Environment) i.e. 5.1 climate, 5.2 air quality, 5.3 noise and light, 5.4 geology, 5.5 terrain and soil, 5.6 hydrogeology, 5.7 surface hydrology, 5.8 aquatic resources, 5.9 terrestrial resources, 5.10 migratory birds,5.11 species at risk, and 5.12 human environment; Traditional</td></tr>
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TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					land and resource use is discussed for each Indigenous community including in Section 5.13.3; The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Aboriginal peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential to the selection of valued components (VCs) as discussed in Section 6.1.3 of the revised EIS. Treasury Metals is committed to the continued engagement of all relevant stakeholders associated with the Goliath Project and in the revised EIS has also presented plans for an Environmental Management Committee (Section 12.22 of the revised EIS), to ensure that Indigenous communities continue to feel actively engaged in all stages of the project. Treasury Metals continues to solicit input for the Project and the EA process is not considered an end-point to engagement efforts associated with the Goliath Gold Project. Treasury Metals is committed to working with all Indigenous communities designated to echo the values of the public and Indigenous stakeholders within the design parameters of the Project and the incorporation on the federal and provincial environmental assessments, and subsequent engineering studies. Treasury Metals is committed as a Company, and as directed from its shareholders to create not only a feasible and economic Project but one that is sensitive to public and Indigenous values in the area. As such Treasury Metals will continue outreach to both public and Indigenous stakeholders to validate information presented within this document and validate all secondary source information presented within this documentation. Treasury Metals believes that significant engagement and education has been completed to date, and that the design reflects the values presented at this time by Indigenous stakeholders. Treasury will continue to work with communities as highlighted by the signing of a MOU with the Metis Nation of Ontario, and continued community discussions planned with designated communities.
11	AC(1)-02	CEA Agency	EIS Section 8.9.3	Sections 12.2, 12.3	**<u>Summary of Comment / Rationale:</u>** Outstanding public and Aboriginal concerns are discussed in section 8.9.3 (EIS). This text is limited to concerns related to water quality and impacts to an individual home owner nearby the site. Comments received during Agency consultation on the EIS indicate that this discussion is not complete. There is no discussion of outstanding potential adverse impacts to Aboriginal and Treaty rights that may result from residual and cumulative environmental effects in section 8.9.3 (EIS). This information is needed by the Crown for consideration as it assesses the adequacy of consultation and accommodation.
					<u>Information Request / Comment</u>: A. Describe the potential adverse impacts on potential or established Aboriginal and treaty rights and related interests that have not been fully mitigated as part of the environmental assessment

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					and associated engagement with Aboriginal groups B. Describe outstanding public concerns related to potential environmental effects as described in section 5 of CEAA 2012 that have not been resolved as a result of changes to the project, mitigation measures, or public participation activities.
					Revised Response: Treasury Metals highlights that they are committed to ensuring all receiving waters surrounding the project are protected and have made the following commitments/ mitigation as described in Section 10 of the revised EIS: • During operations, effluent discharged from the Project to Blackwater Creek will meet the Provincial Water Quality Objectives (PWQO) or background concentrations if background levels are above the PWQO. Where there is no PWQO for a parameter, the commitment will be to meet the Canadian Water Quality Guidelines (CWQG). For total mercury, the commitment will be that effluent discharged to Blackwater Creek will meet background concentrations for that watercourse. Background concentrations for Blackwater Creek are defined as the 75th percentile in accordance MOECC receiving water assessment policy. Detailed parameters will be determined through engagement with appropriate Provincial and Federal regulatory bodies. [Cmt_034] • The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek.[Mit_024] • During operations, excess water not required in the process will be treated to concentrations that meet Provincial Water Quality Objectives (PWQO) or Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life, or background if background levels exceed the PWQO, prior to discharging to Blackwater Creek. In the case of mercury, effluent will be treated to meet the background concentrations in Blackwater Creek. [Mit_053] Part A. Treasury Metals has made overtures to each community, and collated all biophysical and traditional values/land and recourse use information within the EIS to date. This information in turn has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. All information received via engagement has been formally captured within the Stakeholder Engagement Report which is included in the revised EIS as Appendix DD and summarized in Section 9 of the revised EIS.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment(i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community in Section 5.13, this as obtained via engagement related activities and using mostly primary sources of information; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Indigenous peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential as part of the Valued Component selection process outlined in Section 6.1.3 of the revised EIS. Treasury Metals has revised the EIS to reflect the valued traditional knowledge shared by all communities and will continue to work with this community to ensure that any potential impacts of the Project on their traditional land and resource use are properly mitigated. Treasury is committed to continued engagement with all Indigenous communities to ensure that any potential effect of the project on their ability to practice their traditional use of the land is sufficiently off-set and that it does not have a meaningful impact on their traditional uses of the land. Based on the current amount of traditional land and recourse information and traditional knowledge information shared with Treasury Metals by the various Indigenous communities, it is Treasury's opinion that it would not cause substantial changes to the findings presented in the revised EIS. Part B. Outstanding concerns have been collated and captured within the Aboriginal Engagement Report Section 3.4.2 of this report. All current aspects of concern have been responded to in full with applicable reference to existing environment, effects, mitigation measure, in addition to commitments if applicable. Further to this identified public concerns are presented in Section 9.0 and Appendix V of the revised EIS.
12	AC(1)-03	CEA Agency	Appendix C of Appendix S	Sections 5, 9, 11	**Summary of Comment / Rationale:** Aboriginal engagement activities to identify species at risk (SAR) in the project area or define the spatial boundaries for SAR have not been conducted. The proponent received no responses from

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					any of the First Nations contacted through information requests in regard to wetland evaluations (Appendix C of Appendix S). As such, the proponent should consider devising an alternative approach to engaging Aboriginal communities and groups. Section 9.1.2 of the EIS Guidelines states the proponent should seek advice from Aboriginal groups and First Nations on SAR and species of conservation concern.
					Information Request / Comment: A. Engage Aboriginal groups and First Nations to define the spatial boundaries for SAR and acquire information needed to discern SAR location and prevalence in the local and regional study areas. B. Provide documentation of engagement results by Aboriginal group. C. Revise the baseline and effects assessment based on engagement results, including the identification of additional mitigation measures where needed.
					Revised Response: Since the time of the original EIS submission, Treasury Metals has participated in a number of meaningful engagement activities with the Indigenous communities surrounding the project area. Treasury Metals as revised the EIS substantially to reflect the traditional knowledge and traditional land and resource use information shared since the original EIS submission. Traditional knowledge regarding species at risk is located in Section 5.11.4 of the revised EIS which was in turn used in the valued component selection described in Section 6.1.3 of the revised EIS. The VCs were used in the revised assessment of potential effects of the projects which is located in Section 6.21 of the revised EIS. An assessment of the ability of each Indigenous community, including the Métis Nation of Ontario, to practice their traditional land and resource use is provided in Section 6.22 of the revised EIS. Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment) (i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community is located in Section 5.13.3; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Aboriginal peoples in Section 6.21 and specifically for each

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					community in Section 6.22 of the revised EIS. It was also essential to the selection of Valued Components (VCs) as discussed in Section 6.1.3 of the revised EIS. • All engagement activities to date are summarized in Section 9 of the revised EIS and provided in detail in Appendix DD. Engagement logs for all indigenous communities are attached to Appendix DD. • The executive summary has been updated to reflect the meaningful engagement activities with all indigenous communities, With respect to traditional knowledge on species at risk, Section 5.11.4 specifically tates that: According to the consolidated comments received from the Agency following the review of the original EIS by members of Eagle Lake First Nation, Wabigoon Lake, Ojibway Nation, and Whitefish Bay First Nation (Naotkamegwanning First Nation), someone shared that a Barn Owl had been observed in the Project area. Barn Owl are an Endangered Species and are protected provincially in Ontario, as well as federally. In Ontario, Endangered Species and their general habitat are automatically protected under the Endangered Species Act. According to the Ontario Ministry of Natural Resources and Forestry (MNRF) website reports that there are fewer than five pairs of Barn Owls in Ontario, all of which were observed in southern Ontario in the Windsor-Sarnia corridor, Niagara Region, or Lennox and Addington County. The MNRF reports that The Barn Owl cannot tolerate severe winter temperatures, and southern Ontario is the northern limit of its range. Breeding sites in Ontario seem to be restricted to areas with the moderating effects of the Great Lakes (within 50 kilometres of the lakes). Therefore, the observation of a Barn Owl in the vicinity of the Project is highly unlikely as northern Ontario does not support a suitable habitat for this particular endangered species. It is possible that the observer may have seen another species of owl that were mistakenly identified as a Barn Owl.
13	PC(1)- 01	CEA Agency	EIS Sections 8, 8.6, 8.8, 8.8.1 Appendix V	Sections 2.2, 3.3, 4, 5.7, 7.1.1, 7.2.1, 10.3, 11.3, 11.4, 11.5, 12.3, 14, 16, Figure 1	**Summary of Comment / Rationale:** Section 8.6 (EIS) and Appendix V note the locations, persons, and organizations engaged in relation to public participation. Appendix V shows that the proponent presented and provided information on the project description and economic opportunities; however, it is not apparent whether the proponent engaged the public on the effects assessment, including the valued components and the spatial boundaries. The methods of public engagement and their relevance are also not clear. For greater clarity, the proponent needs to provide the materials used and distributed at the public meetings.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Section 8.8.1 (EIS) states: "the detail as to how public concerns are to be addressed is included throughout the EIS". With only a short summary of the measures to address key issues presented in section 8.8.1, it is difficult to know if the public concerns have been fully addressed in the EIS. Some of the responses to the public concerns also contradict the information presented in the EIS. For example, the proponent states that no adverse impacts to fish habitat or fishing opportunities are anticipated but Appendix II indicates that the project infrastructure will overprint fish habitat in Blackwater Creek. Section 11.3 of the EIS Guidelines states: "the EIS will provide a summary of discussions; indicate the methods used and their relevance, locations, the persons and organizations consulted, the concerns raised, the extent to which this information was incorporated in the design of the project as well as in the EIS, and the resultant changes. The proponent will also provide a description of efforts made to distribute project information and provide a description of information and materials that were distributed during the consultation process."
					Information Request / Comment: A. Provide a summary of the information presented, including a reference list and sample of the materials used and distributed at the public meetings held by the proponent, to demonstrate that the public was engaged on each of the following topics: 1. Baseline conditions; 2. Effects assessment, including: a. Valued components; and b. Spatial and temporal boundaries for the assessment; 3. Mitigation measures; 4. Residual effects. B. Provide a table with a summary of public concerns by valued component, the proponent responses (including the extent to which this information was incorporated in the design of the Project as well as in the EIS, and the resultant changes), references to specific sections of the EIS and/or appendices that detail how the concerns has been addressed, and the proponent's commitments to address concerns. C. Where the proponent cannot demonstrate that the above engagement occurred during the development of the EIS, additional engagement activities need to be implemented by the proponent in consultation with the Agency, prior to providing a response to this IR. Any concerns or information gathered from additional engagement activities will need to be documented and

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					included in the table requested in request B above. The proponent also must describe how the additional information was incorporated into the effects assessment.
					Revised Response: A. Treasury Metals fully engaged public stakeholders as part of the overall development of the original and revised EIS and the Goliath Gold Project. Public outreach included meetings with the local communities of Wabigoon, and Dryden. Treasury Metals also completed a review of baseline studies with regulatory authorities prior to issuance in the original and revised EIS. Overall activities have been summarized within Section 9.0 of the revised EIS, and Appendix V, and Appendix DD (Indigenous Engagement Report). Documentation materials used and distributed at the public meetings as part of the EIS submission is included as part of the Stakeholder Engagement Report, and further documentation supporting IR completion is also attached in the following documents (a description and date for each are listed in parentheses): TMI_13-PC(1)-01_Attachment_1 (City of Dryden, 23-04-15) TMI_13-PC(1)-01_Attachment_2 (Notice of Meeting, 30-10-12) TMI_13-PC(1)-01_ Attachment_3 (Town Office, 2013) TMI_13-PC(1)-01_ Attachment_4 (Federal Baseline, 14-05-14) TMI_13-PC(1)-01_ Attachment_5 (Inter-Governmental, 24-09-14) TMI_13-PC(1)-01_ Attachment_6 (Open House, 06-05-15) TMI_13-PC(1)-01_ Attachment_7 (MOECC Goliath Stakeholders, 07-08-14) TMI_13-PC(1)-01_ Attachment_8 (Meeting Brochure, 06-05-15) TMI_13-PC(1)-01_ Attachment_9 (Goliath Stakeholders Group, 07-08-14) TMI_13-PC(1)-01_ Attachment_10 (Dryden Public Meeting, 30-10-12) Documentation is dated as to the date it was presented/distributed. This record can also be traced via Appendix V of the Revised EIS. B. Treasury Metals has made efforts to engage public stakeholders regarding the Project. Overall activities have been summarized within Section 9.0 of the revised EIS, and Appendix V Further to this Treasury Metals has revised the EIS to include the following key changes with respect to resource use:

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					• Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment(i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community in Section 5.13; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Indigenous peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential as part of the Valued Component selection process outlined in Section 6.1.3 of the revised EIS. Treasury Metals has revised the EIS to reflect land use shared by all communities and will continue to work with this community to ensure that any potential impacts of the Project on their traditional land and resource use are properly mitigated. Public concerns have been noted and captured within Appendix V and reflected as per Indigenous values in Section 5.0, and all mitigation measures associated with concerns of the general public have been summarized within Section 9.4.3 of the revised EIS. Further to this reference can be made to the to the materials presented within Appendix V. C. Treasury Metals has solicited input from both public and Indigenous stakeholder and concerns have been documented at reflected as per "A", "B". It is Treasury Metals intent to work with all communities to incorporate, mitigate, and avoid the values identified as part of the EA process, but also the development of the Project. Treasury Metals feels that the level of engagement has met the requirements of the EIS guidelines and the Canadian Environmental Assessment Agency.
14	PD(1)-01	CEA Agency	EIS Sections 1.4.1, 3.2.1, 3.3.2 EIS Summary Section 5.2	Section 5.7	**Summary of Comment / Rationale:** Section 1.4.1 (EIS) does not list dewatering ponds and wetlands as a project activity for the site preparation phase while sections 5.2 (EIS Summary) and 3.2.1 (EIS) indicate that site preparations include dewatering ponds and wetlands within footprint of the proposed mine infrastructure and constructing water realignment channels and ditches. In addition, section 3.3.2 (EIS) notes that there are no permanent ponds or lakes that require dewatering. It is not clear whether dewatering of ponds and wetlands will take place during site preparation and if this activity will take place, which ponds and wetlands will be dewatered. Site preparation should be scheduled to minimize potential disturbance of wildlife. This should also include aquatic life (spawning periods for dewatering activities).

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Information Request / Comment: A. Clarify whether or not the site preparations activities include dewatering of ponds and wetlands. If so, identify and describe the wetlands and ponds to be dewatered. B. Clarify whether or not site preparation will be scheduled to minimize potential effects to fish and fish habitat. C. In relation to subsection 5(2) of CEAA 2012, should any of the ponds or wetlands be subject to the federal authority's exercise of a power or performance of a duty or function, name and map the location of the water-bodies in question, describe any other potential environmental effects of dewatering activities to ponds and wetlands, identify mitigation measures, the significance of residual effects, and any follow-up monitoring that maybe required.
					Revised Response: During the site preparation and construction phase it will be necessary to dewater the upper reaches of Blackwater Creek Tributary 1, which will involve the removal of the temporary natural structures (beaver dams) that can be present within the waterway, as shown in TMI_129-FH(1)-08_Figure_8 for an aerial view of the stated area. In addition to this tailings storage facility (TSF) area (Blackwater Creek Tributary 2) will also require dewatering activities. B. All site preparation activities that have the potential to affect fish bearing waters will be scheduled to minimize potential effects to fish and fish habitat. C. Three surveyed wetlands (WLD2, WLD3, and WLD4), and four unnamed wetlands are overlain (at least in part) by the proposed Project footprint. Although unlikely, these seven wetlands and their intermittent drainages (as illustrated in TMI_014-PD(1)-01_Figure_1) are the only waterbodies/watercourses that could potentially require federal permitting.
15	PD(1)-02	CEA Agency	EIS, Section 3.1, Figure 3.1.2	Sections 4, 5.6, 5.7	**Summary of Comment / Rationale:** Section 3.1 (EIS) describes the proposed use of the existing facilities, including the tree nursery ponds and the existing structures at the former tree nursery. However, there is no description of the infrastructure required to take water from the tree nursery ponds for mine operations. It is also not clear whether additional work on the tree nursery pond dams, irrigation ponds, or at the former tree nursery is proposed.
					Information Request / Comment: A. Describe the use of the existing facilities/infrastructure required to pump water from the irrigation ponds along the tributary of Thunder Creek. Include a map with its location. B. Clarify whether additional infrastructure or works are planned at the Tree Nursery site. If so,

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					describe the environmental effects, mitigation measures, and follow-up measures that are linked to these activities.
					Response: A. Section 3.1.6 of the revised EIS describes that the existing structures and impoundments along Thunder Lake Tributary 2 and Thunder Lake Tributary 3 remain in place and functional. As described in Section 3.8 of the revised EIS, these ponds will be used to supply fresh water during the operations. The location of these ponds is shown in Figure 3.0-1C of the revised. The Project design presented within the original EIS represents the understanding of the Project at the time of filing. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project. A summary of the refinements to the Project and pumping infrastructure since the completion of the EIS are presented in Section 3.16 of the revised EIS. The refined engineering has also modified the water balance for the Project, including refining the expected requirements for fresh water. The refinements to the water balance are presented in Appendix F to the revised EIS. The conceptual water balance fully describes the overall water balance for the Project site and the water taking that will be required of the irrigation ponds. The effects of the water taking activities are described in Appendix JJ (Water Report) to the revised EIS, as well as forming part of the effects assessment on surface water quantity presented in Section 6.9 of the revised EIS. B. There will be limited need for additional infrastructure on site of the former MNRF tree nursery. Treasury Metals has proposed to make use of existing office and warehouse facilities. The location of the requisite pipeline will use the existing disturbance corridor along Tree Nursery Road, as shown in Figure 3.11.1 of the revised EIS. There will be two small explosives storage facilities will be placed on the grounds of the former tree nursery. Each will be equipped with full containment to prevent any effects on the surrounding areas. As such, no significant effects are predicted and no follow up measures will be required throughout the Project.
16	PD(1)-03	CEA Agency	Appendix II Section 3.0	Section 5.5	**Summary of Comment / Rationale:** Section 3.0 (Appendix II) indicates that habitat modifications will result from channel realignment and culvert replacement. However, it is not clear where the culvert replacement will take place.
					Information Request / Comment: A. Provide a map of all water crossings and culvert replacements associated with the Project. B. Describe the culvert replacement and how it will be designed to avoid impacts to fish and fish habitat including fish passage. If the proponent believes that it is not necessary to ensure fish passage, provide a justification.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Revised Response: A. *Provide a map of all water crossings and culvert replacements associated with the Project.* There are 10 existing culverts within the LSA (TMI_016-PD(1)-03_Figure_1). Except for C9 that is overprinted by the Operations Area, existing culverts will be left intact throughout the Project. There are no plans to install new water crossings or to replace/upgrade existing culverts for the Project. *B. Describe the culvert replacement and how it will be designed to avoid impacts to fish and fish habitat including fish passage. If the proponent believes that it is not necessary to ensure fish passage, provide a justification.* There are no plans to install new water crossings or to replace/upgrade existing culverts for the Project. In the event that it is necessary to install new water crossings of replace/upgrade existing culverts, culverts will be sized and constructed in a manner that ensures that the new structures are not barriers to upstream fish migration due to high velocities, shallow water depths, or other impediments to fish movement.
17	PD(1)-04	CEA Agency	EIS Section 3.6.1 Appendix D	Sections 5.7, 7.1.1	**Summary of Comment / Rationale:** Appendix D does not address the proposal to redirect the Tree Nursery Road (a public local roads board road). Section 3.6.1 states that "The process plant site will be located to the east of the mining pits, and just east of the Tree Nursery Road (Figure 3.6.3). The road will be diverted to the east side of the process plant. The plant security gate and car park access will be from this new section of Tree Nursery Road. The process plant and ancillary buildings will be located outside a 500 m radius blast zone from the edge of the open pit and on property owned by Treasury. The crushing facility will have a tentative clearance of 300 m from the edge of the pit. Aerial view of proposed processing plant can be seen in Figure 3.6.1"
					Information Request / Comment: A. Clarify and provide the plans for realignment/redirecting of Tree Nursery Road. Include a map of the realigned corridor. B. Describe the environmental effects (including impacts to Aboriginal peoples), mitigation measures, and follow-up measures for the activities related to redirecting the Tree Nursery Road.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Revised Response: A. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project. A summary of the refinements to the Project since the completion of the original EIS are presented in Section 3.16 of the revised EIS. Treasury Metals has relocated the preferred plant site (see Figure 3.0-1.A in Section 3.0 of the revised EIS) to reduce the overall environmental effects. Re-alignment of Tree Nursery Road around the plant site is no longer proposed. Treasury Metals has evaluated the effects of the Project on wildlife and fisheries, along with the associated effects of land use and Aboriginal peoples using this preferred alternative location. A review of the preferred location was determined to have a minimal effect on air quality and noise as described in Appendix J of the revised EIS. B. As stated in the response to part A, there is no longer a need to re-align Tree Nursery Road due to the relocation of the plant site. An effects assessment was not completed for the re-alignment of the road as it is no longer proposed.
18	PD(1)-05	CEA Agency	EIS Figures 3.5.1, 3.5.2	Section 5.6	**Summary of Comment / Rationale:** Figures 3.5.1 and 3.5.2 (EIS, pages 3-14 and 3-15) show the property boundary immediately adjacent to the overburden stockpile, the waste rock stockpile, and the pit. It appears that the property boundary has been extended in these areas, but it cannot be confirmed.
					Information Request / Comment: A. Confirm whether the property boundary has been extended away from the main mine facilities and is not as depicted in Figures 3.5.1 and 3.5.2. If the figures are inaccurate, provide revised figures that accurately reflect the layout, locations, and scale of the project components.
					Response: Accurate depictions of property boundaries and relative location of Project infrastructure are provided in Figure 3.0-1A of the revised EIS. All facilities associated with the Project (overburden stockpile, waste rock stockpile, open pit) will be located within the property boundary.
19	PD(1)-06	CEA Agency	Appendix F Section 2.1.4	Section 5.6	**Summary of Comment / Rationale:** Section 2.1.4 of Appendix F states: "When the tailings storage facility reaches the design overflow point, it will overflow and discharge effluent." It is unclear whether this means the overflow effluent will be discharged to the water treatment facility and NOT directly to the environment.
					Information Request / Comment: A. Explain to where the overflow effluent from the tailings storage facility (TSF) will discharge. Include a figure to depict the flow path, water management system, effluent transfer locations into

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					and out of the TSF, and the receiving environment of the overflow effluent. B. If the effluent overflow does not go to the water treatment facility, describe the contingency measures that will be put in place to ensure there are no impacts to the environment from the effluent overflow discharge.
					Response: A water management strategy was developed prior to submission of the original EIS and provided in Appendix F of the original EIS. The design overflow point referenced in Appendix F, Section 2.1.4, references the point at which excess water is directed to the effluent treatment facility. As described in Section 3.7 of the original EIS, the tailings storage facility (TSF) will be designed such that any excess water that is directed to the TSF will either be retained and directed to the plant site for use as reclaim or to the effluent treatment plant for treatment. As a regulatory design requirement, the TSF is equipped with an emergency spillway to ensure that there is never the potential for the dam to be overtopped. The design of the TSF will also ensure sufficient capacity below the inlet of the emergency spillway to contain the Environmental Design Storm (EDS) as described in Appendix D of the revised EIS. The EDS for the Project has been assigned as the runoff volume resulting from the 1:1000 year 24-hour event. Given the life of the Project is anticipated to span 15 years, it is highly unlikely that there would be a storm during the life of the Project that would approach the EDS. In the extremely unlikely event that the Project experiences a storm approaching the EDS, water levels within the TSF may rise sufficiently to reach the spillway and be released. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. One of the refinements to the Project is that the location of the spillway has been relocated such that any excess water released from the TSF through the spillway will direct to the open pit. There would be no releases to the environment responses (also see TMI_344-AC(1)-18). The refinements to the Project since the submission of the original EIS are presented in Section 3.16 of the revised EIS. Treasury Metals remains committed to ensuring that final effluent discharged during operations to Blackwater Creek during the life of the Project meet Provincial Water Quality Objectives (PWQO).
20	AA(1)-01	CEA Agency	EIS Section 2 Appendix D Section 4.6.1	Section 8.1	**Summary of Comment / Rationale:** Section 4.6.1 (Appendix D, page 24) states that the proponent assumes a natural clay basin will contain the tailings storage facility in the long term. However, it is noted that much of the onsite clays are interlayered with silt layers. Figure 2-2 (Appendix O) also shows that the surficial geology of the proposed footprint of the tailings storage facility consists of clay and sandy loam. Due to the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Appendix O Figure 2-2		uncertainty of its technical feasibility, the proponent needs to provide evidence and a clear rationale that the underlying clay basin is present and suitable for use in long term tailings storage. It is not clear whether the clay material found on the project site will be segregated from other overburden during stripping and stockpiling for capping the tailings in the tailings storage facility. The environmental effects of obtaining suitable clays from other parts of the project site or offsite locations need to be considered. The proponent also needs to provide a clear rationale that it is economically feasible, and that supply exists, to source any additional required clay from outside vendors. An alternative tailings storage facility that does not depend on clay as an underlying layer and for building a cap should also be provided.
					Information Request / Comment: A. Provide evidence and a clear rationale to support the current assumption that the natural clay basin underlying the tailings storage facility (TSF) is sufficient for long term storage purposes. B. Discuss how onsite clays will be segregated from other materials, if applicable. C. Explain the environmental effects of obtaining the required quantities of suitable clay material from the project footprint and offsite locations to build the TSF embankments; cap the TSF tailings, the backfilled west and central pits; and cap the waste rock stockpile area. D. Discuss the economic feasibility and supply options for sourcing sufficient amounts of suitable clay material from offsite locations. E. As part of the alternatives assessment, describe at least one long term tailings storage facility alternative that is not reliant on clay. Evaluate the feasibility of using a synthetic liner.
					Response: A. At the time of the original EIS preparation site investigation data available for the site was limited to the general area of the proposed open pit and was not available for the potential tailings storage areas. Available sub-surface information for the site indicated clay to sands near surface. This information as well as geological maps of Canada, available from the Ontario Geological Survey of Canada, were used to estimate the sub-surface ground materials at the site. Preliminary assumption was that clay would be present in the basin of the tailings storage facility (TSF) at the resultant preferred location (revised EIS Appendix D – Location 1) and this was used to advance the TSF Alternatives Assessment. Subsequent site investigations at the site, completed after

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					completion of the TSF Alternatives Assessment, showed that the basin area of the preferred location generally consists of sands overlying silt and occasionally clay. This updated site data has been used by Treasury Metals to revise planning for TSF basin containment. The options that are available consist of utilizing locally available clay (i.e. open pit pre-stripping) as fill material in the basin or alternatively using a low permeable engineered liner system (i.e. HDPE). The option of using clay as a basin liner, provided from a borrow source at the site (i.e., within the site surface footprint), will be explored as the Project is advanced. Site investigations will be used to collect samples for laboratory testing to confirm suitability of the clay material as a basin liner. The results of the planned site investigation will also be used to identify the volume of local clay material available at the site that can be used as fill material for the basin. B. The information from the site investigation, discussed above in Part A, will be used to delineate the extents and depths of clays that may be used for construction fill materials. Segregation of clays from other materials at the site would be completed during construction and utilize the borrow area delineation, as discussed above, along with site surveys to control excavation extents and depth during excavation. Construction monitoring is also used to visually observe the excavation activities to provide field control to ensure that material mixing is avoided. Additional control is provided during construction fill placement that utilizes construction monitoring and Quality Assurance/Quality Control (QA/QC). The QA program will collect samples from the stockpiles to confirm that the material meets construction specifications prior to fill placement. Materials that do not meet specifications will not be approved for placement. Samples for the QC program are collected from material placed to confirm that the material meets the specifications. C. Treasury Metals has determined as part of the ongoing engineering refinements that clay will not be used in as a component of the potential low-permeability cover over the TSF for closure (refer to TMI_40-MW(1)-02). Potential environmental effects related to the removal of clay from borrow areas on the mine site are anticipated to consist of mobilization of suspended solids. This situation is generally created with the clearing, stripping and grubbing of topsoil that exposes the underlying soils to potential erosion from surface runoff. Environmental effects from obtaining clay from borrow sources on the mine site are anticipated to be limited as several environmental mitigation measures are planned for the Project and are summarized below: • Utilization of temporary sediment control measures in immediate areas of the borrow source. • Site remediation of borrow sources consisting of site grading, placement of stripped topsoil over the graded area and re-vegetation to prevent erosion. • Presence of a site perimeter ditch/berm system to prevent runoff from leaving the site. The perimeter ditch/berm system would also be used to collect solids mobilized from runoff. D. Treasury Metals intends to complete sufficient site work to source construction fill materials from the mine site. Several pit operations and contractors are located within the Dryden area that can be solicited to supply clay for fill placement if insufficient volumes are available at the site. Treasury

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					Metals has compiled a list of local contractors providing soil supply services in the area. Economics of providing clay from an off-site source will be dependent on the costs that are predominantly influenced by haul distance. Cost comparisons will be used to identify the economic influence of using off-site clay borrow sources in the event that insufficient clay is available on-site. A low-permeable engineered product (i.e. HDPE Liner system) would be the preferred economic approach if costs associated with using off-site clay were assessed to be more expensive. E. The Alternatives Assessment for the TSF (revised EIS Appendix D-1) assessed three (3) potential TSF locations. Location 2 was identified as having potential sand foundations in the basin area, based on the available background data for the site, and was subsequently assessed with the inclusion of a liner system (synthetic liner) and represented an alternative that was not reliant on clay.
21	AA(1)-02	CEA Agency	EIS Section 2	Section 8	**Summary of Comment / Rationale:** Section 2 (EIS) does not assess the potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests from each alternative means in a manner that incorporates input from Aboriginal groups. Section 8 of the EIS Guidelines state that the EIS will identify and consider the effects of each alternative means, including “both environmental effects and potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests”.
					Information Request / Comment: A. Assess the potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests from each alternative means. B. Revise the quantitative analysis to include a weighting factor based on input from Aboriginal groups.
					Revised Response: A. For the purposes of the EIS, Aboriginal and Treaty Rights are defined as the historic and current uses of lands and resources for traditional purposes by members of Indigenous communities. It is Treasury Metals’ understanding that Aboriginal peoples are entitled to access to their lands according to their Aboriginal and Treaty #3 (1873) Rights, and Treasury Metals is committed to working with the Indigenous communities to ensure that the effects of the project on their traditional land and resource use or “aboriginal and treaty rights” are appropriately considered and protected.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Treasury Metals has made overtures to each community, and collated all biophysical and traditional values/land and recourse use information within the EIS to date. This information in turn has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. All information received via engagement has been formally captured within the Stakeholder Engagement Report which is included in the revised EIS as Appendix DD and summarized in Section 9 of the revised EIS. Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment(i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community in Section 5.13, this was obtained via engagement related activities and using mostly primary sources of information; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Indigenous peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential as part of the Valued Component selection process outlined in Section 6.1.3 of the revised EIS. B. These weighting factors are; First Nation Reserves and Communities, Spiritual and Ceremonial sites, Traditional Land Use and Aboriginal and Treaty Rights. The reviewer is also directed to Appendix X of the revised EIS as each alternative is weighted to the effects on Indigenous peoples in the Alternatives Assessment tables.
22	AA(1)-03	CEA Agency	EIS Table 1.5.1, Section 2	Section 8	**Summary of Comment / Rationale:** Table 1.5.1 (EIS, page 1-20) shows that the proponent has applied for a Notice of Camp Opening permit with the Regional Health Unit while Section 2 (EIS) suggests that employees will be responsible for their own housing off-site. The proponent must clarify if they will be constructing and owning employee accommodations either on or off the Project site for the purposes of the Project.
					Information Request / Comment: A. Clearly indicate whether on and/or off-site employee accommodations will be constructed or provided.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					B. Describe the alternatives means for on and/or off-site employee accommodations, the preferred alternative and assess the environmental effects and potential impacts on potential or established Aboriginal and Treaty rights and related interests from each alternative means. C. Provide a map showing the locations of on and/or off-site employee accommodations alternatives.
					Response: A. Treasury Metals does not intend to construct or provide either on-site, or off-site accommodations for employees though the life of the Project. Table 1.5.1 (revised EIS, page 1-20) details the anticipated provincial permits, this table will be updated to reflect the current development of the Project. No Notice of Camp Opening has been applied for at this time with the Regional Health Unit. B. Due to the immediate proximity of the City of Dryden, the village of Wabigoon, and relatively small workforce, neither a long-term construction camp nor permanent residences will be constructed for the Project. Therefore, means for on-site and/or off-site employee accommodations were not considered as part of the alternatives assessment. C. Refer to the answer provided above in Part B.
23	AA(1)-04	CEA Agency	EIS Section 2 Appendix D Section 4.4, Figure 4.1	Section 8	**Summary of Comment / Rationale:** The co-disposal option (tailings in the tailings storage facility and open pit) was only considered for tailings storage facility location #1 because it was determined that its location was optimal due to “proximity to open pit and underground operations while minimizing travel distance and environmental harm” (Appendix D, Section 4.4). It appears that potential locations 4 and 6 are as close or closer to the open pit (Appendix D, Figure 4.1).
					Information Request / Comment: A. Explain why tailings storage facility optional locations 4 and 6 were not considered for co-disposal.
					Response: The Alternatives Assessment for the tailings storage facility (TSF) considered seven (7) candidate locations. The assessment was augmented to include an assessment of four (4) potential tailings disposal technologies consisting of: • Conventional Hydraulic tailings (slurry);

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• Thickened tailings (paste); • Dry Stack tailings; and • Conventional hydraulic tailings (slurry) into the TSF as well as co-disposal of a portion of the tailings with mine waste rock into the open pit and/or the underground. The assessment of the seven (7) locations combined with the four (4) tailings depositional technologies resulted in the assessment of 22 options. Location 4 was not considered for Co-Disposal as the location was not within the Goliath Property Boundary and was not advanced past the pre-screening assessment for location. Location 6 was not considered for Co-Disposal due to closer proximity to the water bodies (Thunder Lake and Wabigoon Lake), and close proximity to population that is located South of Location 6 and the proposed Open Pit. The above notwithstanding, a new Alternatives Assessment for the Project has been developed and included as Appendix D-2 to the revised EIS.
24	AA(1)-05	CEA Agency	EIS Sections 2, 3.1.2	Sections 5.6, 8	**Summary of Comment / Rationale:** Section 2 (EIS) does not assess alternative energy sources for the Project. Section 3.1.2 (EIS) does not describe the energy infrastructure, including power supply and scheduling details. The EIS Guidelines (Section 5.6) require this information.
					Information Request / Comment: A. Identify and assess alternative energy sources for the project. B. Describe the anticipated power demand, routing and location of related infrastructure. C. Identify the power supplier and the builder, owner, controller, and operator of the energy infrastructure.
					Response: A. At the time the original EIS was prepared, Treasury Metals did not consider there was another viable option for power that was as desirable as utilizing the existing Hydro One power infrastructure that runs through the site, adjacent to the proposed plant site. An updated alternatives assessment has been completed in response to this IR, and is provided as TMI_24-AA(1)-05_Attachment_1.pdf. This evaluation confirms the option using the Hydro One infrastructure as the preferred alternative.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					B. Additional details regarding the power demand requirements were provided in Section 3.12 of the original EIS. Since the submission of the original EIS, Treasury Metals has been advancing the engineering for their Project. The refined electrical supply requirements are detailed in TMI_24-AA(1)-05_Attachment_2.pdf. C: Hydro One will supply the power to the Project. All power connections and approvals will be done through appropriate authorities within the regional system of power generation and distribution in Ontario such as Hydro One and the Independent Electricity System Operator.
25	AA(1)-06	CEA Agency	EIS Sections 2.3.2.1, 2.4.4, Figure 3.8.4	Section 8	**Summary of Comment / Rationale:** A number of water management ponds/facilities are referred to in Sections 2 and 3 (EIS) that are not clearly labelled on site maps. Some examples include: a) Figure 3.8.4 (EIS, page 3-54) does not show minewater collections sumps directing water to the waste rock pond. b) There is no “water management pond” or “mine rock pond” shown in any figure despite a reference to it in Section 2.3.2.1 (EIS): “Under an integrated approach, minewater will be pumped from the minewater collection sump(s) in the open pit and underground mine to the mine rock pond. Water from the mine rock including the integrated minewater will be used for processing. Excess water in the mine rock pond not needed for processing will be transferred to either the water management pond or tailings management area pond.” c) The following statement, from Section 2.3.2.1 (EIS), is quite vague: “The integrated site water management system requires a number of large ponds to ensure adequate water availability for processing at all times and does not require any modification to contain and treat minewater.” d) Section 2.4.4 (EIS) lists a tailings storage facility reclaim pond in addition to a tailings storage facility seepage collection pond. The reclaim pond is not shown/ labelled on related maps, e.g. Figure 3.8.4 (EIS, page 3-54). e) Section 3.6.2.1 (EIS Report, pg. 3-19) indicates that during the start-up of the plant, and initial first fill a quantity of water will be taken from the “contact water sediment ponds”. These ponds are not identified in any of the figures. f) Figure 3.8.3 (EIS Report, pg. 3-49) shows a “Raw Water Reservoir” which is not shown in other figures. g) Figure 3.8.4 (EIS Report, pg. 3-54) shows a “Polishing Pond” and a “Collection Pond” south of the Tailings storage facility. However, Figure 3.0.1 (EIS Report, pg. 3-2) shows only one pond, that is, “Polishing Pond/Seepage Collection”. h) Figure 3.11.1 (EIS Report, pg. 3-57) shows a created water structure which is on the Blackwater Creek and no description is provided regarding this structure.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					i) Section 7.1 (Appendix F, pg. 30) mentions secondary waste rock contact water collection ponds and ditches, but these ponds and ditches are not shown on any figure.
					Information Request / Comment: A. Provide a figure that clearly shows all proposed ponds and water management areas. B. Revise all figures showing ponds/water management areas in the EIS, as outlined in part A of this IR. C. Provide references to relevant figures (maps) in the EIS when discussing ponds/water management. D. Provide a description of the function of each pond, along with their capacity and retention time.
					Revised Response: A. Provide a figure that clearly shows all proposed ponds and water management areas. Figure 3.0-1A in the revised EIS s clearly shows all proposed ponds and water management areas. Figure 3.0-1A has been attached to this IR for reference as TMI_025-AA(1)-06_Attachment_1. B. Revise all figures showing ponds/water management areas in the EIS, as outlined in part A of this IR. Substantial revisions including to all figures have occurred since the original EIS submission. As part of the revised EIS all figures have been updated showing ponds/water management areas in the EIS. For example, Figure 3.0.1-A C. Provide references to relevant figures (maps) in the EIS when discussing ponds/water management. The text of the revised EIS has been updated to better link to all relevant maps and figures in the revised EIS. For example, in Section 3.8.10, effluent discharge structure the reference between the text and the figure reads: *"Effluent water will be pumped to the selected discharge location in Blackwater Creek (see Figure 3.0.1A) via a pipeline and discharged into a constructed pool through an in-stream diffuser in order to minimize risks of erosion due to the potentially high flow at the end of the pipe"* D. Provide a description of the function of each pond, along with their capacity and retention time.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					The water balance for the project including the functions of each pond is described in 3.8.6 of the revised EIS for the site-preparation and construction phase, operations phase, closure phase and post closure phase of the project. Conceptual collection pond capacities used by WSP in the water balance • Collection Pond No. 1 – 16,000 m^3 • Collection Pond No. 2a & 2b – 79,000 m^3 • Collection Pond No. 3 – 140,000 m^3
26	AA(1)-07	CEA Agency	EIS Section 2.3.3	Section 8	**Summary of Comment / Rationale:** Section 2.3.3 (EIS, pp. 2-13, 2-14) discusses alternative locations for the waste rock storage area. Alternative locations are not discussed for overburden or the low-grade ore stockpile.
					Information Request / Comment: A. Provide an assessment of alternative locations for the overburden and low-grade ore stockpiles.
					Response: No alternative locations for the low-grade ore (LGO) stockpile were considered in the revised EIS given its temporary nature (will be fed to the mill and depleted by the end of mine life) and the critical need to be located proximate to the crushing facilities. Any alternative locations for the LGO stockpile would have been immediately ruled out as being uneconomic if not located directly adjacent to the crushing facilities. No separate alternatives assessment was done for the location of the overburden stockpile given the limited placement options on the Project site. In essence, the two viable options for locating the waste rock storage area (WRSA) were identical to the options available for the overburden stockpile. Once the preferred alternative for the WRSA was identified, the remaining location was where the overburden storage pile needed to be placed.
27	AA(1)-08	CEA Agency	EIS Section 2.3.7.1, Figure 2.3.10 Appendix M	Section 8	**Summary of Comment / Rationale:** Section 2.3.7.1 (EIS, p. 2-31) discusses creeks near the project site and their ability to supply needed fresh water for mine processing: “The results of the flow gauging studies conducted are presented in Table 2.3.10 (p. 31) along with the maximum allowable water take, which is calculated as 10% of the flow of the creek…There are two ponds on the proposed project site, referred to as the tree nursery ponds. These dug ponds were used for irrigation during the historical operation of a tree nursery and are situated on the creek referred to as Thunder Lake Tributary 3 in the hydrogeology report (Appendix M). This creek was gauged and the results reported for measurements taken during 2013 indicate sufficient flow to meet the process plant requirements. To meet the processing plant requirements, taking 26% of the flow of Thunder Lake

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Tributary 3 would be required" Given that the maximum allowable take is set at 10%, and 26% of the flow of Thunder Lake Tributary 3 would be required for mine processing operations, it is not clear whether the proponent intends to source the extra water from additional sources or whether a 26% take is viewed as sustainable.
					Information Request / Comment: A. Clarify the amount of water that will be required during construction, operation, decommissioning and abandonment phases in cubic meters/day for each water source, including the irrigation ponds (Thunder Lake Tributary 3) and any additional sources.
					Revised Response: The water takings required for the Project are provided in Table 1 below and shows that the only required water taking is during the operations phase.

Table 1: Water Takings Required by Project Phase

Project Phase	Source	Quantity (m^3/day)
Site Preparation and Construction	None	None
Operations Phase	Irrigation Ponds on Thunder Lake Tributaries 2 and 3	No more than 5% of daily inflow into the irrigation ponds
Closure Phase	None	None
Post-closure Phase	None	None

As there will be no water takings during these phases of the Project, figures have not been provided within Appendix JJ (Section 2) of the revised EIS for the site preparation and construction phase, the closure phase, and the post-closure phase.

For clarification, the statement that 26% of the flow of Thunder Lake Tributary 3 would be required for mine processing operations presented in the original EIS is no longer proposed, or shown in the revised water balance found in Section 2 of Appendix JJ to the revised EIS. A maximum of up to 5% of the daily inflow into the irrigation ponds on Thunder Creek Tributaries 2 and 3 may be taken to support the mine during operations. Tables 2-1a, 2-1b and 2-1c of Appendix JJ provide the figures of the conceptual water balance during operations for an average, a 1:20 year dry and 1:20 year wet precipitation

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					conditions. These figures show that the maximum required water taking from the irrigation ponds for processing operations would be in May of a 1:20 dry year and would require 382 m³/day, which is within the proposed 5% takings from the irrigation ponds.
28	AA(1)-09	CEA Agency	EIS Section 2.3.8.6	Section 8	**Summary of Comment / Rationale:** While discussing alternative locations for water (effluent) discharge in Section 2.3.8 (EIS) the proponent does not identify potential spawning locations as a factor in selecting the preferred alternative (Blackwater Creek). The proponent also states in Section 2.3.8.6 (EIS, p. 2-33): "The potential risk to permitting is reduced due to no residents living directly along the creek" in reference to Blackwater Creek. The risk to permitting is not a valid consideration in assessing alternatives from an environmental impact perspective. In addition, the Agency visited the project site during the week of May 4-8, 2015 and noted that there are residents living in very close proximity to Blackwater Creek (e.g. The property on the west side of Tree Nursery Rd. just north of Anderson Road). Under Section 2.3.8.6 (EIS) the proponent states that locating the water discharge along Blackwater creek provides "…the ability for Treasury to quantify its impact on the environment." This statement is unclear because it implies that quantification is not possible at other locations.
					Information Request / Comment: A. Revise the evaluation of the preferred alternative for water discharge location to consider fish spawning habitat. B. Identify and assess impacts to residents living in close proximity to Blackwater Creek and add these residents to related maps. C. Clarify the reasoning behind the selection of the preferred alternative for water discharge.
					Response: A. An evaluation of the preferred alternative for water discharge is provided in Appendix X to the original EIS, and has been updated in TMI_28-AA(1)-09_Table_1 and Appendix X of the revised EIS. The preferred location in both cases was Blackwater Creek. Consideration will be given to the physical flow rate receiving capacity of Blackwater Creek throughout the seasons with the possible regulation of flows and temporary storage of effluent with discharge over spring and summer period. Blackwater Creek intersects the TransCanada highway and railway, and the flow capacity of these crossings will need to be determined and taken into

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					consideration when determining the maximum effluent discharge flow rate. In addition, due to the controlled discharge and nature of the effluent is not expected to impact aquatic life within Blackwater Creek, or impact spawning habitat located downstream of the discharge site. Therefore, due to its proximity to the processing plant, tailings storage facility (TSF), and eventual destination in Wabigoon Lake versus Thunder Lake, Blackwater Creek is the preferred final effluent receiver. B. As described in Appendix X to the revised EIS, and revised in TMI_28-AA(1)-09_Table_1, the alternatives assessment did consider feedback from residents within the assessment. C. Blackwater Creek is capable of meeting the Project's water discharge needs. Water discharge would be treated, restricted, and controlled and is not expected to have any adverse effects. Aquatic life is will not be adversely affected due to effluent, changes in flow, or changes in quality. All aspects of the creek including aquatic life will be monitored in all phases of development. Lastly, Blackwater Creek provides the lowest cost option and one of the options identified as preferable to members of the public.
29	AA(1)-10	CEA Agency	EIS Summary Figure 4.2 EIS Sections 2.3.15.1, 3.13.1, Table 1.5.1	Sections 5.2, 8	**Summary of Comment / Rationale:** Figure 4.2 (EIS Summary) indicates that the explosive storage facility is currently located on provincial Crown lands. This location overlaps with forest research value–breeding and genetic tree orchards that have been established since the 1980's along the Nursery Road, have significant value to Dryden's local forest industry, and have also been used by Lakehead University. Section 5.2 of the EIS Guidelines requires the proponent to identify all environmental and other specific regulatory approvals and legislation that are applicable to the Project at the federal, provincial, regional and municipal levels. (Note: If the intent is to locate the explosives storage facility on Crown land, then a provincial permit will be required.) Sections 2.3.15.1 and 3.13.1 (EIS) state that, in addition to the preferred location, one alternative location has been identified. Descriptions of the two locations in the EIS are brief and no reference(s) to appendices containing descriptions of the locations or reasoning behind the selection of the preferred alternative are provided. **Information Request / Comment:** A. Evaluate and describe alternative locations and the associated environmental effects of each for the explosives storage facility. Provide a reference to this discussion in the EIS.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					B. Provide a map and update existing maps, as required, to show alternative locations for the explosives storage facility.
					Response: A. Refer to Section 3.13.1 of the revised EIS for a description of the Explosives Storage Facility and the rationale for the preferred location. As part of the Project design basis summarized in the Section 3.0 of the revised EIS, Treasury Metals is designing its infrastructure on lands (surface rights and mining rights) that are held by Treasury Metals. Following a review of minimum permissible distances that are published by Natural Resources Canada (Explosives Act), a review of existing roads available to Treasury Metals and a review of the traditional trails in the vicinity of the Project that present a risk of being travelled by members of the public, only one suitable site for the explosives storage magazines was identified and this is presented on Figure 3.0-1A of the revised EIS. B. Please refer to the updated maps in Section 3.0 of the revised EIS.
30	AA(1)-11	CEA Agency	Appendix D EIS Section 2	Sections 8.1, 10.1	**Summary of Comment / Rationale:** Mine waste disposal alternatives have not been thoroughly characterized from a technical, environmental and socio-economic perspective in the Alternatives Assessment Report (Appendix D). Following the pre-screening step, all mine waste disposal alternatives need to be thoroughly characterized. Complete characterization of each alternative ensures that every aspect and nuance of the alternative is properly considered. Furthermore, the provision of a thorough characterization in a clear and concise format that directly compares alternatives ensures complete transparency of the alternatives assessment process. Some examples of additional characterization criteria, which could be provided for each alternative following pre-screening, are provided below for the consideration by the proponent: Technical Characterization • Number of starter dams • Tailings Impoundment Area (TIA) volume • TIA footprint • Closure design • Water management system design (including water treatment system, seepage and run-off collection, etc.) • Design and construction of impermeable covers over wastes • Technical risks

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Environmental Characterization • Downstream water quality • Impacts to groundwater • Size of watersheds affected • Number of fish species affected within a TIA footprint • Loss of wetlands • Presence of fish species at risk • Presence of non-fish aquatic species at risk • Presence of terrestrial species at risk • Presence of plant species at risk • Impacts of changes to freshets Socio-economic Characterization • Local Aboriginal community response • Regional community response • Aboriginal values and traditional use effects These and other relevant characterization criteria can be used to introduce additional sub-accounts and indicators into the alternatives assessment. The proponent is referred to section 2.4 and Tables 3 to 6 of Environment Canada's guidelines for additional information on characterization of alternatives: http://ec.gc.ca/pollution/default.asp?lang=En&n=125349F7-1
					Information Request / Comment: A. Document the assessment of alternatives for mine waste disposal. Rationalize the preferred alternative and document the alternatives assessment process, including engagement of Aboriginal communities as applicable, (e.g., the inclusion of additional characterization criteria in the Alternatives Assessment (AA) Report, or the provision of a rationale as to why certain characterization criteria have not been included in the AA report).
					Revised Response: As part of the process for responding to the Round 1 information requests, Treasury Metals revised the alternatives assessment for certain Project features. In addition, Treasury Metals have prepared a new multiple accounts analysis (MAA) for the evaluation of alternatives for mine waste disposal options (i.e., the TSF), which will require a Schedule 2 amendment under the Metal Mine Effluent Regulations (MMER) for the deposition of deleterious mine substance in fish bearing

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					waters. This document is included as Appendix D-2 to the revised EIS, and the relevant information is summarized in Section 2.3.6 of the revised EIS. In addition to describing the alternatives for mine waste disposal, the MAA (Appendix D-2 to the revised EIS) also presents the alternative location of the minewater pond, which will likely also require a Schedule 2 amendment under MMER. The information regarding alternatives for minewater management presented in the MAA are summarized in Seciton 2.3.2 of the revised EIS. As outlined in the guidance set out by Environment Canada for developing MAAs, Treasury Metals characterized the different TSF and minewater pond alternatives based on environmental, technical, socio-economic and economic categories (referred to as accounts under the guidance). Characterization criteria was then selected by a multidisciplinary team with representative of the four accounts. Each account was split into sub-accounts that are used to determine the level of impact to the account, which are used to measure impacts between the alternatives but are not easy to quantify and rank in a transparent manner. Further characterization into indicators allow qualitative or quantitative measurement of the impact associated with each sub-account. A table with the list of sub-accounts and indicators used in the MAA for the TSF and the minewater pond along with the rationale for its inclusion is provided in Table 8-1 of Appendix D-2 to the revised EIS. Additionally, a list of indicators that were considered, but not included in the characterization of potential alternative effects are provided in Section 8.1 of Appendix D-2. Aboriginal considerations were included in the assessment as per the guidance, as seen in Table 8-1 of Appendix D-2. The sub-account that specifically looks at potential impacts to Aboriginal peoples are under the sub-account “Aboriginal Land Use and Heritage Value” and includes the indicators: • Access Effected Areas • Wildlife Abundance • Loss of Undisturbed Habitat • Avoidance of Thunder Lake Watershed These indicators were based off of input obtained from Indigenous community engagement throughout the Project and specific concerns that were raised by Aboriginal peoples during then engagement process. Additional indicators that could potentially affect Aboriginal peoples are included in other sub-accounts within the socio-economic account.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
31	AA(1)-12	CEA Agency	Appendix D EIS Section 2	Section 8.1	**<u>Summary of Comment / Rationale:</u>** According to the Alternatives Assessment (AA) Report (Appendix D), alternative 1D (co-disposal of waste rock and tailings in a single facility) has been selected as the preferred disposal alternative. It is not clear in the AA Report where waste rock would be disposed of should an alternative other than 1D be the preferred alternative.
					<u>Information Request / Comment:</u> A. Clarify additional options for waste rock disposal if alternative 1D cannot be pursued.
					<u>Response:</u> Should alternative 1D not be available waste rock will continue to be deposited in the excavated mining facilities as planned. There is no requirement to have tailings mixed with waste rock to continue placement of waste rock.
32	AA(1)-13	CEA Agency	Appendix D Tables 4.4, 4.5 EIS Section 2	Section 8.1	**<u>Summary of Comment / Rationale:</u>** Table 4.4 (Appendix D) lists the quantity for each candidate alternative, either numeric or descriptive, associated with each indicator under the four accounts of the Alternatives Assessment Report. Then indicators are scored based on the quantity listed in Table 4.4 and in accordance with the designed scale described in Table 4.5 (Appendix D). However, the source of information provided in Table 4.4 for each indicator is not provided. Without the information source, it is not possible to verify the accuracy of the evaluation and understand its inherent uncertainty. The proponent should provide the source of the information used in Table 4.4 so that the necessary evaluation of the proposed amendments to Schedule 2 of the Metal Mining Effluent Regulations can be undertaken. These sources include but are not limited to personal communication with an expert, literature review and field study.
					<u>Information Request / Comment:</u> A. Provide the source of the information used in Table 4.4.
					<u>Revised Response:</u> In order to address information request TMI_032-AA(1)-13 from the Agency, Table 4.4 of Appendix D to the original EIS was modified in May of 2017 to include the source of the data used for each indicator of the TSF assessment of alternatives. This modified table was attached to the Information request package sent to the Agency in September of 2017 as TMI_034-AA(1)-15_Attachment_2.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					However, in order to address all of the information requests involving the TSF assessment of alternatives, a revised assessment of alternatives for tailings disposal was prepared in August of the 2017 for the joint purpose of meeting the requires under the CEAA Guidelines and to meeting the requires of a Schedule 2 regulatory amendment under the *Fisheries Act*. Appendix D to the revised EIS (submitted April of 2018) presents the information related to the assessment of alternatives of various locations and methodologies for the storage of mine tailings and location of the minewater pond. The appendix includes the following two components in the revised EIS: • D-1: Tailings Storage Facility Alternatives assessment written by WSP Canada Inc., dated July 21, 2014. This provides a full assessment of tailings storage methodologies and locations for the Project and was submitted as part of the original EIS. The report includes Site Characteristics, Alternatives Assessment Parameters, Alternatives Assessment and technical information pertaining to the preferred alternative. As part of the Round 1 information requests, Treasury Metals has made significant changes to the alternatives assessment for tailings storage. As such, Sections 1, 2, 4 and 6 have been superseded by the information provided in Appendix D-2. No changes have been made to Sections 3.0 and 5.0 of Appendix D-1, which continue to be relied on in Appendix D-2 and the revised EIS. • D-2: Multiple Accounts Analysis - Assessment of Alternatives for Storage of Mine Waste, dated August 31, 2017. This draft report provides a full multiple accounts analysis of various methodologies and locations for the storage of tailings material as per the Metal Mines and Effluent Regulations and pursuant to the Guidelines for the Assessment of Alternatives for Mine waste Disposal. The report is currently in a draft form as discussions with appropriate regulators are still pending. The draft report includes a summary of the environmental conditions, study methodology, candidate alternatives, pre-screening assessment of alternatives, characterization of remaining alternatives and a value based decision process using a multiple accounts ledger and sensitivity analysis. Finalization of the multiple accounts analysis is pending consultation with relevant agencies and incorporating their feedback. As outlined in the guidance set out by Environment and Climate Change Canada for developing multiple accounts analyses under the *Fisheries Act*, Treasury Metals characterized the different TSF and minewater pond alternatives based on environmental, technical, socio-economic and economic categories (referred to as accounts under the guidance). Characterization criteria was then selected by a multidisciplinary team with representative of the four accounts. Each account was split into sub-accounts that are used to determine the level of impact to the account, which are used to measure impacts between the alternatives but are not easy to quantify and rank in a

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					transparent manner. Further characterization into indicators allow qualitative or quantitative measurement of the impact associated with each sub-account. The information presented in Table 4.4 of the original EIS, as modified in response to TMI_034-AA(1)-15 (specifically, TMI_034-AA(1)-15_Attachment_2) has been superseded by the information presented in Table 7-1 of Appendix D-2 to the revised EIS. Table 7-1 of Appendix D-2 to the revised EIS characterizes, qualitatively or quantitatively, each indicator. This was done using information obtained from the EIS, baseline studies and Indigenous and public engagement. The information was then used by respective experts in the applicable disciplines (e.g. biologists, geotechnical engineers, socio-economic leads) to further determine the most effective way of characterizing the information in a defensible and transparent manner, while differentiating the alternatives being assessed. Consistent with spirit of the request from the Agency, a column has been added to Table 7-1 that provides the source data for each indicator assessed in the MAA. The data used in the MAA was compiled primarily for the purpose of the MAA by respective discipline experts from Amec Foster Wheeler. In instances where information was taken from other sources to use in the MAA, the author and location in the EIS has been provided, where applicable. In addition, Table 8-1 of Appendix D-2 provides a rationale for the sub-accounts and indicators used in the MAA and a rationale for the valuating criteria found in Table 8-2 of Appendix D-2.
33	AA(1)-14	CEA Agency	Appendix D, Table 4.3 EIS Section 2	Sections 8.1, 10.1	**Summary of Comment / Rationale:** The proponent has considered relevant sub-accounts and indicators under the alternatives characterization section in Table 4.3 (Appendix D). For a number of qualitative indicators, there is no description of why the indicator parameters are varying between each alternative. An example of this is for the indicator Sensitivity to Climate Variability, where Alternatives are ranked as having from low to moderate, to moderate to high sensitivities, respectively, but each alternative is characterized as having the same reclaim requirements (i.e. reclaim from pond during winter with ice buildup in pond, Table 4.3). According to current guidance (http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=1B095C22-1), it should be clear to an independent reviewer what the basis is for the characterization criteria stipulated for any alternative.
					Information Request / Comment: A. Describe why and how indicator parameters are varying between each alternative. Repeat this process for all qualitative indicators.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Revised Response: Information requested by TMI_033 per response # TMI_30 has been integrated into the revised EIS as demonstrated below. Appendix D referenced in the comment contains the Alternatives Assessment and multiple accounts analysis (MAA) for the TSF. As part of the process for responding to the Round 1 information requests, Treasury Metals prepared a new MAA for the evaluation of alternatives for mine waste disposal options included as Appendix D-2 to the revised EIS. Associated relevant information is summarized in Section 2.3.6 of the revised EIS. In addition to describing the alternatives for mine waste disposal, the new MAA (Appendix D-2 to the revised EIS) also presents the alternative location of the minewater pond, which may also require a Schedule 2 amendment under Metal Mining Effluent Regulations. The information regarding alternatives for minewater management presented in the MAA are summarized in Section 2.3.2 of the revised EIS. As outlined in the guidance set out by Environment and Climate Change Canada for developing MAAs, Treasury Metals characterized the different TSF and minewater pond alternatives based on environmental, technical, socio-economic and economic categories (referred to as accounts under the guidance; Appendix D-2, Section 4.5.2.2). Characterization criteria was then selected by a multidisciplinary team with representative of the four accounts. Each account was split into sub-accounts that are used to determine the level of impact to the account, which are used to measure impacts between the alternatives but are not easy to quantify and rank in a transparent manner. Further characterization into indicators allow qualitative or quantitative measurement of the impact associated with each sub-account. Table 8-2 of the revised MAA (Appendix D-2) provides the valuating criteria for each indicator used in the assessment. Each scale was designed to most effectively differentiate the four alternatives as per the Environment and Climate Change Canada guideline, in a transparent and defensible manner. Each qualitative indicator scale provides the description of each point on the six-point scale and how each ranking differentiates the alternatives. There are no instances where alternatives are given different rankings while having the same description.
34	AA(1)-15	CEA Agency	Appendix D, Table 4.5 EIS Section 2	Sections 8.1, 10.1	**Summary of Comment / Rationale:** The proponent has considered relevant sub-accounts and indicators under the alternatives characterization section. For a number of qualitative indicators, there is no description of how and why indicator scores, shown in Table 4.5 (Appendix D), are defined. An example of this is for the indicator “Noise”, where alternatives are either characterized as having Low noise generation or High noise generation due to truck traffic (Table 4.3). However, Table 4.5 does not define what constitutes “High”, “High to Medium”, “Medium”, “Medium to Low”, “Low” or “<Low” noise. Without information such as this, it is difficult to understand the work completed by the proponent in developing the Alternatives Assessment. With respect to the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					qualitative indicators used throughout the multiple accounts analysis, the proponent needs to define the indicator scale in a systematic and transparent manner. Without this information, the impacts of the proposed mine waste disposal alternative cannot be fully understood and therefore it cannot be determined if the preferred option is the one that best mitigates effects on Valued Components. Examples of qualitative value scales are provided in Tables 9 and 11 of Environment Canada's guidelines: http://ec.gc.ca/pollution/default.asp?lang=En&n=125349F7-1.
					Information Request / Comment: A. Define the range of sensitivities used to score qualitative indicators (e.g. for the indicator "Noise", what the difference is between "High", "High to Medium", "Medium", "Medium to Low", "Low" or "<Low" noise). Repeat this process for all qualitative indicators.
					Revised Response: Information required by TMI_034 per response # TMI_30 has been integrated into the revised EIS as demonstrated below. Appendix D referenced in the comment contains the Alternatives Assessment and multiple accounts analysis (MAA) for the TSF. As part of the process for responding to the Round 1 information requests, Treasury Metals prepared a new multiple accounts analysis (MAA) for the evaluation of alternatives for mine waste disposal options (i.e., the TSF. This document is included as Appendix D-2 to the revised EIS, and the relevant information is summarized in Section 2.3.6 of the revised EIS. In addition to describing the alternatives for mine waste disposal, the MAA (Appendix D-2 to the revised EIS) also presents the alternative location of the minewater pond, which may require a Schedule 2 amendment under Metal Mining Effluent Regulations. The information regarding alternatives for minewater management presented in the MAA are summarized in Section 2.3.2 of the revised EIS. As outlined in the *Guidelines for the Assessment of Alternatives for Mine Waste Disposal* set out by Environment Canada and Climate Change for developing MAAs, Treasury Metals characterized the different TSF and minewater pond alternatives based on environmental, technical, socio-economic and economic categories (referred to as accounts under the guidance; Appendix D-2, Section 4.5.2.2). Characterization criteria was then selected by a multidisciplinary team with representative of the four accounts. Each account was split into sub-accounts that are used to determine the level of impact to the account, which are used to measure impacts between the alternatives but are not easy to quantify and rank in a transparent manner. Further characterization into indicators allow qualitative or quantitative measurement of the impact associated with each sub-account.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					A description of the six-point qualitative and quantitative indicator scales used in the assessment is provided in Table 8-2 (Multiple Accounts Analysis Valuating Criteria) of Appendix D-2. Each indicator that requires a qualitative scale was designed in a systematic and transparent manner using the Environment Canada and Climate Change guidance.
35	AA(1)-16	CEA Agency	Appendix, Tables 4.4-4.6 EIS Section 2	Section 8.1	**Summary of Comment / Rationale:** The Alternatives Assessment (Appendix D) seeks to differentiate between each alternative. The selection of value scales for assessing some quantitative indicators to compare alternatives in terms of how these value scales differentiate each alternative is in question. For example, for the indicator "Preliminary Estimate of Total Embankment Height" in Table 4.6, the scale of values presented therein ensures that the scores for each alternative are concentrated in a narrow range, i.e. the scores range from 3 to 5. The proposed value scale does not sufficiently differentiate each alternative in accordance with the objectives of the EIS Guidelines. Since the values of this indicator range from 18 to 34 m (see Table 4.4), it would have been more appropriate to establish a scale of values more representative such as: < 19 m ("best") – score of 6 19 - 22.5 m – score of 5 22.5 - 26 m – score of 4 26 - 29.5 m – score of 3 29.5 - 33 m – score of 2 > 33 m ("worst") – score of 1. This is also the case for the following indicators in the Alternatives Assessment: Potential Loss to flura[sic] and Fana[sic] with construction and operations, Length of Access Roads, Distance from Plant Site to Far End of Facility for pipeline or haul road, Elevation Difference From Plant Site at Final Embankment Elevation, for tailings pumping, Estimate of Slope Angle during operations, Distance From Plant Site to Far End of Facility, Estimate of Water Treatment Volume per year, Capitol[sic] Costs, $M, Life of Mine (differentiating), Operational Cost Estimate, $M, Life of Mine, Closure Cost Estimate, $M, Life of Mine (differentiating), and Extent of structure above topography and sight lines. Current guidance (http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=1B095C22-1 and http://ec.gc.ca/pollution/default.asp?lang=En&n=125349F7-1) state that the Alternatives Assessment seeks to differentiate alternatives. Providing value scales that are more representative of these indicator ranges would better differentiate the alternatives.
					Information Request / Comment:

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					A. Provide and implement value scales that are more representative of the discussed indicator ranges in order to better differentiate the alternatives.
					Revised Response: Information required by TMI_035 per response # TMI_30 has been integrated into the revised EIS as demonstrated below. Appendix D referenced in the comment contains the Alternatives Assessment and multiple accounts analysis (MAA) for the TSF. As part of the process for responding to the Round 1 information requests, prepared a new MAA for the evaluation of alternatives for mine waste disposal options (i.e., the TSF) included as Appendix D-2 to the revised EIS/ Associated relevant information is summarized in Section 2.3.6 of the revised EIS. In addition to describing the alternatives for mine waste disposal, the MAA (Appendix D-2 to the revised EIS) also presents the alternative location of the minewater pond, which may also require a Schedule 2 amendment under Metal Mining Effluent Regulations. The information regarding alternatives for minewater management presented in the MAA are summarized in Section 2.3.2 of the revised EIS. As outlined in the guidance set out by Environment Canada and Climate Change for developing MAAs, Treasury Metals characterized the different TSF and minewater pond alternatives based on environmental, technical, socio-economic and economic categories (referred to as accounts under the guidance; Appendix D-2, Section 4.5.2.2). Characterization criteria was then selected by a multidisciplinary team with representative of the four accounts. Each account was split into sub-accounts that are used to determine the level of impact to the account, which are used to measure impacts between the alternatives but are not easy to quantify and rank in a transparent manner. Further characterization into indicators allow qualitative or quantitative measurement of the impact associated with each sub-account. Table 8-2 of the revised MAA (Appendix D-2) provides the indicator valuating criteria used in assigning values to each of the four alternatives. The valuating scale for each indicator was designed using the Guidelines for the Assessment of Alternatives for Mine Waste Disposal (the Guidelines). As such, most indicator scales have the alternative assessed as, or between, a lowest value as 1, and the highest value as 6, which differentiates the four final alternatives as much as possible. There are some qualitative scales that do not lend themselves to allow for alternatives receiving a one and a six. These scales still follow the Guidelines and allow for enough differentiation between the alternatives to be included as indicators in the assessment.
36	AA(1)-17	CEA Agency	Appendix D, Table 4.5 EIS Section 2	Section 8.1	**Summary of Comment / Rationale:** Further to the objective of differentiating between alternatives, the value scale ranges used to score quantitative indicators in Table 4.5 (Appendix D) should be constant to ensure that scoring is proportional for each value in the scale. The selection of value scales for assessing some

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					indicators to compare alternatives in terms of how these value scales differentiate each alternative is in question. For example, the value scale ranges for the indicator Direct Distance from Plant Site to Structure are not constant: The score of "4" is assigned a range of approximately 300 m (1,200 to 900 m) while the remaining scores encompass a range of approximately 400 m (score of "2" ranges from 2,000 to 1,600 m; score of "3" ranges from 1,600 to 1,200 m; score of "5" ranges from 900 to 500 m). Assigning ranges which are not constant within a value scale could favour alternatives with scores that encompass a greater range, or against alternatives with scores that encompass a lesser range. This also applies to the following indicators: Length of Additional Infrastructure Required, Length of Access Roads, Capitol[sic] Costs, $M, Life of Mine (differentiating), and Closure Cost Estimate, $M, Life of Mine (differentiating).
					Information Request / Comment: A. Assign and apply value scale ranges used to score quantitative indicators that are constant to ensure that scoring is proportional for each value in the scale.
					Revised Response: The document entitled Tailings Storage Facility Alternatives Assessment was included as Appendix D to the original EIS. In response to various information requests, an update to the TSF alternatives assessment has been prepared by Treasury Metals (TMI_34-AA(1)-15_Attachment_1), while TMI_34-AA(1)-15_Attachment_2 provides updates to Table 4.1 to 4.9 of Appendix D of the original EIS. The value scales for each of the quantitative indicators have been adjusted to ensure that scoring is proportional for each value in the scale. As part of the process to revise the EIS, Appendix D has been modified in the following to include the following two components: • Appendix D-1: Tailings Storage Facility Alternatives assessment written by WSP Canada Inc., dated July 21, 2014. This provides a full assessment of tailings storage methodologies and locations for the Project and was submitted as part of the original EIS. The report includes Site Characteristics, Alternatives Assessment Parameters, Alternatives Assessment and technical information pertaining to the preferred alternative. As part of the Round 1 information request process, Treasury Metals has undertaken a multiple accounts analysis (MAA) for the selection of mine waste storage options (included as Appendix D-2 to the revised EIS). As a result, Sections 1, 2, 4 and 6 of

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					Appendix D-1 to the revised EIS have been largely superseded by the information provided in Appendix D-2. No changes have been made to Sections 3.0 and 5.0 of Appendix D-1, which continue to be relied on in Appendix D-2 and the revised EIS. The files TMI_34-AA(1)-15_Attachment_1 and TMI_34-AA(1)-15_Attachment_2 have been appended to Appendix D-1 of the revised EIS for completeness, and text has been added to the "note to readers" at the front of Appendix D to the revised EIS to clarify which sections are current and superseded. • Appendix D-2: Multiple Accounts Analysis - Assessment of Alternatives for Storage of Mine Waste, dated August 31, 2017. This draft report provides a full multiple accounts analysis of various methodologies and locations for the storage of tailings material as per the Metal Mines and Effluent Regulations and pursuant to the Guidelines for the Assessment of Alternatives for Mine waste Disposal. The report is currently in a draft form as discussions with appropriate regulators are still pending. The draft report includes a summary of the environmental conditions, study methodology, candidate alternatives, pre-screening assessment of alternatives, characterization of remaining alternatives and a value based decision process using a multiple accounts ledger and sensitivity analysis. Finalization of the Multiple Accounts Analysis is pending consultation with relevant agencies and incorporating their feedback. The information in Appendix D-2 to the revised EIS was used in preparing Section 2.3.6 of the revised EIS. This includes value scale ranges to score quantitative indicators that are constant to ensure that scoring is proportional for each value in the scale. The scoring values have been included in Section 9 of appendix D.
37	AA(1)-18	CEA Agency	Appendix D, Tables 4.4 to 4.6 EIS Section 2	Section 8.1	**Summary of Comment / Rationale:** According to current guidance (http://ec.gc.ca/pollution/default.asp?lang=En&n=125349F7-1), sub-accounts need to be sufficiently decomposed to allow measurability. However, sub-accounts should also be non-redundant. The multiple inclusions of indicators whose metrics are measured identically effectively favours those candidate alternatives having a high score for those indicators. The following indicators have metrics which are measured identically in the Alternatives Assessment (Appendix D): - Potential for Greenhouse Gas Emission (number of truck hours) and Noise - Number of Main Watersheds Affected and Number of Watersheds - Distance from Plant Site and Operation Distance - Storage Facility and Associated Infrastructure Footprint and Existing Vegetation, ecosystems will be lose[sic] - Slope Stability and Visual Impact - Risk to Human Health and Risk to Worker Safety

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					- Economic Benefits to Regional Communities and Regional Job Creation and Diversity - Aboriginal Rights and Extent of Traditional Land Use
					Information Request / Comment: A. Remove those indicators from the Alternatives Assessment (Appendix D) that effectively result in "double-counting" and reassess data accordingly for further clarity.
					Revised Response: To address comments and concerns raised in the Round 1 information requests regarding the TSF alternatives assessment (Appendix D-1 of the revised EIS), a new alternatives assessment was created to effectively address the concerns raised. This new alternatives assessment has been appended to the revised EIS as Appendix D-2 and replaces Table 4.6 to 4.6 referenced in the information request. There is therefore no need to include the update to the tables referenced in the original response, as they have been replaced by Appendix D-2 (Table 7.1, 8.1, and 8.2). A summary of the changes made to Appendix D, and what is relied on in the revised EIS is provided below. • Appendix D-1: Tailings Storage Facility Alternatives assessment written by WSP Canada Inc., dated July 21, 2014. This provides a full assessment of tailings storage methodologies and locations for the Project and was submitted as part of the original EIS. The report includes Site Characteristics, Alternatives Assessment Parameters, Alternatives Assessment and technical information pertaining to the preferred alternative. As part of the Round 1 information request process, Treasury Metals has undertaken a multiple accounts analysis (MAA) for the selection of mine waste storage options (included as Appendix D-2 to the revised EIS). As a result, Sections 1, 2, 4 and 6 of Appendix D-1 to the revised EIS have been largely superseded by the information provided in Appendix D-2. No changes have been made to Sections 3.0 and 5.0 of Appendix D-1, which continue to be relied on in Appendix D-2 and the revised EIS. • Appendix D-2: Multiple Accounts Analysis - Assessment of Alternatives for Storage of Mine Waste, dated August 31, 2017. This draft report provides a full multiple accounts analysis of various methodologies and locations for the storage of tailings material as per the Metal Mines and Effluent Regulations and pursuant to the Guidelines for the Assessment of Alternatives for Mine waste Disposal. The report is currently in a draft form as discussions with appropriate regulators are still pending. The draft report includes a summary of the environmental conditions, study methodology, candidate alternatives, pre-screening assessment of alternatives, characterization of remaining alternatives and a value based decision process using a multiple accounts ledger and sensitivity analysis. Finalization of the Multiple Accounts Analysis is pending consultation

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					with relevant agencies and incorporating their feedback. The information in Appendix D-2 to the revised EIS was used in preparing Section 2.3.6 of the revised EIS.
38	AA(1)-19	CEA Agency	Appendix D, Tables 4.3, 4.4 EIS Section 2	Section 8.1	**<u>Summary of Comment / Rationale:</u>** Current guidance (http://ec.gc.ca/pollution/default.asp?lang=En&n=125349F7-1) states that when selecting indicators thought should be given to the parameter that will be used to define measurability. Assigning measurability is relatively simple for sub-accounts that readily lend themselves to parametric terms. The following indicators have been defined qualitatively: Potential Impacts to Water Quality, Construction material availability and Tailings Storage Expansion Capacity. It is unclear why the Alternatives Assessment (Appendix D) provides qualitative indicator scales to evaluate indicators which could readily lend themselves to parametric terms. Examples of this include: - Potential Impacts to Water Quality: instead of being ranked, could be defined in terms of water quality predicted parameters (e.g. concentrations of metals, pH, DO, etc.) - Construction material availability: instead of being ranked, could be defined in terms of amount of construction material available or required - Tailings Storage Expansion Capacity: instead of being ranked, could be defined in terms of volume of capacity to which the TIA could be expanded
					<u>Information Request / Comment:</u> A. Define indicators which readily lend themselves to parametric terms, otherwise provide further justification as to why these indicators have been defined qualitatively.
					<u>Response:</u> The indicators used in the Alternatives Assessment for the TSF were reviewed by Treasury Metals and a subsequent new multiple accounts analysis was developed to respond to the concerns raised. The following indicators were incorporated into the new multiple accounts analysis and are discussed below: <u>Impacts to Water Quality:</u> At the time of completion of the Alternatives Assessment, the potential impacts to water quality due to the presence of a tailings storage facility (TSF) was completed in qualitative terms. The design of the TSF had not yet been advanced to a level whereby a selection of the construction materials had been completed in order to complete the TSF design. A design of the TSF with details on foundation materials, construction specifications and material specifications would be required to

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					complete studies to determine the pH or metal leaching (ML) concentrations. A site investigation is currently underway to determine the types of materials available on site for the construction of the dam (borrow sources), foundation materials and parameters that will assist with the design of the TSF. As a result, qualitative parameters were selected in order to rank each of the alternatives. <u>Construction Material Availability:</u> This account had been defined in terms of a qualitative indicator for several reasons. The design of the TSF had not been advanced to a level sufficient to predict the type and volume of materials required for construction in terms of quantity, or quality. In addition, borrow source studies and investigations have not been completed to a sufficient level of detail to accurately predict the amount of material available on or off site. Site investigation programs are underway and material testing is currently being planned on site to determine the amount of and parameters for the materials that may be available on site. The TSF design will be advanced once the availability of material and the associated material parameters for the materials to be used has been defined. <u>Tailings Storage Expansion Capacity:</u> The design input for the TSF is the requirement to hold the current requirement/volume of tailings produced to mine the proposed underground and open pit mine in accordance with the mining plan (minus any tailings that are planned to be stored elsewhere such as underground as fill). Should additional ore reserves be proven, further studies and design work that would be required to plan for the storage of these additional materials in accordance with all applicable codes, guidelines and permit requirements that would need to be followed. It is unknown at this time if additional capacity would be required or what potential if any additional capacity volume required. This indicator was selected to measure the possibility of expanding the TSF if required from a ranking perspective as some geographical locations have little opportunity for expansion, and some in situ parameters such as foundation materials may limit the ability to store additional capacity. Insufficient data is available at this time to use parametric parameters for this account.
39	MW(1)-01	CEA Agency	EIS Summary Section 4.4.1 EIS Section 2.4 Appendix K	Section 5.6	<u>**Summary of Comment / Rationale:**</u> The EIS executive summary and the EIS project description sections state that approximately 23 million tonnes of waste rock will be produced during the open pit mine life with an additional 2 million tonnes being generated and stored on surface from underground mining. Approximately 40% (12 million tonnes) of total open pit waste rock will be used to backfill the pits to minimize the volume and footprint of the waste rock stockpile. The waste rock stockpile will have a footprint of 37 ha, a height of 30 m above grade, and side slopes of 3H: 1V.

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			Appendix L		In Appendices K and L, the amount of total waste rock to be produced at the site is described as approximately 46 million tonnes waste rock. About 20 million tonnes of mine rock will be relocated to the mined out open pits and the remaining 26 million tonnes will be stored in the waste rock storage area (WRSA). The WRSA will have a footprint of 625 000 m^2 (62.5 ha) and a height of 20m. The information presented does not match and it is unknown which of the information presented is factually correct.
					<u>Information Request / Comment:</u> A. Clarify the following: 1. The total mass and volume of waste rock that would be produced from the integrated open and underground mining operations, 2. The total mass and volume of waste rock to be deposited in the mined out pit, 3. The total mass and volume of waste rock to be deposited in the WRSA, 4. The final footprint and dimension of the WRSA and the open pit, 5. The total volume of the integrated mined out pit, 6. The stripping ratio of waste rock to ore, and 7. The mass and volume of overburden mined and stored in the overburden stock pile. B. Revise relevant studies and appropriate sections of the EIS and appendices using the correct information. If the revised information alters significance determinations, describe the changes and provide mitigation, monitoring, and follow-up plans as appropriate.
					<u>Response:</u> A. .As requested, please find the following clarifications; 1. The total mass and volume of waste rock that would be produced from the integrated open and underground mining operations is 26.56 Million Tonnes, or 9.66 (in situ) Million cubic metres (m^3). The total deposited volume of waste rock would be approximately 13.61 Million m^3. 2. The total mass and volume of waste rock to be deposited in the mined out pit is 13.66 Million Tonnes, or 6.95 Million m^3. 3. The total mass and volume of waste rock to be deposited in the waste rock storage area (WRSA) is 12.9 Million Tonnes, or 6.66 Million m^3. 4. The final footprint and dimension of the WRSA and the open pit are as follows: • WRSA footprint: 369,747 square metres (m^2)

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					• WRSA dimensions: length: 1264 m; approximate average width: 315 m; maximum height: 25–30 m • Ultimate open pit footprint: 330,624 m² • Open pit dimensions: length: 1370 m; approximate average width: 296 m; maximum depth: 130–180 m 5. The total volume of the integrated mined out pit is 13.77 Million m³. 6. The stripping ratio of waste rock to ore is estimated at 5.74:1. 7. The mass and volume of overburden (OVB) mined and stored in the overburden stock pile is as follows: • Mined in situ mass of OVB: 5.90 Million Tonnes • Mined in situ volume of OVB: 2.95 Million m³ • Stored volume of OVB: 4.13 Million m³ • OVB stockpile footprint: 255,747 m² • OVB stockpile dimension: length 855 m; approximate average width: 285 m; maximum height:15m B. The supporting studies were completed in a conservative nature such that significance of effects could be considered well within a reasonable estimate of the Project going forward. As any updated studies, would be expected to produce results that are superior to the conservative estimates, Treasury Metals will continue to rely on the aforementioned estimates for effects and significance.
40	MW(1)-02	CEA Agency	EIS Sections 2.3, 2.3.6 Appendix X	Section 8	**Summary of Comment / Rationale:** Project preferred options for both waste rock and tailings management and options at decommissioning (closure) consisted of various locations of the waste rock storage area (WRSA) and tailings storage facility (TSF) sites. At decommissioning (closure) the waste rock will be covered first with a layer of pioneer or base stabilization layer to fill rock voids followed by a low permeability clay layer and a granular shedding on top of the clay layer. At decommissioning (closure) the tailings beach will be graded and covered, similar to the waste rock pile, first with a layer of pioneer or base stabilization layer followed by a low permeability clay layer, a granular shedding on top of the clay layer, and a final top soil layer for re-vegetation purposes. The abandonment (post-closure) performance of simple and composite clay covers on waste rock pile at the Equity Silver Mine, Barrick Gold Corporation, Houston, B.C. and pyritic shale rock pile at

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					the Halifax International Airport, N.S. has not been successful. At both of these sites, the covers did not perform as designed, requiring collection and chemical treatment of the drainage effluents.
					<u>Information Request / Comment:</u> A. Provide information on the type of pioneer layer to be placed on the various waste management sites and the estimated thickness and long-term performance of these layers. B. In light of the poor performance track record of simple clay covers provide additional conceptual design features that could be incorporated in the proposed clay covers at the project site to prevent long-term acid rock drainage (ARD) and metal leaching (ML). C. Provide and describe monitoring and follow-up programs to reliably verify predicted effects (or absence of them), and to confirm both the assumptions and the effectiveness of the proposed clay covers. Provide contingency measures as a means of addressing unforeseen effects related to the proposed clay cover. D. Provide information on the expected longevity of the designed clay covers.
					<u>Response:</u> *Part A - Type of Pioneer Layer* The type of pioneer layer would consist of a geotechnical layer placed to provide a suitable base for construction equipment access. The material would consist of a well graded free draining material placed to a minimum thickness of 0.3 m to ensure that a suitable base is provided. A material such as a MTO Granular B Type I or Type II would be used as the pioneer layer (OPSS.PROV 1010). *Part B – Conceptual Design Features for Clay Cover* Treasury has determined as part of the ongoing engineering refinements that a clay cover will not be used in as a component of the potential low-permeability cover over the tailings storage facility (TSF) for closure. Treasury will advance design for tailings on the basis they are potentially acid generating (PAG) and will manage the risk of acid rock drainage (ARD) and metal leaching (ML) in accordance with Section 59 of the Mine Rehabilitation Code of Ontario (O. Regulation 240/00). Treasury will select and optimize an engineered cover to mitigate chemical issues in accordance with Section 59 of Schedule 2 of O. Regulation 240/00. The cover will be based on empirical data

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					that is gathered over the life of the mine (Peck, 1969). A concept for a dry cover that does not utilize clay as the primary low-permeable zone is provided below for information. • 15 cm of organic soils capable of maintaining a vegetative cover; • 50 cm of protective soil (fine grained material free of sharp oversized particles); • A protective geotextile cushion may be required to ensure protection from angular rocks or zones for HDPE liner; • a 2 mm HDPE geomembrane; • a 6 mm thick GCL, needle punched; and • 15 to 30 cm bedding material. A conceptual configuration for a wet cover would consist of placement of a granular cover over the final surface of the tailings. The material would consist of material similar to the pioneer layer discussed above. The ponded water level over the final tailings surface would be maintained at approximately 1.0 m or as determined as part of detailed closure design. A detailed water balance will be used to ensure proper management of the pond during average, wet and dry annual conditions. A trade-off study is planned to assess each alternative for TSF closure as part of the planned pre-feasibility design work being executed in 2017. Selection of the suitable closure cover and execution of preliminary and detailed design is part of the Treasury Metals commitment registry. *Part C – Monitoring of Clay Cover Performance* As noted above, utilizing a clay cover as a low-permeable layer has been removed from the Project concepts. Closure cover performance monitoring will however be implemented as part of closure activities and will consist of installation of groundwater monitoring wells within the TSF embankment and also in the downstream areas. Monitoring wells can also be installed within the basin to monitor water levels in the tailings and also to collect groundwater samples. Settlement monuments established on the cover can be used to monitor potential long-term tailings consolidation and the effects on the cover. Groundwater sampling as per Regulation 240/00 section 53 will be used. This data will be compared to pre-closure baseline data to monitor the anticipated and actual performance of the TSF closure cover. *Part D – Expected Longevity of the Designed Clay Cover*

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					As noted above, utilizing a clay cover as a low-permeable layer has been removed from the Project concepts.
41	MW(1)-03	CEA Agency	Appendix D, Section 3.2.1 EIS Section 1.4.3	Section 5	**<u>Summary of Comment / Rationale:</u>** Section 3.2.1 (Appendix D) states: “This concept assumes that disposal of tailings solids into underground mine workings can occur after Year 5 of operations and that an assumed 40% can be removed from the tailings stream (directed to the on land tailings facility after Year 5) and directed to the underground mine workings.” While no explicit schedule is provided, there does not appear to be evidence that the goal of diverting 40% of the tailings stream to underground mine workings after year 5 is reasonable. The requested information will also be required in complete detail during the provincial permitting phase when submitting the required closure plan.
					<u>Information Request / Comment:</u> A. Describe how the tailings and exhausted underground mine workings volumes were estimated to provide evidence that the 40% goal is feasible. B. Provide contingency measures as a means of addressing unforeseen effects should the 40% goal not be feasible.
					<u>Response:</u> The assumed 40% of tailings to be disposed in the underground mine was a rough estimate based on previous experience. Further engineering studies will be required prior to obtaining a more accurate value can for the volume of material that will be able to be placed in the underground workings. Should a value of lower than 40% be possible to be place in the underground workings, Treasury Metals would revert to alternative listed as conventional tailings and place all material within the outlined capacity of the tailings storage facility (TSF). Regardless of the total volume of tailings that will be placed in the underground workings, the alternatives assessment has helped to indicate that the co-disposal method is the preferable option and Treasury Metals will continue with this method in future technical studies.
42	MW(1)-04	CEA Agency	Appendix D	Sections 8.1, 10.1	**<u>Summary of Comment / Rationale:</u>** The analysis in Appendix D is incomplete and does not account for the disposal of all mine waste. It only covers the tailings storage location and deposition technology. There is no mention of the

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					disposal of other mine waste such as waste rock, low grade ore (LGO) and overburden. The Metal Mining Effluent Regulations (MMER), as per paragraph 5(1)(a), stipulate that for mine waste to be deposited in a natural water body frequented by fish, the water body must be listed in Schedule 2 of the MMER, designating it as a tailings impoundment area (TIA). In this context, a TIA is a natural water body frequented by fish into which deleterious substances (e.g. tailings, waste rock, low grade ore, overburden, and any effluent that contains any concentration of the deleterious substances specified in the MMER and is of any pH) are disposed. Information pertaining to which water bodies will be impacted by mine waste is essential to the determination of effects to these water bodies.
					<u>Information Request / Comment:</u> A. Describe the disposal of all types of mine wastes including tailings, waste rock, low grade ore, overburden and mine effluent, and indicate whether or not any water bodies frequented by fish will be impacted by the disposal of these mine wastes. B. Provide maps that overlay the proposed mine waste options with the local water bodies and specify which water bodies are deemed to be fish frequented. C. If any of the mine wastes listed in responses to questions A and B of this IR are not required to be subject to the MMER Schedule 2 amendment requirements, provide appropriate explanation and rationale.
					<u>Revised Response:</u> A. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project. A summary of the refinements to the Project since the completion of the original EIS are presented Section 3.16 of the revised EIS. One of the refinements presented in Section 3.0 is a change to the shape of the waste rock storage area (WRSA). As a result of these changes, virtually all of the WRSA now falls within the Blackwater Creek catchment. The WRSA, low-grade ore stockpile, and overburden stockpile are shown in Figure 3.0-1A of the revised EIS. All stockpiles will be within the operations area and will be surrounded by a perimeter ditch that captures any runoff and directs it to the treatment plant. All water captured within the operations area will be discharged into Blackwater Creek. None of these stockpiles will overprint any water bodies.

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					B. TMI_042-MW(1)-04_Figure_2 illustrates the proposed the tailings storage facility and MWP locations relative to Blackwater Creek Tributary 2 and existing wetlands in the Project footprint. A reach of Blackwater Creek Tributary 2 (Tributary 2 - R2), all of its tributary T2-A, and the downstream reach of its Tributary T2-B (T2-B-R1) will be overprinted by the tailings storage facility and the minewater pond. The total stream length that will be overprinted is 2,290 m. A beaver pond on Blackwater Creek Tributary 2 (T2-BP A) that has an area of 0.148 ha will also be overprinted by the minewater pond. These watercourses and the associated beaver pond are all considered to be waterbodies frequented by fish C. The waste rock storage area, the low-grade ore storage area and the overburden stockpiles will not overlay existing waterbodies, and therefore are not required to be subject to the MMER Schedule 2 amendment requirements. Only the tailings storage facility and minewater pond will be placed over a waterbody and therefore potentially trigger the need for Schedule 2 (TMI_042-MW(1)-04_Figure_2).
43	MW(1)-05	CEA Agency	EIS Section 5.4.1 EIS Appendix Figure 1.1	9.1.2	**Summary of Comment / Rationale:** No contour information appears on Figure 1.1 (Appendix D) which is referenced in section 5.4.1 (EIS) as evidence that the project area is one of relatively low relief and that the landslides, slope erosion and potential for instability is limited in the project area. This has implication on the proposed tailings storage facility.
					Information Request / Comment: A. Provide contour information on Figure 1.1 (Appendix D) or change the reference in section 5.4.1 (EIS) to the appropriate figure containing topographic information.
					Response: Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project. A summary of the refinements to the Project since the completion of the original EIS are presented in Section 3.16 of the revised EIS. The requested topography is provided in Figure 3.0-1A.
44	MW(1)-06	CEA Agency	EIS Sections 2, 3, 6, 13	Sections 7.2.1, 9.1.2	**Summary of Comment / Rationale:** Local study areas and regional study areas (LSA/RSA) in relation to acid rock drainage/ metal leaching (ARD/ML) is not clearly defined, justified, or referenced in the EIS. Section 7.2.1 of the EIS Guidelines requires the EIS to clearly indicate the spatial boundaries to be used in assessing the potential adverse environmental effects and provide a rationale for each boundary.
					Information Request / Comment:

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					A. Define the LSA/RSA as it relates to ARD and provide a rationale for the defined LSA/RSA. B. Provide and reference a map that clearly indicates creeks, lakes etc. that could act as receptors for ARD/ML.
					Response: As described in the original EIS (EIS: Section 6.3.1), neither geology nor geochemistry represent assessment endpoints and thus no LSA/RSA were assigned in the original EIS. The potential for the ore and waste rock excavated as part of the Project to cause ARD/ML was evaluated in the EIS, and detailed in Appendices K and L to the original EIS (Appendix JJ has replaced Appendix L in the revised EIS). As described in those Appendices, the determination of ARD/ML was conducted on samples of ore and waste rock collected at the site. The potential for ARD/ML to affect surface water and groundwater was considered as part of those components of the original EIS, rather than part of geochemistry. Since the filing of the original EIS, Treasury Metals has continued to advance the engineering to support the Project should it proceed. As part of that work, Treasury Metals has updated their water balance, which has modified the potential effects on the quality of surface water and groundwater. The revised water balance and associated revisions to the potential effects on surface water and groundwater is provided in Sections 2 and 6 of Appendix JJ to the revised EIS called the Water Report (see also TMI_85-GW(1)-22). The modelled seepage migration routes predicted to occur in the post-closure phase are shown as follows: • Figure 22 of Appendix M seepage paths for the uncapped TSF. This scenario is equivalent to the TSF closed with a wet cover. • Figure 24 of Appendix M seepage paths for the capped TSF. This scenario is equivalent to the TSF closed with a dry cover. • Figure 25 of Appendix M seepage paths for the capped WRSA. This is the planned closure conditions for the WRSA.
45	MW(1)-07	CEA Agency	EIS Sections 6, 11, 13	Section 9.1.2	**Summary of Comment / Rationale:** Section 9.1.2 of the EIS Guidelines requires the EIS to include “ARD/ML prevention/management strategies under a temporary or early decommissioning scenario, including low grade ore.” This information is not provided under sections 6, 11, or 13 of the EIS.

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					Information Request / Comment: A. Provide an ARD/ML prevention management strategy under a temporary or early decommissioning scenario.
					Revised Response: Temporary suspension would not materially alter site management plans for the open pit, waste rock storage area (WRSA) or tailings storage facility (TSF). All active site management facilities including water treatment as required would remain in place. In the event of early closure, the existing closure plans (as summarized in Section 3.14 of the Revised EIS, and detailed in Appendix KK to the revised EIS) could be modified using similar procedures planned for full closure (cover on WRSA, flooding of the open pit and in-pit waste rock and dry or wet cover on the TSF). The following is noted with regards to the low-grade ore (LGO) stockpile: • Under current operational assumptions, temporary suspension does not materially affect the LGO stockpile, since storage is already planned to exist on a time-line measured in years (duration of mining activities). • Ditching and seepage collection is included in the Project plan, with direction of any run-off and seepage to the water management system for possible treatment or recycling within the milling process (Section 3.8 of the revised EIS). • Temporary suspension effectively results in a delay in blending of ore, but this time frame would be short in relation to the operational timeline of the LGO stockpile. • In the event suspension leads to closure, all LGO that remains will be placed in the mined out open pit or tailings storage facility (TSF). A summary of the actions to ensure the protection of the environment in the event of temporary suspension or early closure are provided in Section 3.14 of the revised EIS. The refinements to the Project since the original EIS that relate to insuring chemical stability post-closure are provided in Section 3.16.9 of the revised EIS.
46	MW(1)-08	CEA Agency	EIS Sections 2.3.11, 3.5.1, 3.7.2	Section 5.7	**Summary of Comment / Rationale:** It is unclear whether the proponent will use mine waste rock as a source of aggregate on the project site. Section 3.5.1 (EIS) indicates potentially acid generating waste rock will be separated. Section 2.3.11.2 (EIS) states: “No site has been identified to date that contains non-acid generating (NAG) rock suitable for aggregate construction.” While section 3.7.2 (EIS) states: “Subsequent raising of the embankments will utilize NAG mine waste rock with downstream slopes of 1.5H:1V while

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					maintaining the upstream slope at 2.5H:1V." It is unclear whether NAG rock can be obtained from the waste rock to use for construction of the tailings storage facility (TSF) embankments. If there is no NAG rock available on site, as suggested in 2.3.11.2 (EIS), clarify from where the rock will be obtained for construction of the TSF embankments.
					Information Request / Comment: A. Clarify where NAG rock will be obtained for the construction of the TSF embankments and use as aggregate. B. Confirm whether or not onsite potentially acid generating/metal leaching waste rock will be separated and provide justification for the choice. C. If potentially acid generating/metal leaching rock will be separated, provide detailed methods to be used in this segregation process. D. If aggregate must be sourced offsite, describe the potential impacts associated with obtaining and delivering this material to the project site. E. Revise the EIS document to provide consistency across sections when discussing the use of waste rock as aggregate or material for decommissioning activities.
					Revised Response: Part A: As discussed in Section 2.4.13 of the revised EIS, Treasury Metals considered three alternatives with respect to aggregate materials, namely: using mine rock identified as non-PAG; developing an on-site aggregate pit(s); and obtain aggregate from an existing commercial aggregate supplier in the region. The preferred alternative is to use non-PAG waste rock as the primary source of aggregate as this reduces the volume of waste rock to be managed, would likely reduce the height of the waste rock storage area (WRSA), and would be more economical solution for Treasury Metals. The current drilling samples have indicated that the majority of the rock can be characterized as PAG. As presented in the Section 3.13.3 of the revised EIS, additional characterization studies in peripheral areas of the open pit may be executed in advance of the detailed design. It is hoped that suitable on-site areas where non-PAG waste rock will be identified within peripheral open pit limits. The approach recognizes that drilling to date has been largely focused toward mineralized areas of the future open pit and there has been less sampling in peripheral areas of the pit.

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					Part B: As discussed in Part A of this response, there is a recognition that run-of-mine rock as currently defined will be PAG and it may not be feasible to segregate the relatively small non-PAG component of the rock (perhaps < 7% of currently defined in-pit mine rock). However, the current concentration of drilling in mineralized areas of the pit means that there may be unidentified volumes of mine rock that is non-PAG and suitable for use as aggregate within uninvestigated areas of the open pit volume. As part of future design stages of the Project, it is planned that further geological and drilling assessment work will be completed in open pit areas not previously investigated. The objective of this work will be to identify a suitable non-PAG rock aggregate source, through targeted drilling investigation programs and ML/ARD characterization. If suitable volumes of non-PAG rock are identified, a program for screening and segregating the rock (as necessary) will be developed (see Part C, below). If such volumes are not available, then a commercial off-site aggregate source would be utilized for construction requiring non-PAG rock materials (see Part D, below). Part C: In the event, on-site segregation of non-PAG rock is to be completed to supply construction aggregate for the project (including construction of TSF embankments), a standard operating procedure (SOP) would be developed to segregate suitable non-PAG rock. Any PAG rock would continue to be managed according to current management plans. A screening procedure of the blast rock volumes containing suitable non-PAG rock would developed using stream-lined (rapid) analysis to identify the volume of non-PAG rock that can be segregated (NP/AP >2). It is envisioned that analogue relationships for NP and AP would be confirmed during ML/ARD characterization of the non-PAG mine rock source. Based on available information for current in-pit mine rock, total carbon and total sulphur are expected to be suitable analogues for NP and AP respectively. The anticipated SOP for segregation of non-PAG rock would therefore include the following: • Analysis of blast hole cuttings for carbon and sulphur as an analogue for NP and AP respectively. • Carbon and sulphur analysis would be completed using an on-site Leco analyser or by rush-turn-around at commercial laboratory. • Analogue NP and AP analysis would be periodically checked against full ABA analysis to confirm previously defined analogue relationships (expect 1 in 10 samples initially declining to 1 in 20 samples or fewer as project experience dictates. • A mining geologist would define mineable non-PAG rock volumes (NP/AP >2) to be segregated from the total blast volume based on the analogue NP and AP in blast hole cuttings results.

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					• The defined blast volume of non-PAG rock would then be extracted for use as construction aggregate and remaining rock would be managed as PAG rock according to current project plans. Part D: As discussed in Section 2.4.13 of the revised EIS, Treasury Metals considered three alternatives with respect to aggregate materials, namely: using mine rock identified as non-PAG; developing an on-site aggregate pit(s); and obtain aggregate from an existing commercial aggregate supplier in the region. The preferred alternative is to use non-PAG waste rock as the primary source of aggregate as this reduces the volume of waste rock to be managed, would likely reduce the height of the waste rock storage area (WRSA), and would be more economical solution for Treasury Metals. If sufficient volumes of non-PAG waste rock cannot be identified onsite, Treasury Metals will source aggregate from existing commercial suppliers in the region. There are currently a number of aggregate vendors that Treasury Metals is looking into as possible sources of material should onsite aggregates not be suitable. If aggregate is to be sourced offsite, Treasury Metals will obtain the aggregate from an existing commercial aggregate supplier in the region. Therefore, there would be no new environmental effects associated with sourcing aggregate from an existing commercial supplier in the region. Such Provincially approved facilities would have to meet environmental compliance requirements, which ensures these existing facilities will not have an adverse effect on the environment. It is, however, recognized that sourcing aggregate from an existing, offsite, commercial aggregate supplier will require additional vehicle traffic to haul the aggregate to the Project for use in construction. The largest need for aggregate at the Project will be for the construction of the tailings storage facility (TSF), which will be constructed in two stages, with the initial stage during the site preparation and construction phase, with a later stage of increasing the TSF capacity during the operations phase, say in year 5 or 6 of operations. During the site preparation and construction phase, the aggregate required to construct the initial phases of the TSF would require between 200 and 375 additional vehicles per day, assuming that the aggregate would be delivered in typical highway haul trucks. The range varies on the capacity of the haul vehicles and whether the construction occurs in as single year, or is spread out over a period of 18 months. For context, the estimated daily traffic during the site preparation and construction phase without aggregate haulage is 469 vehicles per day (Appendix E of the Revised EIS). The haul route for the aggregate to and from the Project would be along Highway 17, which currently has an average daily traffic volume 5,950 vehicles per day. The haul of aggregate from an offsite commercial supplier would result in an increase in traffic along Highway 17 of between 16% and 20%. Given the relatively high baseline traffic load along Highway 17, the increased traffic is not projected to have a significant environmental effect. For example, the increase in traffic is projected to result in an

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					increase in traffic noise of less than 1 dB. This can be shown using the following simple formula taken from the ORNAMENT noise model used in Ontario: $$\Delta \mathrm{dB} = 10 \times Log_{10}\frac{Vol_2}{Vol_1} = 10 \times Log_{10}\left(\frac{7{,}170}{5{,}950}\right) = 0.81\ \mathrm{dB}$$ Part E: As part of the work to revise the EIS document, care has been taken to address apparent inconsistencies in the text. The key sections updated in the new EIS revision that relate to aggregate sources include the following: • Section 2.4.13: alternative aggregate sources considered; • Section 3.7.2.2: construction of embankment zones, specifically relating to the "waste rock shell (zone E)"; and • Section 3.13.3: aggregate resources.
47	MW(1)-09	CEA Agency	EIS Sections 3.3.1, 3.5.2, 11.3.3	Section 5	**Summary of Comment / Rationale:** Based on statements in sections 3.3.1, 3.5.2, and 11.3.3 (EIS), it is assumed the overburden material is chemically stable, but no evidence has been provided. The geochemistry of the overburden material is a fundamental piece of information missing from the effects prediction. Note that the requested information will also be required in complete detail during the provincial permitting phase when submitting the required closure plan.
					Information Request / Comment: A. Analyze and describe the chemical stability of the overburden material and any potential environmental effects associated with the overburden stockpile, including feasible mitigation methods and conceptual decommissioning (closure) options.
					Revised Response: Treasury Metals shares the reviewers' view that ARD/ML are important issues that must be effectively managed for the Project. However, the risks associated with ARD/ML of the overburden should be considered low in comparison to that of mine rock. As identified in our previous response, there is no evidence of the potential presence of high risk overburden materials such as locally derived glacial tills that could be enriched in mineralized materials. In addition, limited characterization of shallow soil in the vicinity of the future open pit (24 samples representing the upper 1 to 1.7 m of surficial soils) was completed in support of early base-line sampling for the site in 2011 (KCB 2012). Metal results from these soil samples have been compared to Ontario typical range background standards (MOE, 2011) as provided in the attached TMI_047-MW(1)-09_Table_1. This comparison was completed to identify the overall nature of the

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					materials and whether they are generally typical of background and unmineralized soils. It is noted that, comparison of specific samples to the individual criteria under site condition standards is not considered relevant to this analysis. Results indicate materials have metal contents generally similar to typical background soils in Ontario and would not be expected to represent a risk for ARD/ML on this basis. For completeness, a detailed description of the ranges observed in soil results including a few nominal exceedances of the background soil standards is provided below. However, for the purposes of this assessment the slight exceedances of a few background values represent local minor variability and do not represent any concern indicating a greater potential for mineralized material or metal leaching. The baseline assessment (KCB 2012) also included assessment of selected soils for leachable metal content by shake flask extraction. However, the data were of poor quality, exhibiting elevated detection limits for most parameters apparently due to dilutions required in completing the analyses. The analyses appeared to suffer from high solids/colloids in the extract. We expect the shallow and often clay-rich soils were not good candidates for the shake flask extraction method as applied, and assessment of short-term metal leaching would have been better assessed by other techniques. Detailed description of Table 1 Results Attached A low risk of ARD/ML for overburden is expected based on geological understanding of the site and the available analytical results. Results from soil samples collected on the site were generally well below the MOE background standards, However, a few marginal exceedances of the MOE background standards were identified, including: four of the 25 samples for total chromium at 69 to 78 µg/g (SCS for various land uses ranges from 67 to 70 µg/g) and a single sample for cadmium at 1.39 µg/g (SCS for various land uses ranges from 1 to 1.2 µg/g). In addition, six of the 25 samples for nickel were above the agricultural site condition standard of 37 µg/g but below the background standard for other land uses (82 µg/g). As described above, for the purposes of this assessment the overall results support materials being similar to background unmineralized soils which would have little risk for ARD/ML. Additional sampling of overburden materials to be stripped for the project will be completed in support of future planning to confirm appropriate management of overburden materials. Though unlikely, should any materials of concern be identified, they can be readily managed along with the PAG waste rock materials at the site. In addition, we note that the stockpiled overburden materials will be reclaimed at the end of mining, so there are no long-term post-closure risks for ARD/ML associated with the presence of an overburden stockpile. References KCB 2012. Goliath Gold Project, Baseline Study, November 2010 to November 2011. Report dated 21 September 2012.

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					MOE 2011. Table 1, Site Condition Standard - Soil, ground water and sediment standards for use under Part XV.1 of the Environmental Protection Act.
48	MW(1)-10	CEA Agency	EIS Section 11.2.1 Appendix L Section 5.1	Section 10	**Summary of Comment / Rationale:** The description of the cover to be used for the waste rock storage area (WRSA) is not comprehensive. While it is not expected that the final cover design be provided, the proponent must show the capacity to develop adequate cover onsite, from both a conceptual design and materials availability perspective. It is expected that similar cover would be used for the low grade ore (LGO) stockpile in the event that this pile remains upon decommissioning (closure) and abandonment (post-closure) phases. It was noted in section 5.1.1 (Appendix L) that "the location of the waste rock storage area (WRSA) has not been finalized at this time." However, it was determined through the alternatives assessment, section 2.3.3.4 (EIS), that "the preferred location for the storage of waste rock material is to the north of the open pit combined with a co-disposal within the completed open pit to the extent possible."
					Information Request / Comment: A. Provide a conceptual design for the waste rock storage area (WRSA) cover, including approximate layer type, configuration and thickness, and identify whether the materials required are available for the project. Also provide the conceptual design for the low grade ore stockpile in the event that this pile remains upon decommissioning (closure) and abandonment (post-closure) phases. B. List and describe environmental factors that could result in reduced efficacy or failure of the covers over time. C. Describe monitoring and follow-up plans to confirm both the assumptions and the effectiveness of the WRSA and the low grade ore stockpile covers, as applicable, to limit acid rock drainage. D. Provide a map of the confirmed location of the WRSA.
					Revised Response: Part A: Details regarding the WRSA are provided in Section 3.5.1 of the revised EIS. A conceptual closure plan has also been completed for the Project and is included in the revised EIS submission as Appendix KK.

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					The waste rock stockpile are anticipated to have a footprint of 37 ha, a height of 30 m above grade, and side slopes with a final overall grade of 3 horizontal width to 1 vertical height (3H:1V). The waste rock stockpile will be wholly within property owned by Treasury Metals. Due to the conservative design factors placed on the mine rock stockpile linked to the low seismicity potential in the area of the Project there is an extremely low risk for failure due to a seismic event. The design criteria are considered to be well within a reasonable factor of safety for this purpose. For the area above surface containing PAG rock (i.e. WRSA, process plant site, etc.), Treasury proposes to design and place a multi layered, low permeability cover. The main purpose of this cover would be to control long term acid rock drainage (ARD) by achieving encapsulation and limiting oxygen to the PAG rock. The dry cover would be in accordance with Section 59 of the Mine Rehabilitation Code of Ontario (O. Reg. 240/00). Confirmed PAG rock would be placed beneath the static water level in the open pit and/or underground mine to the extent practical, thereby minimizing the volume of PAG rock in the WRSA. If operational monitoring of the WRSA confirms that it is PAG, a low-permeability dry cover will be constructed over it at closure. Clay would not be used in the dry cover over the WRSA due to potentially poor performance associated with desiccation, freezing and cracking. B. Section 4 of the revised EIS provides a discussion of accidents and malfunctions which includes a discussion of the environmental factors that could result in reduced efficacy or failure of the covers over time. The following non-exhaustive list of environmental factors may result in reduced efficacy or failure of the covers over time: • Extreme floods • Natural fires • Earthquakes • Tornados • Climate Change (freeze/thaw cycles) C. The low-grade ore (LGO) stockpile is temporary in nature and will be depleted by the completion of mining operations. Should there be ore remaining in the LGO stockpile at closure, this ore will be removed and placed with waste rock in the mined out open pit or in the tailings storage facility (TSF). No cover will be required for the LGO stockpile. At closure, a portion of the waste rock will remain on the surface and will be covered with a low-permeability cover to isolate the waste rock from oxygen and prevent acid rock drainage (ARD) in the long-term. As part of the monitoring to be proposed for the post-closure phase of the Project will be monitoring of the efficacy of the cover for the WRSA with respect to both the seepage and runoff. The proposed monitoring for groundwater and surface water quality, originally described in

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					Section 13 of the original EIS, has been elaborated on in Section 13 of the revised EIS with details on proposed follow-up monitoring programs D. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project. A summary of the refinements to the Project since the completion of the original EIS are presented in Section 3.16 of the revised EIS. One of the refinements presented in the Section 3 of the revised is a change to the shape of the WRSA (Section 3.5.1). This new shape is presented in Figure 3.5.1-1 of the revised EIS (Attached as TMI_048-MW(1)-10_Attachment_1 for reference).
49	MW(1)-11	CEA Agency	Appendix F Section 6	Sections 5.6, 9.1.2	**Summary of Comment / Rationale:** During the decommissioning (closure) phase, as water is deliberately drained off the tailings to allow for tailings consolidation and the capping materials are emplaced, acid generation will occur and contaminants will seep into the tailings mass. This pulse of contamination eventually will seep out from the tailings storage facility. No information is provided to explain how contaminated this pulse will be and how long it will take to appear in downstream monitoring wells and ultimately receiving waters. This type of information is important for determining the duration of seepage interception and treatment after decommissioning (closure). Additional information should be provided on the estimated amount of acid rock drainage (ARD) and metal leaching (ML) that will occur during the decommissioning (closure) phase. This additional information should include and consider: (1) how long the tailings storage facility (TSF) dewatering capping will take to complete, and use this to estimate the amount and extent of ARD/ML that may take place; (2) the concentrations of contaminants of concern and estimated volumes of this pulse of ARD seepage that will escape the TSF; (3) the estimated length of time for the seepage to be detected in the monitoring wells; and (4) the potential impact of this seepage on the receiving waters.
					Information Request / Comment: A. Provide additional information on the ARD/ML that will occur during the decommissioning (closure) phase, specifically: 1) the length of time it will take for the tailings storage facility (TSF) dewatering and capping to be complete; 2) the estimated amount and extent of ARD/ML that may take place, calculated by using the results of 1); 3) concentrations of contaminants of concern and estimated volumes of the pulse of ARD seepage that will escape the TSF;

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					4) estimated length of time for the seepage to be detected in the monitoring wells; and 5) the length of time it will take for the pulse to appear in receiving waters; and 6) the potential impact of the seepage on the receiving waters.
					Response: Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ . The Water Report includes a refined analysis of the geochemistry associated with the operations, closure and post-closure phases of the Project (Section 5 of the Water Report), including consideration of the potential ARD during the closure phase. There will be no seepage that leaves the site during the closure phase of the Project as groundwater will still be flowing towards the open pit until water levels in the open pit have reach near pre-development levels. Any initial pulse of seepage from the TSF in the closure phase will ultimately report to the open pit and will not leave site until it meets either PWQO or is less than background. However, it should be noted that the tailings will not be exposed for extended periods of time as the active closure phase will last approximately two years. Refined modelling of surface water quality, including consideration of the contribution from seepage, is presented in Section 6 of the Water Report.
50	MW(1)-12	CEA Agency	EIS Sections 11, 13.5	Section 9.1.2	**Summary of Comment / Rationale:** Section 9.1.2 of the EIS Guidelines requires the EIS to include pit water quality geochemical modeling in the abandonment (post-closure) period. This information is not provided in sections 11 or 13.5 of the EIS.
					Information Request / Comment: A. Provide pit water quality geochemical modeling for the abandonment period.
					Response: As described in the original EIS (EIS, Section 11.2.2), and restated in Section 3.14 of the revised EIS, the open pits will be allowed to flood following cessation of mining activities. Flooding of the open pits will ensure that the backfilled waste rock (deposited in the pits) and pit walls remain underwater during the post-closure phase. As both the pit walls and backfilled waste rock are currently classified as PAG, placing them under a water cover is a standard practice to minimize ARD/ML. The filling of the open pit with water is expected to take approximately between 5 to 9 years, with water derived from three sources: surface water runoff and precipitation (25.5%),

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					effluent treatment discharge (37.6%), and groundwater from wells outside of the mine zone of influence (36.9%). By accelerating the filling of the open pit, Treasury Metals will help to minimize the time for the onset of ARD/ML. Because the time to filling was accelerated, the quality of the water in the pit, once filled, was identified as being near background conditions for surface water and groundwater (original EIS: Section 11.4.3). As the pit lake will be filled in an accelerated manner, extensive ARD/ML effects on pit water quality is not warranted. However, Appendix C to Appendix F of the original EIS did include a pit water quality geochemical model for the post-closure period. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has appended to the revised EIS as Appendix JJ. An updated water quality model for the pit during the post-closure and abandonment phase is provided in Section 6 of the Water Report. An adaptive management strategy has been added to the commitment registry that if operational monitoring determines that ARD is commencing prior to the flooding of the open pit: 1) the pit flooding will be accelerated to create a water cover as quickly as possible; and 2) bactericide will be applied to suppress ARD and/or alkalinity will be added to the pit at closure to neutralize any acidic drainage prior to the filling of the pit, in accordance with standard industry practice, to preserve the predicted water quality in the flooded pit to the extent possible.
51	MW(1)-13	CEA Agency	EIS Section 11.2.2	Sections 10, 11	**Summary of Comment / Rationale:** In describing the flooded pit, section 11.2.2 (EIS) states: "the elevation of the spillway will be set to ensure the lake level is maintained within the overburden above the bedrock." No specific detail is provided as to the depth of water cover that is possible over the overburden-bedrock interface or the mine waste rock that will be used to backfill some of the pit. For this design to be successful, it will be necessary to ensure that adequate water cover is maintained in perpetuity (including abandonment) to mitigate acid rock drainage/metal leaching conditions. The requested information will also be required in complete detail during the provincial permitting phase when submitting the required closure plan.
					Information Request / Comment:

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					A. Describe how water cover can be maintained in the pit, including details of the extent of water cover over both the overburden-bedrock interface and the stockpiled mine waste rock.
					Response: Following closure, approximately 250 ha of the site will drain to the open pit, as described in Section 3.14.9 of the revised EIS. This will result in a surplus of water reporting to the pit post-closure to maintain the water cover. Furthermore, pre-development static water levels have been observed to be approximately 388.5 m, as described in pages 51 (water levels) and 66 (map) of Appendix M of the revised EIS, and this is higher than the pit spillway elevation (388m) and the uppermost lift of backfill (387m). Figure 3.5.1-2 from the revised EIS presents the planned dimensions of the backfilled open pit post-closure, including spot elevations of the spillway, backfill, the bedrock pit rim and the surrounding overburden. The spillway channel is planned to be at elevation 388 m, which is approximately 1 metre above the elevation of the uppermost lift of backfill. Portions of the pit wall will be above the water level in the flooded pit. The exposed surface area associated with the excavation wall is orders of magnitude lower than the backfill material and the potential for impacts from pit highwalls due to acidic generation and metal leaching (ML) are not significant relative to the flooded pit volume. However, the potential of these high walls to contribute acidic drainage will be assessed at closure to determine if a surface covering treatment to exclude water and/or oxygen is warranted and this will be reviewed as part of the closure plan filing in accordance with Ontario Regulation 240/00 (as amended). As indicated in Section 3 of the revised EIS, the soils surrounding the open pit are generally observed to be low-permeability clay (refer to Section 3.14.1). The overburden embankments surrounding the open pit will be sloped to a minimum 2H:1V and track packed (overlapping prints) for long-term physical stability. Following a shallow surface scarification / preparation, the clay embankments above elevation ~388 m will be vegetated by an application of hydroseed containing commercially available seed (no invasive species) and straw or biodegradable matting for interim erosion protection until the seed germinates and becomes established. Embankments below elevation ~388 m will be covered with coarse mine rock (no fines) for erosion protection and protection during wave run-up. Due to the low-permeability soils surrounding the pit and the pre-development static water level being observed to be ~0.5m higher than the planned pit spillway elevation, the outward seepage from the flooded pit through the overburden embankments is not expected to lower the water level in the open pit once it is flooded to the overflow spillway elevation of 388 m.
52	MW(1)-14	CEA Agency	EIS Sections 2, 3, 6, 13	Section 9	**Summary of Comment / Rationale:** While preliminary geochemical baseline studies have been completed, the EIS indicates that additional testing will be required to confirm geochemical modelling predictions and effectiveness

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			Appendix F Appendix C Section 4.0 Appendix K Sections 2.2, 4.3		of proposed mitigation strategies. Section 13 (EIS) does not identify the appropriate enforceable duration for monitoring of acid rock drainage (ARD)/metal leaching (ML). Given that preliminary testing indicates that ARD onset will take decades to occur, monitoring or the lack thereof should reflect this. This information is important as it must be shown that the tailings storage facility effluent can be treated to meet PWQO.
					Information Request / Comment: A. Outline what additional testing is needed and the plans to complete the testing to confirm geochemical modelling predictions and effectiveness of the proposed mitigation strategies. Refer to Prediction Manual for Drainage Chemistry from Sulphidic Geological Materials, MEND Report 1.20.1 (MEND, 2009) for sampling information. B. Outline a monitoring program for ARD/ML and provide justification for the duration.
					Response: A. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. In preparing an updated pit water quality model, further interpretation of existing baseline data in the context of revised mine planning has been completed and is documented in Section 5 of the Water Report. Additional studies (planned or in process) in support of detailed design are presented in Section 13.3.2 of the revised EIS under geochemical monitoring. It was recommended that Treasury Metals conduct this monitoring during the early phases of mine development and operations to gain a better understanding of the potential geochemical effects. B. Geochemical monitoring programs have been developed and included in Section 13.3 of the revised EIS. These monitoring program included pit lake monitoring, pit lake discharge monitoring, and geochemical monitoring. These proposed monitoring programs are anticipated to occur during different phases of the Project, but inclusively will begin during operations and will cease in post-closure.
53	MW(1)-15	CEA Agency	EIS Section 5.4.3.4 Appendix K	Section 9.1.2	**Summary of Comment / Rationale:** Section 5.4.3.4 (EIS) indicates it was conservatively estimated that the time to onset of acid rock drainage (ARD) for the waste rock, which is all classified as potentially acid generating (PAG), would be between a few tens of years to many tens of years. For exposed tailings beaches in the tailings storage facility (TSF) the ARD onset time was

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					estimated to be only a few years. The waste rock is classified as PAG and the waste rock stockpile is estimated to contain approximately 5% of fine broken material of size fraction similar to that of the humidity cell test (HCT) material. This suggests the ARD onset in the waste rock pile should be the earliest humidity cell ARD onset time adjusted for temperature effect, irrespective of other particle size fractions of the waste rock; however Appendix K does not seem to accept this and assumes acidic drainage in the waste rock stockpile will be delayed to a greater extent than observed in the HCTs.
					Information Request / Comment: A. Provide additional information on the methodology followed for estimating the ARD onset time including: times of neutralization potential and acid potential depletions, reaction rate kinetics and drainage effluent (Ca + Mg)/SO_4 based neutralization potential ratio as a function of time. B. For waste rock, provide a more definitive ARD onset time rather than the broader estimated time of a few tens to many tens of years. C. Explain whether or not the ARD onset in the waste rock stockpile should be the earliest humidity cell ARD onset time adjusted for temperature effect, irrespective of other particle size fractions of the waste rock.
					Revised Response: As identified in Section 5.3.3 of the Water Report (Appendix JJ), water quality estimates for the project were prepared with the assumption that exposed waste rock and pit walls would begin to produce acidic metal rich drainage after 2 years of exposure. This was selected following review of all kinetic data and was chosen to be a generally conservative value in consideration of the available static and kinetic data. A discussion of all kinetic results (humidity cells and field cells) is provided in Section 5.2.4 of the Water Report (Appendix JJ). Evaluation of NP depletion rates identified that low NP material as tested in humidity cells were projected go acid after 2 to 6 years. However, several low NP humidity cells exhibited a decline in pH below 6 in a little over a year with cells for BMS, BS and MSS as low as pH 4.5 after 80 weeks. Cells were terminated at that time so it is not clear if these declines would have progressed further with continued operation. For conservative project planning it was inferred that this could represent a relatively early acid on-set time for low NP mine rock. It was interpreted that at field rates some acidic leaching could develop within two years of exposure for some low NP waste rock. This was further supported by observations from field cells:

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					one of which was observed to have a leachate pH <6 (and assumed to becoming acidic) after about two years of operation. Three cells BMS, BS and MSS when monitored after approximately four years of operation had leachate pH values ranging from 3.8 to 5.4. Based on these observations it has been conservatively assumed that potentially acid generating rock will become acidic after 2 years of exposure. Further evaluation of potential ML/ARD for project waste rock including more refined estimates of acid on-set time are expected to progress along with project development and further planned testing.
54	MW(1)-16	CEA Agency	EIS Sections 5.4.3, 5.4.3.1	Section 9.1.2	**Summary of Comment / Rationale:** For estimating the ARD onset time and total loading rates of various contaminants of potential concern (COPCs), it was assumed that the waste rock pile at the project mine site would contain approximately 5% by weight of fine broken material in the particle size fraction of <6 mm (0.25”) used in the humidity cell tests. Materials larger than the above size fraction would also oxidize and contribute to the total COPCs load but at a lower rate due to decreasing specific surface area with increasing particle size. The estimated 5% wt. percentage for <6 mm size fractions appears to be on the low side for the altered felsic metavolcanic rocks (sericite schist, biotite-muscovite schist) and metasedimentary rocks. Actual field data for a granitic waste rock pile in northern Saskatchewan had a wt. percentage of about 8-10% of < 6mm size fractions. It is expected that biotite-muscovite schist type rock at the Goliath site would contain similar or higher weight percentage. The proponent should use a more realistic weight fraction number for rock lithologies that would be mined at the project site. The proponent should provide supporting information on how the expected weight percentage of 5% for COPCs load estimation for the waste rock pile was obtained. Was it based on blast hole rock fragment calculations/measurements or actual field data from other mine sites containing similar rock lithologies?
					Information Request / Comment: A. Provide supporting information on how the expected weight percentage of 5% for the contaminants of potential concern (COPCs) load estimation for the waste rock pile was obtained. B. Justify the use of the current weight fraction number or revise accordingly.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Revised Response: As per response to TMI_068-GW(1)-05, sections 5.3.2 and 5.3.3 of the Water Report (Appendix JJ of the Revised EIS) identify that scaling for water quality estimates utilized humidity cell rates applied on a surface area basis to an assumed mine rock of 50 m^2/tonne. The 50 m^2/tonne is based on a review of published and unpublished data including an internal study by Amec Foster Wheeler on the grain size / surface area of waste rock at a large open pit copper porphyry project. Data from these published and unpublished sources indicated waste rock surface areas ranging from 13 to 52 m^2/tonne.
55	MW(1)-17	CEA Agency	EIS Section 5.4.3 Appendix K Table 3.11	Section 9.1.2	**Summary of Comment / Rationale:** In Table 3.11 (Appendix K) some COPCs loading rates functions are expressed as: y = 6E-8 + 6E-7 (for iron, Fe) y = 3E-7 + 1E-6 (for lead, Pb) y = 5E-6 + 3E-7 (for uranium, U) y = 5E-6 + 1E-5 (for zinc, Zn) Clarification on these functions is needed for the review.
					Information Request / Comment: A. Clarify Table 3.11 (Appendix K) by providing detail on: 1) What the loading rate function equations for Fe, Pb, U and Zn represent; and, 2) How the average loading rates given in the last column of Table 3.11 (Appendix K) were obtained by such loading rate functions.
					Revised Response: A summary and status of the supporting geochemistry documents is provided in Table 1 below. We note that Appendix C of Appendix F refers to previous pit lake water quality estimates prepared by Tetratech in support of the original EIS. As identified in Table 1, this Tetratech work has been superseded by pit lake water quality estimates prepared by Amec Foster Wheeler and documented in the Section 6 of Appendix JJ to the revised EIS (Water Report). The intent of the reference to Appendix C of Appendix F of the original EIS in our previous response was only to point out that the identified typographical errors in Appendix K were never applied to previous pit lake water quality estimates (prepared by Tetratech) for the Project. Section 1.2.5 of the Appendix JJ to the revised EIS (Water Report) does identify that all of the geochemical data presented in Appendix K was reviewed and in some cases reevaluated. Section 1.2.5 of the Appendix JJ to the revised EIS (Water Report) could have more explicitly stated that

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					the kinetic rates developed in Appendix K were superseded by rates developed and applied in water quality estimates (see Table 1) for the revised EIS Appendix JJ, Water Report). This distinction has been added to the text of Section 1.2.5 of Appendix JJ. The updated pit lake water quality estimates (Section 5.3 of Appendix JJ) did not apply the temperature and grain-size adjusted source-terms developed in Appendix K (see Table 1). The updated approach utilized direct surface area scaling from humidity cells (assuming a waste rock surface area of 50 m^2/t, Section 5.3.3 of Appendix JJ) rather than scaling based on a 5% effective mass within the waste rock (see also the revised response to TMI_068-GW(1)-05). Thus, the approach utilized in Section 5.3 of Appendix JJ included a number of more conservative assumptions than previously considered for the Project, including potential for earlier on-set of acid drainage and no adjustment for lower field temperatures and reaction rates as proposed in the above referenced sections of Appendix K (see also the revised response to TMI_059-MW(1)-21). Section 5.3 of Appendix JJ to the revised EIS (Water Report) documents the development of the updated pit lake water quality estimates without reliance on Appendix K, except as referenced for context therein. Table 1 – Summary and Status of Referenced Geochemistry Documents

EIS Referenced Document	Status
Appendix C of Appendix F (of original EIS)	No longer part of revised EIS and rewritten Appendix F of EIS (see text)
Appendix K of revised EIS	Provides primary supporting data for revised EIS. Sections pertaining to development of kinetic rates namely 2.4.3, 3.3 (and associated tables 3.8 to 3.14), and Appendices I and J are superseded by information and analysis in the Water Report (Appendix JJ).
Section 5 of Appendix JJ of revised EIS	Provides the following: • Section 5.1 – A review of site geology and mineralization • Section 5.2 – Assessment of the primary static and kinetic data from Appendix K (updated to include additional field cell data) • Section 5.3 – Open pit water quality estimates and results, including description of all assumptions and source terms used. • Section 5.4 – Long-term seepage water quality estimates from WRSA

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					and TSF, including description of all assumptions and source terms used.
56	MW(1)-18	CEA Agency	Appendix C of Appendix F Section 4.0	Sections 10, 11	**Summary of Comment / Rationale:** One assumption of the model presented in section 4 (Appendix C of Appendix F) is that: "backfilled pits are effectively isolated from water and oxygen, thus prevented from undergoing further ARD reactions or generating leachate." It is not clear how the proponent expects to isolate the waste rock that is used to backfill the pits from water. It is anticipated that the pits will flood, thus saturating the waste rock, with the intention of limiting the oxidation of this material.
					Information Request / Comment: A. Clarify and justify the assumption described in section 4, revise as necessary.
					Response: The reviewer is correct in their assessment. Once the pit is flooded, the backfilled materials are effectively isolated from sulphide oxidation by the water cover. However, there will be a period of time when the backfilled materials in the pit will be exposed. This is considered in a revised pit water quality model presented in Section 5 of Appendix JJ to the revised EIS (the Water Report).
57	MW(1)-19	CEA Agency	Appendix K Section 2.3.3	Section 9	**Summary of Comment / Rationale:** Section 2.3.3 (Appendix K) requires clarification for interpreting the geochemical evaluation results. It was described in this section that "the samples were constantly agitated for approximately 24 hours prior to sampling the leachate," and that "all flasks were intermittently agitated over a 24 hour period."
					Information Request / Comment: A. Clarify which technique was used for the shake flask extractions.
					Response: A. The laboratory has confirmed that all SFE samples underwent intermittent agitation over a 24 hour period. The constant agitation procedure was not available due to a broken shaker table. Intermittent vs. constant agitation is not anticipated to impart a substantial effect on results for these tests.
58	MW(1)-20	CEA Agency	EIS Section 5.4.3	Section 9.1.2	**Summary of Comment / Rationale:** The soluble masses of constituents in the tailings and mine rock were assessed by shake flask extraction (SFE) tests. The tests involved leaching of the test materials with DI water using water to solid ratio of 3:1.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Appendix K Section 2.3.3		Although no regulatory criteria exist for constituent concentrations in SFE, values were compared with Provincial Water Quality Objectives (PWQO). For screening purposes, results of the SFE were compared to 100 times (100X) the PWQO in order to identify aqueous constituents that may require additional investigation. The 100X screening level was chosen to represent the "natural dilution contact water would undergo as it enters the surface water." It is understood that the 7Q20 of Blackwater Creek, the proposed discharge receiver, is essentially zero. Therefore, it cannot be expected that 100 times dilution will be achieved. The proponent should provide the rationale for using the dilution factor of 100 for comparing the SFE results to PWQO as the SFE leachates (liquid to solid wt. factor of 3) are already about 30 times dilute in comparison to actual drainages from waste rock pile where the contact liquid to solid weight ratio is about 0.1:1 (wt. factor 0.1) or less. In addition, the SFE leachate results provide the total concentrations of soluble constituents present in the test materials and have no relationship to the actual leachates that will be produced from tailings or waste rock management sites. The proponent should provide the purpose of their comparisons with appropriate regulatory water quality objectives.
					Information Request / Comment: A. Provide a revised comparison datum to represent more realistic dilution rates and comment on any additional aqueous constituents that may require further investigation. B. Provide the purpose of comparisons with appropriate regulatory water quality objectives.
					Response: A) The SFE test is a standardized test recommended under guidance in MEND (2009). The intent of the test is to provide an assessment of short-term leaching of metals from a sample. However, it is recognized that the test does not simulate actual site drainage conditions. Rather the test is applied as a standardized screening tool. The intent of the test is to identify potential elements of interest in early leaching conditions from mine rock and including neutral metal leaching (ML) conditions. Flows over blasted rock surfaces and through waste rock piles are dynamic processes that includes variable contact time and mixing of contact and non-contact waters. Sizeable dilution of contact waters are expected during rain events that result in flows from mine development. The screening approach for this type of data can be site specific and follow different approaches considering different assumptions and anticipated mine development conditions. In particular, it

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					should also be noted that the 3:1 ratio of the test is considered to be sufficiently high to minimize potential solubility limitation in the test without excessive dilution. The test procedure is also designed to generate a suitable water volume for analysis. The very low water rock ratio of 0.1 to 1 by mass identified by the reviewer is akin to porewater below saturation in most porous media. This water rock ratio has little environmental relevance to surface water quality, which is a primary concern in environmental assessment. We note that since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. The refined water balance will modify some of the water predictions. To capture these changes and the changes suggested by the response to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ. An updated analysis of all SFE data in support of this work is provided in Section 5 of the Water Report. One aspect of this data analysis is direct comparison (1:1) of SFE results to Provincial Water Quality Objectives (PWQO) as a screening level assessment. B) The use of environmental water quality objectives such as PWQO in screening of SFE results is commonly completed to provide an environmental reference to the screening process. However, the referenced guideline has no direct relevance to the extracted concentration. Rather results are compared in a relative sense with higher concentrations relative to guidelines representing a higher potential for ML that may warrant further consideration.
59	MW(1)-21	CEA Agency	Appendix K Section 2.4.3 EIS Section 5.4.3.1	Section 9.1.2	**<u>Summary of Comment / Rationale:</u>** The following equation, the Arrhenius equation, was used in section 2.4.3 (Appendix K) to translate laboratory humidity cell test (HCT) results for mine rock and tailings reaction rates, k_1, to more appropriate field reaction rates, k_2: $ln(k_1/k_2)=(E_a (T_1-T_2))/(RT_1 T_2)$ by assuming that laboratory temperatures, T_1, were 20 °C, "while temperatures under field conditions for the stockpile [T_2] will be approximately equal to the average air temperature at the site," 2°C. A temperature adjustment factor of 0.12 was estimated and used for reaction rates of metal loading from the stockpile in the EIS. While this transformation is necessary, it was hypothesized that using the average annual air temperature may not be accurate since near surface ground temperature is known to fluctuate with air temperature and the Arrhenius equation is not a linear function. This theory was tested by calculating the average monthly field reaction rate, k2, using average

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					monthly air temperatures for the site taken to be -16.8, -12.7, -5.8, 3, 10.8, 16.2, 18.9, 17.8, 11.7, 4.2, -5.2, and -13.5 for January through December (1981 to 2010 Canadian Climate Normals for Dryden Airport, Environment Canada). The average of these 12 monthly reaction rates was 0.29, approximately 240% of that estimated using the average annual air temperature. The calculated contaminants of potential concern loadings are unnecessarily biased on the low side due to inclusion of winter temperatures when the waste rock pile is mostly frozen and there is no subsurface flow or drainage. In some cases the waste pile may remain warm or hot depending upon the rate of sulphide oxidation within the pile. Therefore, the low temperature adjustment factor of 0.12 is unjustified and should be revised. Given the exponential nature of the Arrhenius equation, it may be more appropriate to use more detailed temperature data when transforming laboratory reaction rates to field condition reaction rates. The requested information will also be required in complete detail during the provincial permitting phase when the updated geochemical model is provided.
					<u>Information Request / Comment:</u> A. Recalculate the temperature adjustment factor for reaction rates and provide details on any changes this alteration has on the geochemistry evaluation of the site. B. Recalculate and provide the contaminants of potential concern (COPCs) loadings rates on a monthly basis for ice free period using the temperature adjustment factors corresponding to the monthly average daily temperatures as shown in figure 5.1.1. (EIS, page 5-3) for the Dryden area. Add together the individual monthly COPCs loadings to obtain the total annual load and provide this sum. C. Revise and provide the predicted effluent concentrations accordingly on a monthly basis and use these values for developing the monitoring program.
					<u>Revised Response:</u> A summary and status of the associated geochemistry documents are provided in Table 1 below. As also described in TMI_059-MW(1)-17, we note that Appendix C of Appendix F refers to previous water quality estimates prepared by Tetratech in support of the previous EIS. This Tetratech work has been superseded by pit lake water quality estimates prepared by Amec Foster Wheeler and documented in Appendix JJ to the revised EIS (Water Report). The intent of the reference to Appendix C of Appendix F in our previous response was only to point out that

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					temperature corrected rates developed in Appendix K were never applied to previous water quality estimates for the project that were completed by Tetratech. Section 1.2.5 of the Water Report (Appendix JJ to the revised EIS) does identify that all of the geochemical data presented in Appendix K was reviewed and in some cases reevaluated. The Water Report (Appendix JJ to the revised EIS) should have more explicitly stated that the kinetic rates developed in Appendix K (see Table 1 below) were superseded by rates developed and applied in water quality estimates for the Water Report (Appendix JJ to the revised EIS). The updated pit lake water quality estimates (Section 5.3 of Appendix JJ to the revised EIS) did not apply the temperature adjusted source-terms developed in Appendix K. For the updated pit lake water quality estimates, source terms were more conservatively developed based on laboratory humidity cell rates (Table 5-6 of Appendix JJ to the revised EIS) without correction for temperature. No additional seasonal adjustment for temperature was applied to the rates in preparing the estimates. This is implicit in Section 5.3.3 and Table 5.6 of Appendix JJ to the revised EIS, and has been footnoted as such in the table. Scaling as in the case of acidic PAG rates (where no humidity cell data was directly applicable) used a fixed factor of 100 times the laboratory sulphate rate (uncorrected for temperature) and any scaling simply used scaling ratios of metals from field cells again applying no specific correction for lower field rates due to temperature.

Table 1 – Summary and Status of Referenced Geochemistry Documents

EIS Referenced Document	Status
Appendix C of Appendix F (of original EIS)	No longer part of revised EIS and rewritten Appendix F of EIS (see text)
Appendix K of revised EIS	Provides primary supporting data for revised EIS. Sections pertaining to development of kinetic rates namely 2.4.3, 3.3 (and associated tables 3.8 to 3.14), and Appendices I and J are superseded by information and analysis in the Water Report (Appendix JJ).
Section 5 of Appendix JJ of revised EIS	Provides the following: • Section 5.1 – A review of site geology and mineralization • Section 5.2 – Assessment of the primary static and kinetic data from Appendix K (updated to include additional field cell data) • Section 5.3 – Open pit water quality estimates and results, including description of all assumptions and source terms used.

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<tr><th>TMI #</th><th>Agency Reference #</th><th>Parties Asking Questions</th><th>Reference to EIS</th><th>Reference to EIS Guideline</th><th>Comment / Information Request / Response</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td><table><tr><td></td><td>• Section 5.4 – Long-term seepage water quality estimates from WRSA and TSF, including description of all assumptions and source terms used.</td></tr><tr><td>Section 6.2 of the revised EIS</td><td>The section of the revised EIS described the effects of the Project related to geology and geochemistry VCs and indicators. The section summarizes the information presented in Section 5 of Appendix JJ (Water Report) to the revised EIS.</td></tr></table></td></tr>
<tr><td>60</td><td>MW(1)-22</td><td>CEA Agency</td><td>Appendix K Section 3.3.1</td><td>Section 9</td><td><u>Summary of Comment / Rationale:</u>
Section 3.3.1 (Appendix K) states: “one or more of the BS [biotite schist], BMS [biotite muscovite schist], and MSS [muscovite sericite schist] HCTs [humidity cell tests] did not reach steady-state for one or more COPCs [constituents of potential concern] prior to concluding the experiments.” It is not clear whether or not those HCTs that did not reach a steady-state would be continued through to completion.

Please note the Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND, 2009) suggests that “the humidity cell test ends when the rates of sulphate generation and metal leaching have stabilized at relatively constant rates for at least five weeks.”

Having a complete understanding of the anticipated drainage chemistry is an integral part of the effects assessment and must be adequately addressed in order for impacts to be evaluated appropriately.</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td><u>Information Request / Comment:</u>
A. Confirm that HCTs were allowed to progress through to completion, or adequately justify how the results collected are sufficient for the purposes of the effects assessment for the Project.</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td><u>Revised Response:</u>

Several humidity cells for each of the four major rock types were operated for approximately one year and allowed to reach generally steady state conditions under neutral pH conditions and represent reasonable data for source term development under non-acidic drainage conditions.
One low NP cell for each rock type was continued for an additional 22 weeks (total of 85 weeks). Three of the continued cells (BMS-C, BS-C and MSS-C) exhibited a steady decline in pH in the latter period of testing and had a pH below 5 at the end of testing. The MSED sample also exhibited a slight decline in pH toward the end of testing with a minimum pH of 5.4 reported at the</td></tr>
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TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					end of testing. Three of the four cells that continued (BMS-C, BS-C and MSS-C) identified a progression to acidic conditions and were terminated at that time. Appendix JJ to the revised EIS (Water Report) included an updated pit lake water quality assessment that utilized the above data for the following purposes. • Establishing source terms for neutral leaching conditions in waste rock using stable neutral leaching rates (weeks 20 to 63, see Table 5-6, Appendix JJ). • Supporting a more conservative interpretation of the lag time to acidic drainage for potentially acid generating (PAG) waste rock than previously assumed (e.g. a lag time of two years rather than 10s of years, see also Sections 5.2.4 and 5.3.3, Appendix JJ). In addition to the above described laboratory humidity cell data, field cells continued to be operated after submission of the original EIS. Additional data from two of four field cells (BMS and MS) that were acidic after 218 weeks of operation were also used in developing acidic PAG source terms for the updated water quality models. We acknowledge that stable long-term acidic rates were not achieved in the humidity cells at termination. However, the loading rates observed from these cells were sufficient to interpret lag times for NP depletion and therefore support a time of 2 years to onset of net acidic conditions for application in project planning. This was further supported by observations from field cells one of which was acidic after about two years of operation and two which were observed to become acidic after approximately 4 years. See also response to TMI_053-MW(1)-15. In the absence of stable acidic loading rate data, acidic PAG rock source terms for the updated water quality models used a sulphate rate that was 100 times that of non-acidic rates (supported by unpublished data for an analogue site) with site specific scaling and adjustment of minor and trace metals based on acidic data from the two lowest pH acidic operating Project field cells (Section 5.3.2 and Tables 5-6, 5-7 and 5-8; Appendix JJ).
61	MW(1)-23	CEA Agency	EIS Section 11.5.1	Section 5, 11, 12	**Summary of Comment / Rationale:** The period length of five years for dam stability monitoring during decommissioning (closure) and abandonment (post-closure) does not appear adequate to ensure the physical integrity of the dam in perpetuity. There was no mention of waste rock storage area or tailings storage facility slope stability monitoring. Monitoring the integrity of the slopes and dams is required to ensure they are functioning as intended. It is expected that such monitoring will be conducted during decommissioning (closure) and abandonment (post-closure) phases. **Information Request / Comment:**

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					A. Revise the dam stability monitoring program to include monitoring of the integrity of the waste rock storage area or tailings storage facility slopes and provide details regarding the justification of the monitoring program. B. Describe physical stability monitoring for the waste rock storage area and tailings storage facility, including covers, slopes, feasible mitigation measures that will be initiated in the event that deficiencies are observed, and assigned responsibilities to identify and implement the mitigation measures.
					<u>Revised Response:</u> Tailings dam stability monitoring during closure and post-closure will be carried out in accordance with Part 8 requirements of the Ontario Mine Rehabilitation Code (the Ontario Code) pursuant to the Ontario *Mining Act;* as well as: the Canadian Dam Safety Guidelines (CDA 2007), and Ontario Ministry of Natural Resources and Forestry (MNRF) Dam Safety Reviews Best Management Practices (MNR 2011) per the Ontario *Lakes and Rivers Improvement Act*. Where multiple guidance is provided, the more stringent will be applied. As such, dam safety inspections will be conducted by a qualified professional engineer every five years during the mine closure phase in accordance with CDA (2007). During the post-closure period, the dam safety inspections will be conducted at least every 10 years (per MNR 2011), assuming previous inspection findings did not suggest increased regularity. In accordance with Part 8 of the Ontario Code, the physical inspection of the tailings dams will include the following: • Surface erosion, including gully or wind erosion; • Vegetation cover growth; • Tension cracks at the crest of any slopes; • Signs of new or ongoing failure; • Seepage stains; • Piping failures; • Bulging of slopes; • Sloughing of crests; • Drainage for suspended solids; • Settlement, seepage increases or internal deformation which may require surveying or instrumentation; and

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					• Water discharge by measuring discharge rates [or water cover depths] and comparing these to design requirements / specifications. In the event that deficiencies are observed these would be addressed in accordance with the type of deficiency observed using standard engineering / remediation practices. Potential mitigation measures could include such things as: buttressing exterior dam slopes, regrading or re-armouring dam crests, making changes to spillway designs to further improve tailings water cover characteristics to respond to climate variables. Mine rock stockpiles would also be assessed at periodic intervals by qualified personnel in accordance with any perceived risks. Inspections would initially occur every five years during the closure and post-closure phases, transitioning to every ten years or greater, as time progresses (mine rock stability generally improves with time once the loading response of the underlying base material reaches stability). The following will be conducted, meeting Section 8 of the Ontario Code: • Inspecting for tension cracks at the crest of any slopes; • Inspecting for signs of new or ongoing failure; • Inspecting for rill or gully erosion; • Inspecting covers for soil erosion and stability of vegetation growth. In the event of stability concerns, stockpile slopes would be regraded and/or buttressed as required to achieve improved stability. In terms of cover inadequacies, addition soil placement and/or vegetation propagation would be provided. References: Ministry of Natural Resources. 2011. Lakes and Rivers Improvement Act – Dam Safety Reviews Best Management Practices. CDA. 2007. Technical Bulletin – Geotechnical Considerations for Dam Safety. Canada Dam Safety Association
62	MW(1)-24	CEA Agency	EIS Section 5.4.1, Figure 5.4.1 Appendix D Figure 2.2	Section 9.2.1	**<u>Summary of Comment / Rationale:</u>** The Wabigoon Fault is a regional structure that transects the southern edge of the Goliath project property. Information provided in the EIS related to the fault is that, north of the Wabigoon Fault, rock units dip steeply (70-80°) south whereas south of the fault, rocks face steeply north. No information regarding the fault itself is provided in the EIS. Impacts related to the proximity of the Wabigoon Fault to the proposed development cannot be assessed without information on the fault. This has implications on mine waste management, seepage and the tailings storage facility.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Information Request / Comment: A. Describe the character, width, age and movement history of the Wabigoon Fault, specifically addressing: 1) Whether it is a structure along which movement will take place over the course of the project; and 2) Whether it is a structure that will localize/mobilize/affect drainage and water (contaminated or fresh groundwater). B. Describe any potential environment impacts that could reasonably be expected to occur in connection with the Wabigoon Fault and how the impacts will be mitigated.
					Response: The Wabigoon fault is a regionally significant structure. However, Beakhouse & Pigeon (2003), the primary source for the location of the Wabigoon fault in the Dryden area, indicate that it is an inferred structure. The reasons for mapping the Wabigoon fault in the area are described in the preliminary reports of Beakhouse (2000, 2001). It is 'interpreted to be a major regional structure separating two contrasting domains within the western Wabigoon Subprovince' (Beakhouse, 2001). This is based on north of the inferred structure being steeply dipping, southward-younging, foliated metavolcanic and metasedimentary units, whereas as south of the inferred structure metavolcanics predominate that are steeply dipping, northward-younging and less foliated. Beakhouse (2000, 2001) draws no conclusions on the geological nature of the Wabigoon fault. However, some inferences on the possible characteristics of the inferred structure can be drawn based on the observations made by Beakhouse (2000, 2001). Firstly, in comparison to other greenstone belts, overall the Wabigoon Subprovince has relatively high grade metamorphism from upper greenschist facies to upper amphibolite. In addition, locally, there is evidence described of increasing intensity of the foliation (i.e., ductile strain), particularly 200 to 400 m south of the inferred location of the Wabigoon fault. This information indicates that the Wabigoon fault is more likely a high-strain ductile shear zone (e.g., a mylonite where crystal plastic deformation is dominant) and not a brittle fault with possibly enhanced hydraulic conductivity. The exact geological nature of the Wabigoon fault remains speculative in the Dryden area. However, the inferred fault is at least 2 km south of the proposed Goliath open pit and associated infrastructure. The overall structural grain of the Wabigoon Subprovince in the Dryden area is east – west; it is well defined from geological mapping in the area. The hydrogeological site investigation (revised EIS, Appendix M, Section 4.2.3) shows there is some evidence of enhanced hydraulic conductivity in the bedrock along the steeply dipping zone of mineralization and deformation striking east – west through the proposed Goliath open pit, referred to as the Central Unit in Appendix M of the revised EIS. The Wabigoon fault may have some significance if there are permeable structures cross-cutting the east – west structural grain connecting the Wabigoon fault

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					to the east – west striking Central Unit and the Wabigoon fault itself was a zone with enhanced hydraulic conductivity. One cross-cutting structure has been mapped in the area of the proposed Goliath open pit; the NW Fault. This fault is projected to reach surface to the north of the inferred location of the Wabigoon fault as shown in Figures 7 and 8 of Appendix M of the revised EIS. The outcrop mapping and drilling along the zone of mineralization of the Goliath ore body undertaken by Treasury Metals has not revealed any evidence to suggest that there are cross-cutting north – south striking structures that connect the area of the Wabigoon fault with the Central Unit. In conclusion, the present information and data indicate that the inferred Wabigoon fault is not a significant factor in the environmental assessment. **References** Beakhouse, G.P. 2000. Precambrian geology of the Wabigoon area. In: Summary of Field Work and Other Activities, Ontario Geological Survey, Open File Report 6032. Beakhouse, G.P. 2001. Project Unit 00-012. Precambrian Geology of the Thunder Lake Segment, Wabigoon Area. In: Summary of Field Work and Other Activities, Ontario Geological Survey Open File Report 6070. Beakhouse, G.P. & Pigeon, L. 2003. Precambrian Geology of the Thunder Lake Area. Ontario Geological Survey, Preliminary Map P.3529, scale 1:20 000.
63	MW(1)-25	CEA Agency	Appendix F Section 4.2	Sections 5, 11	**Summary of Comment / Rationale:** Beached tailings are a likely possibility. Mitigation measures or a contingency plan to address the effects of this possibility are not discussed in the EIS. With the significant positive water balance in the tailings storage facility (TSF), it should be possible for the proponent to maintain adequate water cover to mitigate the possibility "that tailings are deposited above the intended water cover, or the water level in the tailings storage facility drops to the point that tailings solids become exposed to air." It is planned that "water cover of 1.2 m will be maintained" on the TSF. This amount of cover does not appear sufficient. When determining the water cover required, the proponent must consider undulations in the tailings (e.g., plan that 1.2 m is the minimum amount of water cover at any point within the TSF), extreme drought events, and wave erosion.
					Information Request / Comment: A. Provide adequate justification for the water cover on the TSF and include mitigation measures and contingencies that will ensure adequate water cover is maintained until the dry cover is to be administered.

					Revised Response: During operations, Treasury Metals plan on maintaining a minimum water cover of 1.2 m (Section 3.8.5) over the entire tailings storage facility (TSF). The planned operating procedures for tailings deposition will require frequent re-location of the tailings discharge to establish a uniform deposition of tailings solids along the entire perimeter of the tailings storage facility (TSF). The primary deposition method will be spigotting, which will ensure even deposition of tailings so long as the tailings slurry is not allowed to freeze before it exits the discharge pipeline. The risk of freeze-up in the discharge pipeline is expected to be minor because slurry typically exits a CIL process at more than 20°C, and the operating practice will be to discharge tailings during winter months as close to the mill as possible to minimize pumping distances to the tailings discharge point. The spigotting method of tailings deposition promotes a uniform deposition across a large section of dam embankment, minimizing the risk that solids will "cone up" and an elevated beach above the water cover will be created. Furthermore, the tailings grind is considered "ultra-fine," which will promote a flat tailings deposition slope and further minimize the risk of an elevated beach. The revised water balance for the Project, presented in Section 3.8.6, shows the flexibility in the Project water balance. During dry periods, Treasury Metals to maintain production while reducing the reclaim from the TSF during the summer months of drought years. Water required in the process during dry periods would be provided by primarily by the mine dewatering water stored in the minewater pond, along with water recovered from the runoff collection ponds. It should be noted that Appendix F to the original EIS has been replaced as part of the process to respond to the Round 1 information requests. As part of the revisions to the Project since the filing of the original EIS, the water management plan for the Project has been updated, and those sections that are no longer current (e.g., Appendix F to the original EIS) have been replaced. It should be noted, however, that Section 4.2 of Appendix F to the original EIS did not indicate that the Project would be operated with exposed tailings beaches, rather the text indicated that the modelling of supernatant water quality was based on a conservative assumption that 10% of the tailings were exposed to oxidation. Additionally, Section 4.2 of Appendix F to the original EIS confirmed that "*beached tailings are not a planned occurrence*", however, they also indicated beached tailings can occur should a project "*push production beyond the original design capacity of the TSF*". Treasury Metals plan to operate the TSF within its capacity, using the deposition methods set out in Section 3.8.5, which they are confident will produce tailings that are relatively uniformly deposited. Treasury Metals will maintain a minimum water cover during operations of 1.2 m to protect against the risk of tailings being exposed during operations be wave action. Additionally, Treasury Metals have the capacity within their water management system to reduce the water reclaimed from the TSF and continue to maintain production levels.

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64	GW(1)-01	CEA Agency	Appendix M Section 4.3 EIS Section 5.6.3.4	Section 9.1.2	**Summary of Comment / Rationale:** Groundwater quality in bedrock has not been assessed. This is necessary for baseline purposes and is most important for the shallow bedrock as it is most likely to be affected by seepage. **Information Request / Comment:** A. Provide groundwater quality monitoring data for the shallow bedrock. **Response:** The wells BH1A, BH2A and BH4A are all screened to bedrock. The screen of BH1 has a small overlap with the thin discontinuous sand at the base of the overburden; the screen of BH2A overlaps approximately 50% with the clay and the thin discontinuous sand at the base of the overburden and BH4A is screened almost entirely in bedrock with a small amount in clay. These wells will provide water quality data on the primary flow horizon (i.e., the shallow bedrock and discontinuous sand at the base of the overburden) in the Project area from which private wells are likely to abstract water. Groundwater quality monitoring data are provided in Appendix E of Appendix M of the revised EIS for these three wells.
65	GW(1)-02	CEA Agency	EIS Section 3.7.6	Sections 7.1.2, 11.4, 16	**Summary of Comment / Rationale:** Seepage monitoring should be able to detect changes in groundwater quality both in the early stages of operations and in the abandonment phase. Seepage can take many years, even decades, to travel to a monitoring well depending on its distance from the seepage source and hydrogeological conditions. If the seepage does lead to groundwater quality impacts it could manifest in impacts to fish and fish habitat when it discharges into surface water. **Information Request / Comment:** A. Identify proposed groundwater monitoring locations that are intended to detect and measure seepage. Justify their locations based on seepage flow directions, volumes, travel times, and the location of environmentally sensitive areas. **Revised Response:** Details on the comprehensive groundwater monitoring program for operations through post-closure that has been developed for the Project is provided in Section 13.10 of the revised EIS. Figure 13.10.3.2-1 of the Revised EIS shows the location of the proposed groundwater monitoring well locations (a copy is attached as TMI_065-GW(1)-02_Attachment_1). Justification of the chosen locations is provided in Table 13.10.3.2-1 as "Monitoring Objective" for each well. The overall objective of the groundwater monitoring program is to ensure that adverse effects to groundwater quantity and quality (including from seepage) are not occurring as a result of the Project.

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					Seepage volumes and travel times are proportional to the hydraulic conductivity (i.e. the permeability). The locations of the monitoring wells have been chosen with respect to location of mine infrastructure (specifically down hydraulic gradient of the open pit, WRSA and the TMA) as well as according to the hydraulic conductivity of the geological strata. As such each monitoring location has been located within a sufficiently close distance to inherently account for estimated volumes and travel times such that any changes will be readily seen as the projects develops. The groundwater monitoring wells will be installed with have screen / piezometer locations in the most permeable strata, which include: • The shallow bedrock; • The basal sand (where present, as this is discontinuous); • Shallow sands (TMA).
66	GW(1)-03	CEA Agency	EIS Section 6.2.1.8 Appendix K	Section 10	**Summary of Comment / Rationale:** Some potential effects to groundwater are not discussed in the EIS. These include seepage from the pit, contamination related to explosive residuals, and estimated loadings to receivers resulting from seepage from the mine facilities including the waste rock storage area (WRSA), low grade ore stockpile (LGO), tailings storage facility (TSF, TMA), and the pit. While information regarding seepage quantity is provided in Appendix M, and loading rates for the tailings storage facility (TSF) and waste rock storage area (WRSA) are estimated in Appendix K, the estimated quality of the seepage from the mine facilities, including receiver loading estimations, does not appear to be discussed. Effects associated with seepage, including seepage quantity and surface water loading estimates should be considered in the hydrogeological model sensitivity analysis.
					Information Request / Comment: A. Describe seepage water quality during operations, decommissioning and abandonment from the major mine features, including the pit, WRSA, TSF, and LGO stockpile, groundwater impacts associated with explosives, and seepage loadings to receivers. Include conservative estimates of loadings to surface water, predicted effects to offsite groundwater and feasible mitigation measures.
					Revised Response: A. Describe seepage water quality during operations, decommissioning and abandonment from the major mine features, including the pit, WRSA, TSF, and LGO stockpile,

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					groundwater impacts associated with explosives, and seepage loadings to receivers. Include conservative estimates of loadings to surface water, predicted effects to offsite groundwater and feasible mitigation measures. Since the time of the original EIS submission in 2015, Treasury Metals has substantially updated and/or provided additional technical document to support information regarding seepage water quality. This may be found in Appendix JJ which is new to the revised EIS report and was not included in the original submission. Information regarding seepage was used in the discussion of effects of the project on Surface Water Quality (Section 6.8), Groundwater Quality (Section 6.10), Fish and Fish Habitat (Section 6.14), Huma Health (Section 6.19), and Aboriginal Peoples (Section 6.21). The discussion of seepage is factored into hundreds of pages of text and tables in the revised EIS such that summarizing all of that information into a single IR response is not particle. The reviewer is encouraged to reference the subsection of the revised EIS and Appendix JJ for full technical details that have been provided in response to this IR. The following key summaries have been provided: In general seepage may be described for the following ***project phases:*** • Operations Phase: During operations, there will be a single point of surface water discharge from the Project, through an engineered structure into Blackwater Creek. All runoff from the operations area will be captured during the operations phase and used in the minewater management system. To the extent possible, this water will be used in the mine and the processing plant. Treasury Metals has committed (Cmt_034) that during operations, effluent discharged from the Project to Blackwater Creek will meet the Provincial Water Quality Objectives (PWQO), or background concentrations if background levels are above the PWQO. Where there is no PWQO for a parameter, the commitment will be to meet the Canadian Water Quality Guidelines (CWQG). For total mercury, the commitment will be that effluent discharged to Blackwater Creek will meet background concentrations for that watercourse. Background concentrations for Blackwater Creek are defined as the 75th percentile in accordance MOECC receiving water assessment policy. Detailed parameters will be determined through engagement with appropriate Provincial and Federal regulatory bodies. • The waste rock storage area (WRSA) and TSF will be equipped with a perimeter ditches and seepage collection systems to capture the majority of seepage, which will then be incorporated in the minewater management system. During operations, the open pit and underground mine will be dewatered to provide a safe working environment, which will create a drawdown zone in the water table where groundwater will be directed towards the open pit. Seepage from the WRSA and TSF that escapes the seepage collection systems will be captured within the drawdown zone, and will ultimately report to the open pit where it will be incorporated into the minewater management system.

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- Closure Phase: There will be no discharges to surface water during the closure phase. The site will be graded as part of the closure activities so that all of the runoff from the site will be directed towards the open pit. The process water in the TSF will be withdrawn, treated and used to help fill the open pit. Although dewatering activities will cease at the end of mining activities, the drawdown zone created during operations will continue to direct groundwater and seepage from the WRSA and TSF to the open pit until it is filled. The perimeter ditches will remain in place during this phase.
- Post-closure Phase: In the post-closure phase, all site runoff will continue to be directed to the open pit, and the open pit will continue to experience an influx of groundwater. Once the pit is fully flooded, excess water will be released through a spillway into a tributary of Blackwater Creek. Once the pit is flooded, groundwater levels will return to near pre-development conditions. At that point, a portion of the seepage from the TSF and WRSA will escape from the site, and will ultimately report to various nearby waterbodies during this phase.

Information regarding Seepage Quality has been incorporated into Section 6.3 Geology and Geochemistry in the revised EIS.

<u>Dry Cover Option</u>

Estimates of the long-term TSF and WRSA seepage quality under post-closure conditions were determined since a portion of the seepage may not be captured by the open pit after flooding is complete. This seepage is not directly evaluated as an indicator for the “pit lake quality” VC, but the seepage entering the pit lake will affect the overall quality of the water within the pit lake. Additionally, seepage that leaves the site during post-closure is an important input to evaluate in the surface water quality modelling.

Acidic and metal-rich waters have also been projected for long-term seepage from the TSF. However, the elevated loads for cadmium, copper, lead and particularly zinc in the estimated seepage quality may be driven by a particularly aggressive laboratory humidity cell source term that is based on the limited available data. It is noted that estimated antimony, chromium, molybdenum, silver and vanadium concentrations are primarily influenced by laboratory detection limit values in source terms. Given the HDPE liner proposed for the floor of the TSF, only a small quantity of seepage leaves the TSF to interact with surface waterbodies in the area. The results were presented in Table 6.3.4.1-1 of the revised EIS, and replicated below in Table 1.

Table 1: Seepage Quality Estimates for TSF and WRSA

Parameter	Dry Cover Option for TSF (mg/L)		Wet Cover Option for TSF (mg/L)	
	TSF	WRSA	TSF	WRSA
Sulphate	203	6,121	69	6,121

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Aluminum	5	85	0.2	85
Antimony	0.0024	0.0011	0.0020	0.0011
Arsenic	0.016	0.038	0.018	0.038
Beryllium	0.0012	0.0049	0.0005	0.0049
Boron	0.06	0.12	0.02	0.12
Cadmium	0.1024	0.0074	0.0020	0.0074
Chromium	0.0006	0.0021	0.0001	0.0021
Cobalt	0.05	0.76	0.00	0.76
Copper	1.11	0.27	0.02	0.27
Iron	7	266	0.4	266
Lead	0.87 (1)	0.21	0.08	0.21
Mercury	—	0.00005	0.00	0.00005
Molybdenum	0.00029	0.00053	0.00100	0.00053
Nickel	0.16	5.76	0.02	5.76
Selenium	0.0041	0.0027	0.0005	0.0027
Silver	0.00006	0.00011	0.00005	0.00011
Thallium	0.00084	0.00058	0.03000	0.00058
Uranium	0.02	0.11	0.005	0.11
Vanadium	0.0059	0.0055	0.0040	0.0055
Zinc	50.7	3.4	0.04	3.4

Notes:

"— " Concentrations for mercury are not included due to incomplete source term data

(1) TSF seepage water quality estimate for lead is equilibrated (see text)

Un-equilibrated results except as indicated.

Wet Cover Option

Estimates of the long-term TSF and WRSA seepage quality under post-closure conditions were determined for a wet closure option for the TSF (see Table 1). Estimates for the long-term WRSA seepage quality are the same as for the dry cover options, since there is no relationship between TSF management and the future WRSA. The TSF seepage water quality for a wet cover option assumes the seepage through the liner was non-acidic tailings porewater, which would have quality similar to tailings supernatant water (see Table 3.8.8-1).

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					Although seepage is not directly evaluated as an indicator for the "pit lake quality" VC, but the seepage entering the pit lake will affect the overall quality of the water within the pit lake. Additionally, seepage that leaves the site during post-closure is an important input to evaluate in the surface water quality modelling. <u>Determining Post-Closure Phase Surface Water Quality</u> Once the pit is flooded, groundwater levels will return to near pre-development conditions. At that point, a portion of the seepage from the TSF and WRSA will escape from the site, and will ultimately report to various nearby waterbodies during this phase. The volumes of seepage to various waterbodies was provided in Table 6.11.4.4-1 of the revised EIS, and have been provided for reference in Table 6.8.2.6-2 (provided below in this IR response for reference). The table lists the respective seepage rates from both the TSF and WRSA, as well as identifying the modelling node where the seepage is predicted to report, for both TSF closure options. As described in the effects predictions for geology and geochemistry (Section 6.3), the following two options are being considered for the closure of the TSF. Tailings within the TSF will be isolated using either a low permeability dry cover, or a wet cover of non-process water. The preferred option for limiting environmental effects is a wet cover. [Mt_023]: • The dry cover option assumes that the process water in the TSF will be withdrawn at closure, treated and used to help fill the pit. The tailings will then be physically isolated using a granular cover. Finally, the tailings will be covered with a low-permeability dry cover to limit the potential for acidification. • The wet cover option is similar in many ways to the dry cover option. The process water in the TSF will be withdrawn at closure, treated and used to help fill the pit. The tailings will then be physically isolated using a granular cover. Finally, the tailings will be isolated from oxygen using a cover of non-process water to prevent acidification.

<table>
<tr><th>TMI #</th><th>Agency Reference #</th><th>Parties Asking Questions</th><th>Reference to EIS</th><th>Reference to EIS Guideline</th><th>Comment / Information Request / Response</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>
Table 6.8.2.6-2: Seepage Discharge Volumes to Receiving Waters during Post-closure
<table>
<tr><th>Node</th><th>Source</th><th>Waterbody Receiver</th><th>Volume of Seepage (m³/d)</th></tr>
<tr><td>TL</td><td>WRSA (capped)</td><td>Thunder Lake</td><td>10</td></tr>
<tr><td>TL</td><td rowspan="5">TSF (dry cover)</td><td>Thunder Lake</td><td>0.1</td></tr>
<tr><td>TL2</td><td>Thunder Lake Tributary 3</td><td>0.1</td></tr>
<tr><td>HB1</td><td>Hoffstrom's Bay Tributary</td><td>0.1</td></tr>
<tr><td>BW1</td><td>Blackwater Creek</td><td>0.7</td></tr>
<tr><td>BW2</td><td>Blackwater Creek</td><td>0.1</td></tr>
<tr><td>TL</td><td rowspan="5">TSF (wet cover)</td><td>Thunder Lake</td><td>0.1</td></tr>
<tr><td>TL2</td><td>Thunder Lake Tributary 3</td><td>0.1</td></tr>
<tr><td>HB1</td><td>Hoffstrom's Bay Tributary</td><td>0.1</td></tr>
<tr><td>BW1</td><td>Blackwater Creek</td><td>0.7</td></tr>
<tr><td>BW2</td><td>Blackwater Creek</td><td>0.1</td></tr>
</table>
Notes:
(1) During operations, seepage from the WRSA and TSF not captured by perimeter collection ditches will be captured within the drawdown zone caused by active dewatering, and will ultimately report to the open pit
(2) During operations, there will be no discharge from the pit lake to the surrounding environment

The quality of the water in the pit lake as well as the quality of the seepage from the WRSA and TSF was determined as part of the effects assessment for geology and geochemistry. Specifically, Tables 6.3.4.1-1 and 6.3.4.2-1 (both shown above in this IR response) provide the predictions for the dry cover option for the TSF and the wet cover option for the TSF, respectively.

The sections that follow in the EIS provide detailed descriptions for the water quality schematic shown in Figure 6.8.2.6-1. The text is organized by the four watershed areas and two lakes covered by the nine modelling nodes.

The volume of seepage shown in 6.8.2.6-2 is very low, thus effects of seepage on surface water quality is also intrinsically low. Full details are provided in the EIS.
</td></tr>
<tr><td>67</td><td>GW(1)-04</td><td>CEA Agency</td><td>Appendix D Section 4.7.1</td><td>Section 9.1.2</td><td>
<u>Summary of Comment / Rationale:</u>
Section 4.7 (Appendix D) states: “The summaries for each of the accounts (from Environment Canada, Guidelines for the Assessment of Alternatives for Mine Waste, September 2015) are as follows:
• Environmental Account – Characterizing the local and regional environment surrounding the proposed TIA. These include elements such as climate, geology, hydrology, hydrogeology, water quality and potential impacts on aquatic, terrestrial and bird life.”

However, in section 4.7.1 (Appendix D), under the subaccount, “Water Impacts”, groundwater quality and quantity are not listed as indicators.

Groundwater quality and quantity, which are valued components (see section 9.1.2 of the EIS
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</table>

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Guidelines), must be included in the environmental account to predict the direct and indirect effects caused by the development, construction, operation, and decommissioning of a given location and tailings disposal technology.
					Information Request / Comment: A. Incorporate groundwater quality and quantity in the environmental account, as defined in current guidance, and include groundwater quality and quantity under the subaccount, "Water Impacts".
					Response: Treasury Metals commissioned Amec Foster Wheeler to undertake a multiple accounts analysis (MAA) of features of the Project that may require an amendment of the MMER, , and prepare a report suitable for initiating discussions with the various agencies who would need to be consulted. This work has been undertaken in accordance with current guidance noted in the comment. A report entitles "Draft Assessment of Alternatives for Storage of Mine Waste for the Goliath Gold Project" has been included as Appendix D-2 to the revised EIS. This document, prepared in accordance has been developed to specifically support the process for getting an amendment to MMER, should one be required. The draft MAA includes all components identified in the guidance.
68	GW(1)-05	CEA Agency	Appendix C of Appendix F Section 3.0 Appendix K Sections 2.4.2, 2.4.3, 3.3.2	Section 9	**Summary of Comment / Rationale:** Scaling factors were used to adjust laboratory results for source term calculation in the groundwater quality model. The proponent states: "The scaling factors were selected based on applicability to site conditions at the Project and were calibrated against the data collected from field cells in operation since November 2012. The details of the scaling factors applied to each source term are presented in Table 1." It was assumed that Table 1 was referring to the table of assumptions at the end of Appendix C (of Appendix F) as no Table 1 could be found. The values used as scaling factors are not discussed in detail. Further information is required to assess the validity of these values. Some scaling factors used were in the range of 0.03, suggesting that some laboratory tests over estimate loading rates by a factor of 3,333%. Such a significant discrepancy between laboratory and field conditions warrants additional justification. Section 2.4.2 (Appendix K) states that: "the barrel tests results are assessed in parallel with the laboratory humidity cell results to verify the appropriateness of the scaling factors used to scale laboratory conditions to field conditions." However, it appeared as though the results of this assessment were not provided. Additionally, section 3.3.2 (Appendix K) states that "loading rates

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					were not calculated for the barrel tests as equilibrium values had not yet been reached for each of the four mine rock types, at the time of this report." There was no discussion of when these results would be provided. These results are needed to verify the appropriateness of the scaling factors used. Section 2.4.3 (Appendix K) states: "it was assumed that approximately 5% of the material comprising the expected Goliath mine rock material will be of similar size to the material tested in the humidity cells (less than 1 inch to silt/clay size). As such, a scaling factor of 0.05 was applied to the calculated laboratory loading rates." This logic is unreasonable, as the remaining 95% of the mine rock material will not have zero surface area and cannot be excluded from the effects assessment. No water quality model sensitivity analysis results were provided for these scaling factors. The requested information will also be required in complete detail during the provincial permitting phase.
					<u>Information Request / Comment:</u> A. Provide the results of the barrel tests and discuss the assessment of the appropriateness of these scaling factors as they relate to barrel test results. B. Provide additional details and discussion regarding the development and use of these scaling factors. Include water quality model sensitivity analysis results for these adjustment factors to provide a range of potential, including worst case scenario, effects. C. Justify the use of the particle size scaling factor of 0.05 to adjust loading rates instead of a particle size scaling factor that represents 95% of the mine rock material. Revise the water quality model as appropriate and describe any change in anticipated effects.
					<u>Revised Response:</u> A. The table of assumptions presented at the end of Appendix C of Appendix F is the information referred to as Table 1. The net surface area scaling factor of 0.03 presented in Appendix C represents the combined net scaling of field waste rock surface areas per unit mass at 10% of HC surface areas and an actively flushed surface within the pile of 30%. The seemingly low scaling value reflects the assumption of a coarse grained partially flushed waste rock pile in comparison to the fine grained well flushed humidity cells.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including updated geochemistry assumptions and calculations related to geochemical inputs potentially affecting surface water quality. This analysis is presented in Section 6.3 of the revised EIS, with additional details provided in Section 5 of Appendix JJ of the revised EIS. This analysis includes consideration and description of the available Field Cell data. Additionally, the field barrel results are presented in Table 1A in Appendix A of Appendix JJ (Water Report) of the revised EIS B. Section 5.3 of Appendix JJ provides an updated assessment of the pit lake water quality in support of the revised EIS. The previous water quality assessment (Appendix C of Appendix F) was discarded and assumptions and scaling factors previously developed in Appendix C of Appendix F and Appendix K were not utilized. As described in Section 1.2.5 of Appendix JJ, Treasury Metals undertook a reevaluation of all previous geochemical data in Appendix K and included additional data collected from on-going monitoring of field cell water quality (described in Section 5 of Appendix JJ). The assumptions and scaling factors adopted for the updated water quality assessment followed methods and approaches developed and utilized by Amec Foster Wheeler on similar recent projects, which are generally more conservative than those put forward by previous consultants. The approach in the updated water quality assessment utilized a number of key conservative assumptions. Key assumptions include the following: • Open pit walls and stored waste rock consist of 93% potentially acid generating (PAG) rock [Errata – typographical error - bullet 8 on page 74 of the Water Report, Appendix JJ should read – “The proportion of NPAG rock at all open pit walls and stored waste rock was 7% (Appendix K of the EIS)”]. • A time to acid on-set of all PAG rock was assumed to be two years. • Laboratory loading rates were applied directly to the estimates with no adjustment for decreased rates due to lower average field temperatures. • Covering of the waste rock stockpile area does not occur until two years after completion of all open pit and underground mining. • The uncovered waste rock stockpile area delivers acidic metal rich drainage to the open pit until covered and after covering continues to contribute acidic metal rich drainage at a reduced rate proportional to the decrease in infiltration due to covering • Pit flooding is not complete until 6.7 years following mine closure and exposed in-pit mine rock and pit walls contribute acidic metal rich load until flooding is complete. • In the long-term projections, acidic metal rich drainage from a 10cm thick active zone with dry cover tailings was assumed.

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					In addition, to assess potential uncertainty in source terms, the water quality estimates determined lower and upper bound estimates for each parameter based on median rates and 75th percentile rates respectively. C. As detailed in Sections 5.3.2 and 5.3.3 of Appendix JJ to the revised EIS (Water Report), scaling for water quality estimates utilized humidity cell rates applied on a surface area basis to an assumed waste rock storage area (WRSA) mine rock of 50 m2/tonne. The 50 m2/tonne is based on a review of published and unpublished data including an internal study by Amec Foster Wheeler on the grain size / surface area of waste rock at a large open pit copper porphyry project. Data from these published and unpublished sources indicated waste rock surface areas ranging from 13 to 52 m2/tonne.
69	GW(1)-06	CEA Agency	Appendix C of Appendix F Section 3.0, Table 1	Section 9	**Summary of Comment / Rationale:** Assumptions are made throughout Table 1 (Appendix C of Appendix F) for various 'active depths'. No justification for the selection of these depths is given. The requested information will also be required in complete detail during the provincial permitting phase when submitting the required Closure Plan.
					Information Request / Comment: A. Provide details on how the active depths were considered and whether the assumptions made are conservative.
					Response: Since the submission of the original EIS, Treasury Metals has been advancing its engineering for the Project, including refining the water balance for the site. This updated water balance modifies some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report that has been appended to the revised EIS as Appendix JJ. An updated water quality model for the pit during the post-closure and abandonment phase, including assumptions and supporting rationale such as active depth, is provided in Section 5 of the Water Report. Specifically, Section 5.3.5 of Appendix JJ to the revised EIS lists the assumptions in the geochemical model, including a 10 cm active layer within covered, but unsaturated tailings.
70	GW(1)-07	CEA Agency	EIS Sections 3.7.4, 3.8.5.4 Appendix F Sections 2.1.4, 4.2, Appendix C	Sections 5.6, 10.1.2	**Summary of Comment / Rationale:** The embankments for the tailings storage facility (TSF) are proposed to be constructed upon overburden, rather than upon bedrock that has been exposed by excavation of the overburden. Seepage will therefore occur which has the potential to impact both surface and groundwater quality.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Appendix K Section 4.3 Appendix M Section 5.3.5		Some inconsistency exists within the EIS, where Section 2.1.4 (Appendix F) suggests that all seepage from the TSF will be captured: "seepage from the dam will be collected and returned to the tailings storage facility." This claim is also made in Section 4.2 (Appendix F): "…any dam seepage being returned to the impoundment." Again in Appendix C (of Appendix F): "for the purposes of this preliminary water quality model, all run-off and seepage waters are considered to be collected and diverted to the TSF." And further in Section 4.3 (Appendix K): "All drainage from the temporary stockpiles will report to one of three collection ponds and treated at the processing plant before being discharged to the environment." Note the reference to "all drainage" in Section 4.3 (Appendix K). This concept is also discussed in Section 6.5 (Appendix L). It is not reasonable to suggest that all seepage will be collected. This idea is supported in Appendix M where it is stated that some seepage from the waste rock storage area (WRSA) and the tailings management area (TMA) is expected to eventually discharge to Blackwater Creek, Hoffstrom's Bay Creek, Thunder Lake Tributary 3 and Thunder Lake.
					<u>Information Request / Comment:</u> A. Revise the seepage assessment to include and account for the amount of seepage that will flow beneath the embankments and assess the potential ground and surface water quality impacts associated with its release. B. Update the wording to remove any suggestion that all seepage from any of the mine facilities will be captured.
					<u>Response:</u> A. The reviewers point is noted, however; during operations, there will be active dewatering of the open pit and underground mine. The dewatering of the open pit will result in a substantial drawdown of groundwater. Therefore, any seepage that is not captured by the perimeter ditches will be captured in the open pit. As a result, there will be no seepage that leaves the site during the operations phase. B. Once operations cease and the open pit is flooded, the groundwater will gradually return to conditions similar to those prior to development of the mine. Once this occurs, groundwater flow will no longer be directed to the open pit and seepage will have the potential to be transported off-site. The potential off-site effects of seepage during the post-closure phase are provided in Section 3 (groundwater) and Section 6 (water quality) of the Water Report (Appendix JJ of the revised EIS).

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
71	GW(1)-08	CEA Agency	Appendix M Section 3.1.1, Figure 4	Section 9.1.2	**Summary of Comment / Rationale:** A good understanding of the surficial geology of the area around the proposed pit is essential for both hydrogeological modelling and site layout purposes. The surficial geology map shown in Figure 4 (Appendix M) is erroneous for the area surrounding the proposed pit and along the perimeter of the drawdown zone. For example, the map shows glaciolacustrine sediments in an area where the proponent mapped a series of bedrock outcrops. Moreover, the map differs considerably from that of Cowan and Sharpe (1991) cited by the proponent, which appears to be more accurate in many respects. The missing surficial units may play a key role on groundwater recharge and flow.
					Information Request / Comment: A. Update Figure 4 (Appendix M) (i.e. the map of surficial geology of the project site and, at a minimum, the area of the drawdown cone and its perimeter). Based on the updated figure, make necessary changes to the discussion and analysis in subsequent sections of the EIS and supporting documents. B. Update conceptual model, groundwater recharge, flow model, etc. based on the revised surficial geology information.
					Response: Since the publication of both the Cowan and Sharpe (1991) and the Roed (1980) surficial geology maps the following additional data has become available, or been collected by Treasury Metals: • The water well records from wells drilled after publication of these maps (note these have occurred around Thunder Lake and Wabigoon are not a significant addition to areas immediately around the proposed Goliath open pit). • The Beakhouse and Pigeon (2003) map, which has delineated locations of bedrock outcrops (shown on Figure 4 of Appendix M to the revised EIS), and has provided some localized comments on sediments at surface. • Bedrock outcrop mapping under taken by Treasury Metals in the immediate vicinity of the proposed Goliath open pit (shown on Figure 4 of Appendix A of Appendix M to the revised EIS). This information is taken to be more accurate than the outcrop location data from Beakhouse and Pigeon (2003) and is used in preference where mapped as indicated on Figure 4 of Appendix M to the revised EIS.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• The overburden thickness from the exploration boreholes, whose locations are clustered around the east – west trending zone of mineralization that runs through the proposed Goliath open pit. • Nine groundwater quality wells drilled by Treasury Metals in May 2013 (See Appendix A of Appendix M to the revised EIS for borehole logs). • Twenty geotechnical boreholes drilled by Treasury Metals in March 2014 (See Appendix B of Appendix M to the revised EIS for borehole logs). As noted in Section 3.1.1 (page 6) of Appendix M to the revised EIS, these data were used to create the 3D delineation of superficial deposits used in the groundwater model to assess the impacts of the proposed Goliath open pit. Both the Cowan and Sharpe (1991) and Roed (1980) maps are 1:100,00 scale maps; neither provide detailed information on the surficial geology in the area of interest around the proposed Goliath open pit. Nevertheless, they may provide supplemental information, particularly in areas of limited data. It is noteworthy that around the proposed Goliath open pit and immediately to the west and north, the Cowan and Sharpe (1991) map is discordant with the detailed site-specific data as listed above and discussed in Section 3.1.1 of Appendix M. These areas are mapped by Cowan and Sharpe (1991) as 1 ('*drift and rock: rock dominated terrain (25% to 80% outcrop) with scattered boulders; thin till and stratified deposits, 1 – 3 m thick in depressions*') and 6b ('*littoral and shallow water deposits: sand with silty fine sand*'). This discordance is demonstrated by the information shown on Figure 5b of Appendix M (section B-B' on Figure 4 of Appendix M) where clay (interpreted to be glaciolacustrine) is the predominant superficial deposit in this area where elevations are below 395 to 400 masl. Overall, the Roed (1980) map is more consistent with the site specific geologic data. It is also more consistent with the local hydrologic monitoring (see Section 3.2, page 10 of Appendix M), which indicates Hoffstrom's Bay Tributary (HS5) and Little Creek (HS6) having little or no baseflow (i.e., rising on clay as indicated by Roed (1980)), whereas the unnamed creeks Thunder Lake Tributary 2 (HS7) and Thunder Lake Tributary 3 (HS4) have much higher baseflow (i.e., rising on sand as indicated by both Cowan and Sharpe (1991) and Roed (1980)). In conclusion, the site specific data as indicated on Figure 4 of Appendix M was used to generate the 3D delineation of superficial deposits used in the groundwater model. The Roed (1980) map is used in preference to the Cowan and Sharpe (1991) to provide supplemental information as it is known to be more accurate in the vicinity of the proposed Goliath open pit. Ultimately, a larger extent of clay cover around the proposed Goliath open pit is more conservative as:

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• It leads to a greater predicted drawdown cone (inflows are controlled by the transmissivity at the open pit); and • Overall groundwater flow rates are predicted to be lower, which limits the dilution potential of any contaminants entering the groundwater. Using the mapping provided by Cowan and Sharpe (1991) would result in less conservative results. References Beakhouse, G.P. & Pigeon, L. 2003. Precambrian Geology of the Thunder Lake Area. Ontario Geological Survey, Preliminary Map P.3529, scale 1:20 000. Cowan, W.R. & Sharpe, D.R. 1991. Surficial Geology, Wabigoon Lake, Ontario. Geological Survey of Canada, Map 1774A, scale 1:100,000. Roed, M.A. 1980. Northern Ontario Engineering Geology Terrain Study 22, Wabigoon Lake Area (NTS 52F/NE), District of Kenora. Ministry of Natural Resources.
72	GW(1)-09	CEA Agency	Appendix M Sections 3.2, 5.1.3, 5.3.5, Figure 9, Table 8	Section 9.1.2	**Summary of Comment / Rationale:** In Appendix M, an estimate that recharge rate equals the minimum daily flow is used. This is an extreme value and corresponds to extreme minimal recharge. It would be preferable to use the average minimum daily flow over a period of 7 days or more and to calculate the base flow, thus providing minimum and maximum recharge values. In section 5.3.5 (Appendix M), the HELP model was used to calculate infiltration through the tailings management area. This model could also be used to validate the recharge estimated, based on streamflow data. The recharge rates were not included in the model sensitivity analysis. A discussion of the source of these values, justification for their applicability, evidence that they are conservative, and an assessment of model sensitivity to these values are requirements of the effects assessment.
					Information Request / Comment: A. Calculate the average minimum daily flow over a period of 7 days and the base flow at the gauging stations in order to obtain minimum and maximum recharge values. Validate these results using the HELP model. B. Update Figure 9 (Appendix M) and add the drainage area for each station and the value of the base flow in m^3/d.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					C. Update the groundwater flow model and results with the recharge values obtained. D. Adjust the recharge values in Table 8 (Appendix M) based on the updated surficial geology map, justify their applicability, provide evidence that they are conservative and assess the hydrogeological models sensitivity to these values.
					Response: Measuring low flows from small low gradient runoff-dominated creeks which experience frequent beaver impoundment is problematic and often the accuracy of gauged flows are low. For instance, this is why only the gauges with the best stage-discharge relationships have been used to calibrate the groundwater model as explained in the response to TMI_76-GW(1)-13. Deriving recharge from baseflow is problematic as the hydrograph response that is attributable to groundwater is highly variable between different geologic strata. This is the reason why baseflow analysis is no longer being used in some countries (e.g., United Kingdom examples documented in Shepley et al. 2012) for the management of large water supply aquifers (i.e., > 100,000 m^3/d) with high baseflow indexes (i.e., > 0.50). The problem is worse for runoff dominated creeks with very little baseflow given the likely inaccuracy of the gauged low flows. Consequently, the method of analysis proposed by the reviewer for the analysis of the stream flow data is not considered appropriate. Ultimately the recharge is a calibration parameter that needs to fit with the estimated hydraulic conductivities to produce the hydraulic gradients observed from groundwater level monitoring and be consistent with the low-flows measured in the creeks. Overall, this objective has been achieved with the groundwater model constructed for the Project. Finally, as discussed in TMI_71-GW(1)-08, the recharge values are not considered high and this is conservative regarding both the estimation of drawdown from dewatering of the mine and the dilution potential of any contaminants entering groundwater. Reference Shepley, M.G., Whiteman, M.I, Hulme P.J. & Grout, M.W. 2012. Groundwater Resources Modelling: a Case Study from the UK. Geological Society, London, Special Publication, v. 364.
73	GW(1)-10	CEA Agency	Appendix M Section 5.1	Section 9.1.2	**Summary of Comment / Rationale:** In the numerical groundwater flow model, the hydraulic conductivity (K) of the fault is lower than that of the surrounding rocks, which is unexpected. Evidence supporting this value is needed.
					Information Request / Comment: A. Explain why the hydraulic conductivity of the fault is lower than that of the surrounding rocks.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Response: The nature and the significance of the Wabigoon Fault is discussed in the response to Information Request MW(1)-24. The Wabigoon Fault is an inferred structure in the Thunder Lake – Wabigoon Lake area and its geological characteristics are not well known. It may be considered a ductile shear zone based on the brief overview of the surrounding geology given by Beakhouse (2000, 2001). Ductile shear zones are characterized by crystal plastic deformation with generally no development of brittle fractures. Such a shear zone may have lower hydraulic conductivity than the surrounding bedrock, particularly in the direction perpendicular to the shear zone foliation (in this case east – west). The representation of the Wabigoon Fault in the groundwater model can therefore be described as that of a ductile shear zone. One sensitivity run has been undertaken without the Wabigoon Fault having lower hydraulic conductivity, with little overall effect on the zone of influence of the proposed Goliath open pit. This result is consistent with the conclusion of TMI_62-MW(1)-24; the inferred Wabigoon fault is not considered a significant factor in the environmental assessment given its distance of 2 km and more from the proposed Goliath open pit. References Beakhouse, G.P. 2000. Precambrian geology of the Wabigoon area. In: Summary of Field Work and Other Activities, Ontario Geological Survey, Open File Report 6032. Beakhouse, G.P. 2001. Project Unit 00-012. Precambrian Geology of the Thunder Lake Segment, Wabigoon Area. In: Summary of Field Work and Other Activities, Ontario Geological Survey Open File Report 6070.
74	GW(1)-11	CEA Agency	Appendix M Figure 14	Section 9.1.2	**Summary of Comment / Rationale:** The hydraulic conductivity (K) values of the groundwater model presented in Figure 14 (Appendix M) could be more variable for depths 0-100 m. For the first 100 m, it is unclear whether this variability of K values been considered in the sensitivity analysis.
					Information Request / Comment: A. Discuss variability of K values for the first 100 m in the sensitivity analysis.
					Response: The calibrated model has the following hydrostratigraphic units: • The shallow bedrock (< 7 m below top of bedrock) with a hydraulic conductivity of 1E-6 m/s;

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• The intermediate bedrock with a thickness of 100 m with a hydraulic conductivity of 1E-7 m/s; The hydraulic conductivity data collected on the shallow and intermediate bedrock shows variability, typical of fractured crystalline bedrock. Higher estimated values tend to be associated with small packer test intervals, whereas lower estimated values are associated with longer interval tests. The hydraulic conductivity values applied in the model are broadly in the line with the collected data falling broadly between the longer and shorter interval tests (see Figure 14 of Appendix M to the revised EIS). As the model is based on the equivalent porous media principal, it is the longer interval data that are likely more applicable in representing the hydraulic conductivity of the bulk rock mass. The hydraulic conductivity values and hydrostratigraphy applied at the Goliath Gold Project are consistent with other recent studies in similar rock, such as the Rainy River Gold Project nearby. In the sensitivity analysis, the hydraulic conductivity of the shallow and intermediate bedrock have been increased / decreased individually by a factor of two. The aim is to capture the possible variability of the hydraulic conductivity of the bulk rock mass, rather than the highest (or lowest) values measured as these are less likely to be representative. In addition, using an extreme value for the hydraulic conductivity, results in simulations that have relatively poor calibrations, indicating a predictive simulation that is less reliable.
75	GW(1)-12	CEA Agency	Appendix M Figure 17	Section 9.1.2	**Summary of Comment / Rationale:** Figure 17 (Appendix M), which presents the results of the model calibration, does not show the location of the wells. Although the bias is low, it is not possible to interpret the spatial trends without identifying/labelling the wells.
					Information Request / Comment: A. Add and label the wells in Figure 17 (Appendix M) and discuss the spatial trends of the residuals. B. Provide a plot of the mean value of the residuals (measured minus simulated values) and the mean of the residuals in absolute value in the graph.
					Response: A. As requested, a revised version of Figure 17 from Appendix M is given below in this response. The calibration data does not appear to be biased with respect to depth or simulated hydrostratigraphic units since statistics of the discrepancies between computed and observed

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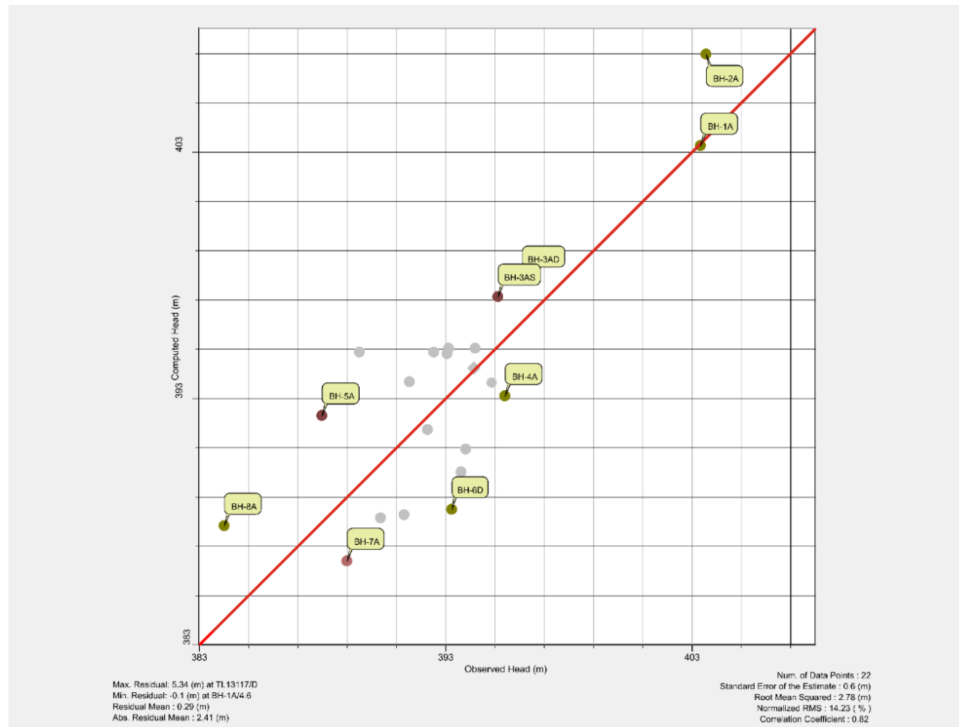
					hydraulic heads in the overburden, overburden + weathered shallow bedrock and deeper bedrock wells are similar. B. As requested, please find enclosed the following: • mean and absolute mean errors in five overburden calibration wells (BH3AS, BH3AD, BH5A, BH6D, BH7A) are 0.85m and 2.38m, respectively; • mean and absolute mean errors in four overburden / shallow bedrock wells (BH1A, BH2A, BH4A and BH8A) are 1.19m and 2.41m, respectively; and • mean and absolute mean errors in the remaining 13 deeper bedrock calibration wells (shown as grey circles and a diamond in Figure 17) are 0.07m and 2.23m, respectively. 
76	GW(1)-13	CEA Agency		Section 9.1.2	**Summary of Comment / Rationale:**

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Appendix M Figure 19		For a better understanding and assessment of the groundwater model and its calibration, Figure 19 (Appendix M) should show all the gauging stations.
					Information Request / Comment: A. Include all gauging stations at which base flow is affected by the Project in Figure 19 (Appendix M), namely those within the drawdown area. Readjust the limits (minimum and maximum base flow) according to the revised information.
					Response: The creeks in the area of the proposed open pit are runoff dominated with relatively small baseflows. Obtaining an accurate continuous record of flows across all flow conditions is often difficult. Using continuous flow data to calibrate a groundwater model requires a reasonable correspondence of the stage-discharge relationship and gauged spot flows for low-flow conditions. This is important in the present situation where the baseflow is a small proportion of the total flow and consequently inaccuracies at low-flow may be high. As noted in Section 3.2 of Appendix M to the revised EIS, the best stage-discharge relationships have been obtained for gauging stations TL1a (Blackwater Creek – glaciolacustrine clay and 'sand-clay/silt-sand'), HS5 (Hoffstrom's Bay Tributary – glaciolacustrine clay and bedrock) and HS7 (Thunder Lake Tributary 2 – sand and gravel from glacofluvial outwash), which have therefore been used for calibration as indicated in Section 5.2 of Appendix M to the revised EIS. These three gauging stations provide sufficient flow calibration targets for the groundwater model. The other stations do not have good enough stage-discharge relationships at low-flows to calibrate the groundwater model. This will not have a significant effect on the overall calibration and accuracy of the model, as the three utilized gauging stations cover all the main overburden watershed categories within the Project area.
77	GW(1)-14	CEA Agency	Appendix M Figure 2	Section 10, 11	**Summary of Comment / Rationale:** Figure 2 (Appendix M) shows that the waste rock storage area (WRSA) rests partly on bedrock outcrops and thin deposits, which can allow and even promote vertical migration of potential contaminants in several parts of the project site. The proponent needs to explain how vertical infiltration from the WRSA will be controlled. For example, whether the bottom of the WSRA will be covered with a clay layer or an impermeable material.
					Information Request / Comment: A. Explain how vertical infiltration from the WSRA will be controlled.
					Revised Response: As explained in GW(1)-17, the open pit will draw in and contain groundwater from the WRSA during operation and closure. By drawing this water in, the pit will essentially collect local seepage

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					and will act as a mitigation measure to collect seepage for treatment along with mine water collected (mitigation measures Mit_048, Mit_050, Mit_052 of Tables 6.23-1 through 6.23-20, Section 6 of the revised EIS). To control the vertical infiltration are WRSA perimeter collection ditches. These will be installed during operation, but will be decommissioned when reclamation starts. Reclamation of the WRSA will include covering with a low permeability cover (mitigation measure Mit_018, Section 6 of the revised EIS). This will restrict the potential for percolation of precipitation through the stockpile and creation of new seepage , which will act to control vertical infiltration from the WRSA to groundwater.
78	GW(1)-15	CEA Agency	Appendix M Section 5.3.3, Figures 20, 21	Section 10, 11, 12	**Summary of Comment / Rationale:** While the proposed groundwater monitoring locations appear reasonable, additional groundwater monitoring locations will be required to provide an adequate groundwater monitoring network. It does not appear as though any domestic use wells were included in the groundwater monitoring program. Wells of interest surrounding the Project should be considered for inclusion in the groundwater monitoring quality and level monitoring programs. Figures 20 and 21 show that several wells will be affected by drawdown due to mine dewatering. The proponent has not explained whether it would remediate any damage that these activities could cause to individual wells (water level and quality). Mitigation measures will have to be planned for all wells, regardless of their context. Additionally, the impact of drawdown on streams is unclear. The requested information will also be required in complete detail during the provincial permitting phase when applying for required Permits to Take Water.
					Information Request / Comment: A. Include surrounding domestic use wells in the groundwater monitoring program, upon receiving permission from the well owners. B. Describe mitigation measures for the wells affected by dewatering of the pit. C. Replace the basemap in Figures 20 and 21 with the revised surficial geology map requested in GW(1)-09.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					D. Describe and quantify the impact of drawdown relative to total and base flows. E. Describe the impact of drawdowns on streams in the LSA.
					<u>Revised Response:</u> A. Groundwater monitoring wells have been installed by Treasury Metals and these are presently being monitored. New groundwater monitoring wells will be installed as part of the groundwater follow-up programs, which are described in Sections 13.10 (groundwater quality) and 13.11 (groundwater quantity) of the revised EIS. Treasury Metals has had discussions with nearby residents who have expressed concerns about their wells. Private wells may be incorporated in the groundwater monitoring program, given the consent of owners. Figure 6.1.4.10-1 shows the location of domestic water wells, I is attached to this IR for reference as TMI_078-GW(1)-15_Attachment_1. B. A total of 77 private wells were identified in Section 6.11 of the revised EIS as falling within the zone of influence (ZOI) for groundwater drawdown. Of these wells, 55 are located in areas where drawdown of less than 5 m is predicted. The risk for effects in these wells were classified as ranging from “Low to very low” to “Low to moderate”, depending on their location and the nearby geology. Of the 22 wells with predicted drawdowns of more than 5 m, the risk for effects on private wells were identified as follows in Table 6.11.4.2-1 (attached for reference as TMI_078-GW(1)-15_Attachment_2) of the revised EIS: • five (5) of these wells fall within the Project and would belong to Treasury Metals; • five (5) wells are drilled to depths of more than 30 m and were classified as having a “low” risk; and • twelve (12) wells are dilled to depths of less than 25 m, and were classified as having a “moderate to high” risk. Although potential risks to residential wells were identified as a result of drawdown, whether an individual well is affected will depend on the depth of the well and the surrounding geology. In the event that private wells are impacted, mitigation would include providing suitable replacement of private water supply (e.g., drilling of new water well or deepening of existing water wells, installation of cistern and supply of potable water,) until groundwater level recovery has occurred on completion of mining depending on location and requirements. As detailed in Section 6.11 of the revised EIS, Treasury Metals will be required to provide financial assurances to the Ministry of Mines Northern Development and Mines (MNDM) as part of the start-up approvals to mitigate effects to residential water wells impacted by the Project.

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					C. The use of the overburden basemaps is discussed in the response to TMI_72-GW(1)-09. Based on this discussion, the present basemaps of Figures 20 and 21 (appendix M) are considered appropriate. D and E. The potential effects of dewatering on surface water quantities are described in Section 6.11 of the revised EIS, and the results considered in the hydrologic modelling used to describe the effects of the Project on surface water quantities (Section 6.9 of the revised EIS). Additional details regarding the groundwater interactions on surface water flows are provided in Section 5.3.4 0 of Appendix M of the revised EIS. Most of the creeks close to the proposed open pit, and within the zone of influence (ZOI), are runoff dominated creeks with watersheds that sit predominantly on clay. These creeks are a lot less sensitive to mine dewatering and will likely become mostly perched under drawdown conditions. The exceptions are: • Thunder Lake Tributary 2 and Thunder Lake Tributary 3: A portion of the catchments for these two waterbodies sits atop a glacial fluvial deposit (see Figure 6.11.4.2-1, attached for reference as TMI_078-GW(1)-15_Attachment_2). The ZOI from dewatering (see Figure 6.11.4.2-1).overlaps a portion of these areas and thus the drawdown from dewatering could have an effect on flows. • Blackwater Creek: While the majority of the Blackwater Creek catchments watersheds sits predominantly on clay and fine silts, there are portions of the headwaters of the main arm of Blackwater Creek, and a portion of the headwaters of Blackwater Creek Tributary 4 that are underlain by granular materials and thus the drawdown from dewatering could have an effect on flows. Section 6.9 of the revised EIS presents the predicted effects of the Project on surface water quantities and total flows in the waterbodies potentially affected by the Project. The assessment considers changes in flows as a result of drawdown, changes as a result of adjustments to catchment areas, as well as water taking and discharges associated with the Project. The assessment of groundwater quantity effects evaluated effects for an average climatic year, a wet (1 in 20, or 95th percentile) year and a dry (1 in 20, or 95th percentile) year. The hydrologic model is described in Section 6.9.2 of the revised EIS, and further detailed in Section 4 of Appendix JJ (Water Report) to the revised EIS. The groundwater modelling, as described in Appendix M of the revised EIS, predicts minimal effects (<10%) to the baseflow contribution to Thunder Lake Tributary 2 and 3. These three creeks are remote from the Goliath mine site with their catchments on the edge or outside of the Zone of Influence (ZOI) of mine dewatering. Blackwater Creek is expected to have more baseflow; however, much of the Blackwater Creek watershed sits predominantly on clay. This makes it harder to accurately quantify baseflow conditions. Because of the presence of clays beneath much

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					of the Blackwater Creek watershed, it would be less sensitive to the effects associated with mine dewatering that waterbodies underlain by granular materials.
79	GW(1)-16	CEA Agency	EIS Section 13.6.2 Figure 13.6.1	Section 11	**Summary of Comment / Rationale:** According to section 13.6.2 (EIS), monitoring well locations will be determined on the basis of flow directions provided by the model. If the adjustments to the model suggest a different flow pattern, the monitoring program will have to be adjusted accordingly. For effective adjustment, the well network must cover all possible flow directions. However, the locations of monitoring wells down gradient of the low grade stockpile have not been proposed. It is recommended that the monitoring program be designed to detect all changes in direction of lateral and vertical flow, even after mine decommissioning, until water quality parameters have returned to baseline conditions.
					Information Request / Comment: A. Revise the monitoring program to detect all changes in direction of lateral and vertical flow, even after mine decommissioning, until water quality parameters have returned to baseline conditions.
					Response: It is assumed that this request relates to changes requested to the conceptual and numerical groundwater model in TMI_71-GW(1)-08, particularly with respect to the superficial deposits. The response to TMI_71-GW(1)-08 provides a full explanation of the use of data to represent the superficial deposits in the groundwater model. The conclusion to TMI_71-GW(1)-08 is that the data have been used appropriately and there is no need to revise the conceptual or numerical groundwater model constructed for the Project. With respect to the present Information Request we therefore conclude that the proposed groundwater monitoring network as provided in Section 13.10 and 13.11 of the revised EIS, based on the groundwater modelling described in Appendix M, will detect the changes to the flow directions caused by the operation of the mine including the dewatering of the proposed Goliath open pit and the operation and closure of the tailings storage facility (TSF). Regarding the location of wells around the low-grade ore (LGO) stockpile, details on the groundwater monitoring program is provided in Section 13.10 and 13.11 of the revised EIS. There are upstream and downstream monitoring wells planned around the LGO stock pile that are shown in Figure 13.10.2-1 of the revised EIS. A further refinement of the groundwater monitoring program is provided in the Water Report (Appendix JJ to the revised EIS).
80	GW(1)-17	CEA Agency		Section 10, 11	**Summary of Comment / Rationale:**

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			Appendix M Section 5.3.5		The current groundwater flow model predicts potential tailings management area (TMA) and waste rock storage area (WRSA) seepage to receiving environments. Given that it is highly likely that the seepage will be contaminated, it is recommended that the proponent monitor groundwater and develop a plan to collect groundwater that will not be intercepted by the drainage ditches a short distance from the TMA and WRSA, should it exceed provincial water quality limits. It is recommended that monitoring wells be installed all around the facilities and in each aquifer to confirm the direction of migration of potential contaminants.
					<u>Information Request / Comment:</u> A. Provide additional detail for the groundwater monitoring program to detect exceedances of water quality standards in the direction of flow from structures and provide a mitigation/contingency plan in the event of exceedances to prevent the spread of contaminants to receiving environments.
					<u>Revised Response:</u> The Treasury Metals Goliath Project has a geographically compact footprint with both the TSF and WRSA falling within the drawdown cone of the open pit. Consequently, the open pit will draw in and contain groundwater from these locations during operation and closure, i.e. an implicit seepage collection system, which will mitigate the effects of the Project on groundwater quality throughout the operations and closure phases. The EIS follow-up program for groundwater quality is described in Section 13.10 of the revised EIS. The follow-up includes a groundwater monitoring program designed to detect degradation of groundwater quality in the downgradient direction from structures (i.e., WRSA and TSF). The location of the groundwater monitoring wells are illustrated on Figure 13.10.3.2-1 of the revised EIS (a copy is attached as TMI_080-GW(1)-17_Attachment_1). In the event that significant degradation of groundwater quality contamination or unexpected adverse groundwater level drawdown is recorded from the groundwater monitoring network, this may trigger investigations, comprising: • Recalibration of the groundwater model and update of predictions incorporating any changes to the mine plan. With the respect to groundwater quality this may include an assessment of post-closure conditions when the open pit no longer acts to capture groundwater; • Installation of new monitoring wells and/or increase of frequency of monitoring (e.g. installation; and • Other investigations.

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					If the investigation determines a mine-related cause, mitigation measures to be completed, may include the following: • Suitable replacement of private water supply until groundwater level recovery has occurred on completion of mining depending on location and requirements (e.g., deepening of existing water wells, drilling of new water wells, installation of cistern and supply of potable water); and • Containment measures if significant post closure adverse groundwater quality is predicted.
81	GW(1)-18	CEA Agency	Appendix M Figure 4	Section 10	**Summary of Comment / Rationale:** A large part of the project site is overlain by lacustrine clay. In this context, groundwater drawdown is known to cause significant ground settlement and can affect mine infrastructures.
					Information Request / Comment: A. Identify potential areas and extent of ground settlement within the project area. B. Indicate areas at risk of damage due to ground settlement caused by groundwater drawdown due to mine dewatering and propose mitigation measures, as required.
					Response: The glaciolacustrine clay is relatively thin and of low-permeability. Clays are very unlikely to dewater under gravity when the water table is drawn below the base of the bedrock surface. Consequently, subsidence at the Project is unlikely to occur from groundwater drawdown.
82	GW(1)-19	CEA Agency	Appendix M Section 5	Section 9.1.2	**Summary of Comment / Rationale:** The uncertainty of the groundwater flow model is associated with hydraulic parameters such as hydraulic conductivity and recharge, but also with the selected conceptual geological model.
					Information Request / Comment: A. Review and revise the groundwater flow model results and sensitivity and the discussion on the basis of the corrected information. B. Incorporate the revised groundwater flow model in the follow-up program. Review the model simulation results annually and adjust the groundwater quality and level monitoring plan, as required.
					Response: It is assumed that the corrections referred to under A) relate either to:

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					• The nature and the significance of the Wabigoon Fault as discussed in the response to TMI_62-MW(1)-24; and /or • The overburden mapping used for the assessment of recharge as discussed in the response to TMI_71-GW(1)-08. The responses to these Information Requests both conclude that these aspects of the conceptual model have been assessed appropriately and no changes are required to the numerical groundwater.
83	GW(1)-20	CEA Agency	Appendix M Figures 24, 25	Section 10	**Summary of Comment / Rationale:** The particle-tracking results in Figures 24 and 25 (Appendix M) show the possible migration pathways of potential contaminants. However, it is not possible to identify the aquifer through which the water flows, or the travel time toward receiving environments. It is unclear whether all wells identified on the map are part of the monitoring program that will be implemented during the mine activities and at the time of mine decommissioning.
					Information Request / Comment: A. Indicate the aquifer through which the water flows and the travel time towards the receiving environments for Figures 22 to 25 (Appendix M). B. Identify the wells that are part of the monitoring program to be implemented during the mining activities and at the time of mine decommissioning.
					Response: A. The particles depicted in Figures 24 and 25 of Appendix M to the revised EIS travel through the shallow bedrock and the discontinuous basal sand that lies between the clay and the shallow bedrock. The calculation of travel times requires the estimation of the kinematic porosity of the shallow bedrock and the basal sands. Although this can be estimated based on laboratory experiments and small-scale tests, it is extremely difficult to estimate for large rock masses, particularly the fractured bedrock. Travel times may be of the order of decades. B. Details on the proposed groundwater monitoring program is provided in Section 13.10 and 13.11 of the revised EIS. The proposed wells indicated in Table 13.10.2-1 and shown on Figure 13.10.2-1 of the revised EIS will be monitored. Groundwater level monitoring will be continued in these wells up to cessation of dewatering operations. It is planned that the groundwater quality monitoring would be continued up to the time when both the tailings storage facility (TSF) and waste rock storage area (WRSA) are capped. Both groundwater level and quality monitoring will

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					be continued until completion of a satisfactory review of the monitoring data collected during mine operation and / or closure by the relevant government agencies.
84	GW(1)-21	CEA Agency	EIS Section 6.2.1.12 Appendix G Section 9.3.6.1 Appendix F of Appendix M Figure 1 Appendix S Table 3.4	Section 5, 9.1.2, 10	**Summary of Comment / Rationale:** The proponent states in section 6.2.1.12 (EIS): "Makeup water may be required for operation of the processing plant and may be obtained from groundwater wells or via pipeline from the old tree nursery irrigation ponds located on the Hoffstrom's Bay tributary on the Treasury offices site which has potential to reduce water quantity and, indirectly, habitat quality." No details are provided on these withdrawals. The hydrogeology of the project area as shown in Figure 1 (Appendix F of Appendix M) includes a portion of Lola Lake Provincial Park, which is an extensive wetland area. Section 9.3.6.1 (Appendix G) states: "…it [Lola Lake Wetland] likely provides the area with significant ecological functions such as groundwater discharge, wildlife habitat and carbon storage (Harris pers. comm. 2011). The presence of iron precipitates (Appendix VII-2, Plate 11) and rich minerotrophic indicators including sticky tofieldia (Triantha glutinosa), tufted clubrush (Trichophorum cespitosum), and creeping juniper (Juniperus horizontalis) indicates that there is a strong flow of nutrient rich groundwater from the peatland (NE to SW) into the ponds at the tree nursery grounds and eventually into Thunder Lake." In addition, Table 3.4 (Appendix S, page 17) indicates the olive sided flycatcher, a migratory bird and threatened species at risk, was identified in the portion of Lola Lake Provincial Park wetland area adjacent to the irrigation ponds. The potential environmental effects on the wetland area from the groundwater withdrawals are unclear.
					Information Request / Comment: A. Provide information on makeup water withdrawals: quantity, location of withdrawal sites, and impact on groundwater (drawdown). B. Based on the information gathered for WL(1)-03 and request A above, reassess and describe the potential effects and any residual effects from groundwater drawdown on wetlands, including the Lola Lake Provincial Park wetlands, adjacent to the irrigation ponds, considering the magnitude, extent, duration, frequency, reversibility criteria to determine significance of adverse environmental effects.
					Response:

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					A. To clarify, the potential sources of makeup water are described fully in Section 3.8.3 of the revised EIS. The fresh water needed for the Project was identified as coming from the irrigation ponds at the former Ontario Ministry of Natural Resources and Forests (MNRF) tree nursery. These ponds are located on the Thunder Lake Tributary 3. There are errors in the identified sources of fresh water presented in the description of potential effects for fish and fish habitat. The irrigation ponds at the former tree nursery are not located on the Hoffstrom's Bay Tributary, and groundwater will not be used as a source of fresh water. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ. As part of the refinements, Treasury Metals in now considering accessing fresh water from the irrigation pond on Thunder Lake Tributary 2, as well as the two irrigation ponds on Thunder Lake Tributary 3. There will be no effect on groundwater drawdown associated with this fresh water withdrawal. B. As detailed in the response to TMI_146-WL(1)-03, the Lola Lake Nature Reserve has been excluded from the wetlands surveyed in 2016 because the wetland is not predicted to be affected as a result of the Project. Treasury Metals has prepared a Wetlands Baseline Study (2016), which has been appended to the revised EIS as Appendix S. The Wetlands Baseline Study provides a summary of the baseline information collected to support the EIS as well as information collected since the submission of the original EIS. The supply of fresh water will come from the irrigation ponds at the former MNRF tree nursery. One of these ponds is located on Thunder Lake Tributary 2, which is in a different watershed that Lola Lake. The other two irrigation ponds are located on Thunder Lake Tributary 3. Since these ponds are well downstream from Lola Lake, withdrawals from the ponds would have no measurable effect on flows and water levels in Lola Lake Provincial Park. Additionally, the drawdown associated with the dewatering of the open pit and underground mine will not extend into the park.
85	GW(1)-22	CEA Agency	EIS Section 6.3.1.10	Section 9	**Summary of Comment / Rationale:** Section 6.3.1.10 (EIS) states: "Previous assessment of surface water hydrology in the watersheds surrounding the proposed mine development area have found that aquifer discharge provides for a negligible amount of creek base flow so depression of the groundwater surface would likely not impact the surface water regime to any significant extent." This statement may need to be modified based on the information and model updates that may result from the proponent's response to IRs on groundwater and surface water.

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					Information Request / Comment: A. Analyze the impacts to the surface water regime, based on responses to IRs on groundwater and surface water, and update the effects assessment accordingly.
					Response: Based on the responses to the Round 1 IRs, notably TMI_71-GW(1)-22, there would be no significant changes that would warrant changing that statement. Specifically, the response to TMI_71-GW(1)-22 confirmed that the surficial geology supports the following description of base flows in the creeks feeding into Thunder Lake: • Hoffstrom's Bay Tributary (HS5) and Little Creek (HS6) having little or no baseflow (influenced by clay as indicated by Roed (1980)); and • Unnamed creeks Thunder Lake Tributary 2 (HS7) and Thunder Lake Tributary 3 (HS4) likely have higher baseflow (influenced by sand as indicated by both Cowan and Sharpe (1991) and Roed (1980)). Subsequent to the filing of the original EIS, Treasury Metals has been refining the water balance for the site. As part of this work, Treasury Metals has revisited the water balance for the Project to optimize the process to the extent possible, to avoid or reduce potential effects on the environment. These changes have the potential to affect four components of water, namely: surface water quality, surface water quantity, groundwater quality, and groundwater quantity. To capture these water component effects, as well as to reflect the responses to the Round 1 IRs, Treasury Metals has prepared aWater Report tobe appended to the revised EIS as Appendix JJ. The Water Report represents a technical document describing the updated predictions of effects to water as a result of the Project. As described in the response to TMI_2-EA(1)-02, Treasury Metals acknowledges that the Round 1 IRs included a number of questions related to the organization and approach used in the EIS. Treasury has prepared a revised EIS to resolve this. References Cowan, W.R. & Sharpe, D.R. 1991. Surficial Geology, Wabigoon Lake, Ontario. Geological Survey of Canada, Map 1774A, scale 1:100,000. Roed, M.A. 1980. Northern Ontario Engineering Geology Terrain Study 22, Wabigoon Lake Area (NTS 52F/NE), District of Kenora. Ministry of Natural Resources.
86	GW(1)-23	CEA Agency			**Summary of Comment / Rationale:**

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			EIS Sections 11.2.2, 11.4.3	Section 5, 10, 11	The details of the source of the groundwater (an estimated 524 233 m^3/year, approximately 1 436 255 L/day) to be used for enhanced pit flooding are not provided in section 11.2.2 (EIS). Section 11.4.3 (EIS) mentions that pit filling will be augmented by other groundwater/surface water sources, but no details regarding these sources are provided. The requested information will also be required in complete detail during the provincial permitting phase when applying for required PTTWs.
					Information Request / Comment: A. Discuss the source of groundwater to be used for enhanced flooding of the pit and any associated effects and required mitigation measures related to groundwater quality and quantity.
					Revised Response: Since the submission of the original EIS, Treasury Metals has been enhancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions presented in the EIS. To capture these changes, and to reflect changes suggested by the responses to the Round 1 information requests, Treasury Metals has revised their water predictions and provided the results in the Water Report, which has been appended to the revised EIS as Appendix JJ. The results of the revised water analyses have been included in the revised EIS. At the end of operations, dewatering activities will cease and the open pit will be allowed to fill with water. The estimated pit flooding time, based on the average meteorological conditions for the area, will 6.7 years after completion of mining, with actual filling ranging between 6 to 8 years, depending on the actual meteorological conditions that are encountered. The following three sources of water will be relied on for filling the open pit: • Supernatant water from the TSF: At the end of operations, the supernatant water present in the TSF will be withdrawn, treated, and used to help fill the open pit. This represents a one-time transfer of 970,000 m^3 of water in year one of closure. • Groundwater: Once the dewatering activities stop, groundwater will flow into the open pit. Inflow rates at the start of dewatering will be highest, and gradually decrease as the groundwater levels return to near pre-disturbance levels. Once the open pit is fully flooded, the groundwater inflow rates were calculated to be 100 m^3/day. On average, the groundwater inflow during the filling of the open pit would be 700 m^3/day, which includes the relatively small volumes of seepage from the TSF and WRSA.

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					• Surface runoff: During closure the operations area will be graded to direct all runoff towards the open pit. The rate of runoff from the site would vary depending on the actual meteorological conditions experienced. Surface catchment inflows were calculated assuming post-closure TSF dry cover hydrology that was adjusted in years 1 and 2 after end of mining for the uncovered WRSA and assumptions regarding run-off within the in-pit catchment. No other sources of water would be relied on to fill the open pit. No water takings will be required, or used to aid in the filling of the open pit, and there was no need identified for the mitigation of groundwater or surface water quantities following closure. The revised EIS specifically uses "pit lake water quality" as a valued component for the geology and geochemistry component. The effects of the Project on pit lake water quality were described in Section 6.3 of the revised EIS, and relies on the geochemical modelling described in detail in Section 5 of the Water Report (Appendix JJ to the revised EIS). As described in Section 5.4.3 of the Water report (appendix JJ to the revised EIS), it is projected that ML/ARD rich waters could develop in the open pit during flooding in the initial post-closure period. The modelling identifies that the in-pit waste rock is the dominant load source for sulphate and elevated metals (aluminum, cadmium, cobalt, iron, lead, nickel, zinc) to the open pit. Additionally, the uncovered WRSA contributes the bulk of the remaining load for sulphate and the aforementioned metals. Section 6.3.5 of the revised EIS describes the following mitigation measures (identified with a unique reference number in brackets) that will be implemented to manage the geochemical effects of the Project, and ultimately the water quality in the open pit: • Waste rock will be evaluated and segregated between PAG and NAG rock, if feasible [Mit_019] • The PAG waste rock would be placed in the mined out areas of the open pit, to the extent practical. [Mit_020] • During operations, tailings will be maintained in saturated conditions, and a water cover will be maintained over the majority of the TSF to prevent the onset of acidification. [Mit_021] • The WRSA will be capped with a low permeability cover, then a layer of overburden, then vegetated during closure. [Mit_018] • The open pit will be allowed to flood at closure [Mit_022]. • Tailings within the TSF will be isolated using either a low permeability dry cover, or a wet cover of non-process water. The preferred option for limiting environmental effects is a wet cover. [Mit_023].

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					• The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek. [Mit_024]. • Once the pit lake is fully flooded, it is expected that the monitoring of the water quality in the pit lake will continue for a period of time to determine whether additional batch treatment may be required to ensure the water released from the pit lake meets effluent release limits. [Mit_124].
87	SW(1)-01	CEA Agency	EIS Sections 3.5.1-3.5.3, 3.8.4, 3.8.8	Section 9.1.2	**Summary of Comment / Rationale:** In sections 3.5.1 to 3.5.3 (EIS), the proponent has indicated that ditching and seepage collection will be installed around the edges of the mine rock, overburden, low grade ore and other stockpiles. However, no design details are provided. It is not clear how deep the ditches will be, and whether or not they will be dug to bedrock. This information is important in order to understand the effectiveness of the collection system, especially with respect to seepage. Section 3.8.8 (EIS) states that surface water runoff (SWR) from site (rain) is not expected to require treatment. Limited information is given regarding how SWR will be diverted from the site. If SWR were to combine with seepage then it would likely require treatment. Ditches and SWR are not shown in Figure 3.8.4 (EIS, page 3-54) as referenced in section 3.8.8 (EIS). In addition, the proponent has not indicated to where this surface water runoff will discharge. It is important to know whether this SWR will also be discharged to Blackwater Creek and where with respect to the other final discharge point as it could have both an individual and a combined impact on Blackwater Creek. Further information is also required to determine whether this point of discharge will be considered as another final discharge point under the MMER. The proponent states in 3.8.4 (EIS) that “freshwater may also be required for truck wash facilities within the maintenance facilities and dust control during summer open pit operations. This water used for these purposes is anticipated to be sourced from any supplemental mine water runoff that does not require further treatment for use.” If this is the case, it is unclear how the water will be segregated and its suitability for these purposes will be determined. The proponent should provide a figure showing all ditches to be installed on the project site in order to ensure that mine contact water will be collected for treatment and that surface drainage will be diverted to avoid contamination.
					Information Request / Comment: A. Confirm whether there is one drainage ditch to collect both surface water runoff and seepage or two separate ditches. If runoff and seepage are combining in a shared ditch, provide methodology

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					and rationale for determining whether treatment is needed. Describe the contingency measures to be put in place in cases where water quality exceeds the standards. B. Provide a figure showing all drainage ditches (runoff and seepage collection) to be installed on the project site. C. Provide a description of these drainage and seepage collection ditches, including but not limited to, their design capacity and where the water and/or effluent collected by each of the drainage and seepage collection ditches will be deposited. D. Confirm to where the surface water runoff will be discharged. E. Provide methodology for determining that mine water is suitable for additional purposes such as washing trucks and dust control or general discharge into the environment.
					Response: Section 5.6 of the revised EISthe revised EIS describes the components of the runoff and seepage collection system that will surround the operations area (as defined in the Metal Mining Effluent Regulationsrevised EIS) and water management. A. One perimeter ditch will be constructed around the operations area (as defined revised EISSection 6.6.2 of the revised EIS and as defined in Metal Mining Effluent Regulations) to collect both surface water runoff and seepage from the entire operations area. Water that is not required for use in the mining or milling process will be treated and discharged via a single effluent discharge point to Blackwater Creek in accordance with Metal Mining Effluent Regulations, provincial regulations and provincial approvals. B. Refer to Figure 3.0-1A of the revised EISrevised EIS and the figures included therein. C. Refer to Section 3.8 of the revised EISrevised EIS and the figures included therein. D. All surface runoff from the operations area will be contained, as described above in A, and there will be no discharge of surface runoff. Water that is contained in the operations area that is not required for process will be treated and discharged via a single effluent discharge point as described in A. E. Mine water will be used for dust suppression at the operations area, where runoff and seepage are contained, and as a substitute for the tailings storage facility (TSF) water during periods of low water. These uses do not require clean water with low suspended solids or low dissolved solids. During periods of low water when fresh water is not available from the fresh water pumphouses on Thunder Lake Tributary 2 and Thunder Lake Tributary 3 (refer to Section 3.8.3 and 3.8.4 of the revised EISrevised EIS), mine water could be treated in the effluent treatment plant (filtration and/or treatment in reverse osmosis) so that it could be used in the process plant as a substitute for fresh water. Similar utilization of water that is collected in the perimeter runoff and seepage collection ditches is planned, as described in Section 3.8 of the revised EIS.

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88	SW(1)-02	CEA Agency	EIS Section 4.3.2.2	Section 9.1.2	**Summary of Comment / Rationale:** Section 4.3.2.2 (EIS) indicates: "The ditches will be lined to ensure that seepage is contained within the ditch and that erosion damage does not occur. " The proponent needs to explain what will be used to line the ditches and whether all ditches on the project site will be lined.
					Information Request / Comment: A. Describe how the perimeter seepage collection ditches for the tailings storage facility will be lined and indicate whether all ditches on the project site will be lined.
					Response: Section 3.8 of the revised EISrevised EIS describes the components of the runoff and seepage collection system that will surround the operations area (as defined in the Metal Mining Effluent Regulations and the revised EIS).
89	SW(1)-03	CEA Agency	EIS Figures 3.8.3, 3.8.4	Section 9.1.2	**Summary of Comment / Rationale:** Figure 3.8.3 (EIS, page 3-49) shows the leachate and runoff from the waste rock pile collection pond discharging into the low grade ore stockpile collection pond for leachate and runoff. However, in Figure 3.8.4 (EIS, page 3-54), there is no connection between the water output from the waste rock storage collection pond and the low grade stockpile collection pond. A good understanding of how mine water is conveyed between the different water management structures is essential to ensure that mine water is being treated and has no significant impact to water quality.
					Information Request / Comment: A. Confirm and describe how leachate and runoff is conveyed from the waste rock pile collection pond and the low grade ore stockpile collection pond and provide figures to further describe mine water conveyance.
					Response: Section 3.8 of the revised EIS describes water management. A perimeter runoff and seepage collection system that surrounds the entire operations area (as defined in the revised EIS and in accordance with the Metal Mining Effluent Regulations) will prevent discharge to the environment. Any surplus water within the operations area containment structures (runoff collection ponds, minewater pond, tailings storage facility (TSF)) will be treated and discharged to Blackwater Creek in accordance with the Metal Mining Effluent Regulations, provincial legislation and provincial approvals. This will be the only effluent discharge for the operational phase of the Project.
90	SW(1)-04	CEA Agency		Section 9.1.2	**Summary of Comment / Rationale:**

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			Appendix F Sections 2.1.6, 4.1.1		Section 4.1.1 (Appendix F) states: “Based on geochemistry test work, it is assumed that all runoff water from the Goliath site will potentially be acidic and contain at least trace amounts of dissolved metals.” However, section 2.1.6 (Appendix F) indicates: “Surface water runoff from the processing plant site is not expected to require treatment. In the future, provision could be made for containment and pumping of the contaminated surface water to the tailings storage facility using a portable pump. By design, plant site surface water will drain into the surrounding terrain and ultimately to Blackwater Creek.” The two sections appear to contradict each other. An explanation is required from the proponent as to why surface water runoff from the processing plant site does not need to be collected and treated.
					<u>Information Request / Comment:</u> A. Explain the predicted quality of surface water runoff from the processing plant site with a rationale as to why it will not require collection and treatment. B. Indicate how this surface water runoff will be monitored to determine if it can be released into the receiving environment. C. Describe the contingency measures, should surface water runoff not meet water quality standards.
					<u>Response:</u> A. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining of the water balance for the site, including the collection and treatment of site surface water runoff. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ. The updated water balance, including discussions regarding collection of various site waters, is provided in Section 2 of the Water Report. As per the refined water balance, all surface water runoff within the Project boundary will be collected and ultimately treated prior to discharge to the environment (Blackwater Creek). This includes surface water runoff from within the processing plant site boundary area. B. All surface water runoff from the operations area of the Project site will be collected and directed to the effluent treatment plant prior to being discharge to the environment (i.e., Blackwater Creek). Treasury Metals remains committed to ensuring that all water discharged to Blackwater Creek during the operations phase meets Provincial Water Quality Objectives (PWQO). As part of the revised EIS, Treasury Metals described the water quality monitoring proposed to support the environmental management plan for the Project (Section 12.3), as well as the proposed

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					environmental monitoring for surface water quality (Section 13.8 of the revised EIS). Treasury Metals expects the details of these monitoring plans will be developed and finalized as part of the regulatory permitting process for the Project. Treasury Metals also expects to engage input and feedback from regulators, Aboriginal peoples and interested stakeholders in the development of the final environmental management plans. Further monitoring and management details associated with surface water can be found in Section 12 and Section 13 of the revised EIS. C. Treasury Metals remains committed to collect all surface water runoff from within the Project boundary. This collected runoff will ultimately be treated prior to discharge to Blackwater Creek. The water discharged to Blackwater Creek during operations will meet PWQO, or the Canadian Council of Ministers of the Environment (CCME) limits when PWQO are not available for a parameter.
91	SW(1)-05	CEA Agency	Appendix M Section 5.3.5	Section 9.1.2	**Summary of Comment / Rationale:** Seepage has been predicted from the tailings management area and the waste rock storage area in Section 5.3.5 (Appendix M). However, it appears that seepage has not been predicted for the overburden stockpile and the low grade ore stockpile.
					Information Request / Comment: A. Confirm whether seepage has or has not been predicted for the overburden and low grade ore stockpiles. If seepage has not been predicted from these stockpiles, provide an explanation as to how this conclusion was drawn. If it has been predicted, describe the potential effects and mitigation measures that would be applied.
					Response: The overburden stockpile and low-grade ore (LGO) stockpile are both adjacent to the proposed Goliath open pit and lie well within the drawdown cone of the pit. Some limited vertical seepage to groundwater is likely to occur in areas where the stockpiles are situated directly on bedrock. This seepage will be captured by dewatering of the open pit, which will provide full hydraulic containment during operation and prior to full water level recovery in the open pit when mining has ceased. As both stockpiles will be removed on cessation of mining, seepage from these stockpiles is not a consideration when the mine is closed and the water level in the open pit has fully recovered.
92	SW(1)-06	CEA Agency	Appendix M	Sections 9.1.2, 10.1.2	**Summary of Comment / Rationale:** The proponent has estimated seepage volumes, but has not determined the potential effects of seepage upon the surface water quality of nearby waterbodies. Such an assessment should

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					consider the estimated seepage volumes that will report to surface waters and the concentrations of contaminants of concern it is predicted to contain over time.
					Information Request / Comment: A. Assess the potential effects of seepage upon surface water quality during operations and through the abandonment phase.
					Revised Response: The revised EIS explicitly evaluated the potential effects of seepage from the Project on surface water quality of nearby waterbodies. This evaluation was presented as part of the description of Project effects on surface water quality presented in Section 6.8 of the revised EIS. The effects of seepage on surface water quality was incorporated in the updated water quality model described in Section 6.8.2 of the revised EIS, and in Section 6 of the Water Report (Appendix JJ to the revised EIS). The potential effects of seepage from the Project on surface water quality will vary during the Project life, depending on the Project phase, as described below.. Site Preparation and Construction Phase There will be no specific mining activities during the site preparation and construction phase, and therefore there would be no seepage generated likely to affect surface water quality of nearby waterbodies. Operations Phase During operations, only a limited quantity of seepage is expected from the various onsite structures (i.e., tailings storage facility (TSF), waste rock storage area (WRSA) and low-grade ore (LGO) stockpile). This seepage resulting from the onsite structures will be controlled by seepage collection systems, with the collected seepage being transferred to the overall water management systems. Seepage resulting from the toe of the TSF dam will be captured via a collection ditch and pond and returned to the tailings pond on the TSF surface. Any seepage during operations that escapes the various seepage collection systems will be captured within the drawdown zone (refer to IR Response TMI_66-GW(1)-03 for further details) caused by mine dewatering, and will ultimately report to the open pit. From the open pit, the seepage water will be captured as part of the dewatering activities and transferred to the water management system whereby it will be used in the process plant or treated prior to discharge. Closure Phase Following the end of mining operations, the dewatering activities will cease and the open pit will be allowed to fill with water. However, the drawdown zone caused by mine dewatering will remain into the post-closure phase, when the groundwater will gradually return to near pre-development levels.

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					Seepage from the remaining onsite structures (i.e., TSF and WRSA) will continue to be controlled by seepage collection systems, with any seepage that escapes the various seepage collection systems being captured by the drawdown zone caused during operations by mine dewatering, and will ultimately report to the open pit. There will be no releases from the open pit during the closure phase. The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek [Mit_024]. Post-closure Phase Once the open pit is fully flooded and the groundwater returns to near pre-development levels, seepage from the remaining onsite structures (i.e., TSF and WRSA) will escape from the site, ultimately reaching nearby waterbodies. Table 6.8.2.6-2 of the revised EIS lists the volumes of seepage from the remaining onsite structures (i.e., TSF and WRSA) that were included in the updated water quality model used to evaluate the post-closure surface water quality in nearby waterbodies. The predicted adverse effects of the Project on the post-closure water quality in nearby watercourses, which includes the effects of seepage the remaining onsite structures (i.e., TSF and WRSA), is provided in Section 6.8.5.4 of the revised EIS, and the results summarized in the following tables: • Table 6.8.5.4-1: Adverse Effects for Surface Water Quality Effects during Post-closure (TSF dry cover) • Table 6.8.5.4-2: Adverse Effects for Surface Water Quality Effects during Post-closure (TSF wet cover)
93	SW(1)-07	CEA Agency	EIS Section 2.3.2	Section 9.1.2	**Summary of Comment / Rationale:** Section 2.3.2 (EIS) indicates that residual hydrocarbons will be removed in sumps. The proponent has not explained how this would be achieved in the sumps. If not removed, residual hydrocarbons have the potential to lead to adverse effects on water quality and ultimately fish and fish habitat.
					Information Request / Comment: A. Explain how residual hydrocarbons will be removed in sumps (in pit or underground).
					Response: The description of the mine water management systems for the Project is described Section 3.8 of the revised EIS. Sumps will be used in the open pit and underground mine workings to help collect the mine water, and facilitate its removal from the mine to the water management system. To the extent possible, water collected from the open pit and underground mine will be used in the process, and discharged with the tailings to the tailings storage facility (TSF). Ultimately, all of the water collected at the site will be treated in the effluent treatment plant before being discharged to Blackwater Creek. Treasury Metals has committed (Table 10.0.1) that the effluent from the Project

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					during operations will meet Provincial Water Quality Objectives (PWQO), or the Canadian Council of Ministers of the Environment (CCME) limits if no PWQO exist for a compound. While there was mention of "…sumps (in pit or underground) to remove bulk suspended solids and residual hydrocarbons" in introductory text in Section 2.3.2 (alternatives assessment for mine water management), Treasury Metals is not relying on sumps to provide treatment for residual hydrocarbons present in the open pit and underground mine.
94	SW(1)-08	CEA Agency	EIS Section 3.3.2	Section 9.1.2	**Summary of Comment / Rationale:** Section 3.3.2 (EIS) indicates that surface water runoff will be prevented from entering the open pit by means of a small berm or ditch and that the water will be collected to form part of the recycled water used for processing in the plant facility. This small berm or ditch is not shown in any of the figures and the proponent does not indicate where this water will be collected.
					Information Request / Comment: A. Provide a figure showing the small berm or ditch around the open pit and indicate where the surface water runoff will be collected.
					Response: Please refer to Figure 3.0-1A of the revised EIS for locations and facilities regarding ditching and water infrastructure.
95	SW(1)-09	CEA Agency	Appendix F Sections 1.3, 2.0, 2.3 EIS Section 3.8.5	Section 9.1	**Summary of Comment / Rationale:** The proponent has conducted a revised site water balance to accompany the revised EIS (Appendix F). The preliminary assessment indicates a positive water balance, where excess water is anticipated for average years and that excess water will be continually treated via an effluent treatment plant. The proponent also states that a further study that considers seasonal variations and storm event variations will be required in subsequent stages of the Project. Effluent discharges are expected to vary throughout the year, with the highest discharge occurring during spring thaw. Extremely wet or dry year scenarios resulting from climate variability are not considered in the calculations. Considerations of extreme climate conditions are important to assess infrastructure requirements and consideration of mitigation measures in case of extreme excess or shortage of water during mine operations. The proponent should comment on measures that would be considered if, during a dry period, there is not enough water cover over the tailings to minimize acid generation of the tailings solids. On the other hand, the maximum operating level of the tailings storage facility (TSF) is said to be set to contain runoff from average and wet precipitation conditions. An additional containment storage volume will be provided based on the Environmental Design Storm (1000-yr event). The ability to remove excess water in a timely manner to maintain the maximum operational level and

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					to maintain the 1000-yr storage above seems to be governed by the effluent treatment plant capacity. Should wet conditions prevail during mine operation, it is unclear whether there is any ability to increase the effluent treatment rate to prevent excess water from accumulating in the TSF. Evaluation of wet year precipitation conditions and consideration of seasonal variation are critical to the preliminary design.
					Information Request / Comment: A. Elaborate on the adequacy of the TSF sizing, effluent treatment rate selected, and possible mitigation measures in consideration of natural variation in weather conditions, including seasonal variations.
					Response: The tailings storage facility (TSF) has been adequately sized to contain tailings solids, as well as operational and stormwater. Available capacity of the TSF is based on the natural ground contour information and the selected embankment alignments. The contour information for the site was enhanced in 2016 with the completion of a site LIDAR survey, which will be used to generate more accurate topography that will be utilized as the design is advanced to the detailed level. Storage of tailings solids is based on the life of mine tonnage throughput and tailings solids in situ density that has been assigned as 1.1 t/m^3 at this stage of the Project based on technical literature and experience with similar projects. Confirmation of the tailings solids in situ density is more accurately determined as the Project is advanced using laboratory testing. An allowance for the tailings beach slope was also included in establishing the required height of the perimeter embankments of the TSF. Containment is also provided for operational water that includes the planned water cover. The peak water levels are identified as an output from the completion of a water/solids balance that includes assessments for the average, dry and wet annual precipitation. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ.. An updated water balance is provided in Section 2 of the Water Report. Section 2 of the Water report describes the expected variability in discharges from the Project within each year and from year to year. The required treatment rate is based on the expected water to be handled at the site. As described in the Section 3 of the revised EIS, and Section 2 of the Water Report, the Project will be designed such that it has the ability to store a portion of the water collected within the site to manage variations in water. The planned treatment system is designed to be modular and expandable in a stepwise

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					manner and additional units can be added to ensure the system has the capacity to treat the total volume of water that will be generated. Additional allowances have been provided to containment of the environmental design storm above the peak operating water level along with sufficient freeboard to ensure that water does not overtop the dam during the occurrence of the Inflow Design Flood if the spillway becomes active. Treasury is planning on incorporating a mine dewatering pond as part of the surface water management for the site. The mine dewatering pond will be used to supplement water for the cover during periods of low annual precipitation.
96	SW(1)-10	CEA Agency	EIS Section 3.5.3	Section 9.1.2	**Summary of Comment / Rationale:** Section 3.5.3 (EIS) indicates that there may be several smaller runs of mine piles of varying grade in the general area of the low–grade stockpile. The proponent has not indicated whether these piles will be within the ditching and seepage collection of the low grade stockpile. If these runs of mine piles are not within the ditching and seepage collection of the low grade stockpile, surface water runoff may be contaminated and could impact water quality.
					Information Request / Comment: A. Confirm whether the smaller runs of mine stockpiles are within the ditching and seepage collection area of the low grade stockpile. B. Describe how surface water runoff will be collected, seepage will be controlled and provide mitigation measures for the additional stockpiles if they are not located within previously described ditching and seepage collection areas.
					Response: A. The smaller run of mine stock piles will be located directly adjacent to the crushing facilities and will be wholly within the overall ditching and seepage collection plan for the general operations, as required by the Metal Mining Effluent Regulations (MMER) and the Ministry of the Environment and Climate Change (MOECC) requirements. Since the filing of the EIS, Treasury Metals has been advancing the engineering design of the Project. The revised EIS (Section 3) contains additional details on the water collection systems. B. Refer to the response provided in Part A.
97	SW(1)-11	CEA Agency	EIS Sections 3.6.2, 3.6.4	Section 9.1.2	**Summary of Comment / Rationale:** Section 3.6.2 (EIS) and section 3.6.4 (EIS) mention an emergency stockpile but no further information is provided about this stockpile.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Information Request / Comment: A. Clarify the purpose of this emergency stockpile, its location, size, potential to leach contaminants of concern and any measures that would be implemented to collect and contain effluent (seepage and runoff) so its flow and quality can be measured via a final discharge point prior to its release to the receiving environment. B. Provide the location of the final discharge point for the emergency stockpile and describe potential impacts on the environment resulting from discharge.
					Response: Treasury Metals may elect to use a small stockpile for providing rock feed to the crusher to ensure consistent feed to the mill in the event of a temporary stop in feed coming from the mine production. The location of this stockpile will be wholly within the footprint of the operations area and the associated runoff/seepage collection system. As such, this stockpile will not create an additional area where seepage and runoff collection is required. The operations area is described in more detail within Section 3 of the revised EIS.
98	SW(1)-12	CEA Agency	EIS Figure 3.8.2 Appendix F Figure 2-2	Section 9.1.2	**Summary of Comment / Rationale:** The direct pond precipitation values in Figure 3.8.2 (EIS, page 3-47) are different from the net precipitation value presented in Figure 2-2 (Appendix F, page 10).
					Information Request / Comment: A. Clarify the difference between the direct pond precipitation values in Figure 3.8.2 (EIS, page 3-47) and the net precipitation value presented in Figure 2-2 (Appendix F, page 10).
					Response: The direct pond precipitation value presented on Figure 3.8.2 of the original EIS is the annual volume in cubic metres (m^3) and does not include evaporation, which is shown as being unknown on this figure. In contrast, Figure 2-2 of Appendix F to the original EIS presents the daily net precipitation (less evaporation) in units of tons per day. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ.. The direct precipitation and net precipitation used in the revised evaluation and the refined water balance are captured within Section 2 of this report.

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99	SW(1)-13	CEA Agency	EIS Table 3.8.3	Section 9.1.2	**Summary of Comment / Rationale:** Table 3.8.3 (EIS, page 3-50) shows the predicted tailings supernatant concentration for Ammonia (as N) with an asterisk, which means "Assumed Values". The proponent should explain what is meant by assumed values. Furthermore, there is a second note with two asterisks, which means "At least one value used in determination was based on limit of detection". The proponent should explain what is meant by this note and to which parameter(s) this note refers.
					Information Request / Comment: A. Explain what is meant by "Assumed Values" for Ammonia (as N) in Table 3.8.3. B. Explain what is meant by "At least one value used in determination was based on limit of detection" in Table 3.8.3 and indicate which parameter(s) are referred to in the statement.
					Response: A. Ammonia measurements were not available in the ICP solution test results. The 6 mg/L value used is a common SO2/air cyanide destruction target value and was the assumption for the Project. B. The phrase "at least one value used in determination was based on limit of detection" was used to indicate that the limit of detection was used as the concentration of the component for the purposes of calculating averages where component concentrations were reported as being below the limits of detection. For example, the lab reports the Vanadium concentration as <0.1 ppm, however, we do not know what the exact value is. The actual concentration of Vanadium could range from 0 to 0.0999 ppm. Therefore, the worst case was assumed and the limit of detection concentration was used, which in this example would be 0.1 ppm. In Appendix F of the original EIS, Table 4.1 presents leach solution assays. In this table a number of assay results are reported with a "<" symbol in front of them. This symbol indicates that the actual assay result is below the limit of detection. Hence, Be (Beryllium) is reported as <0.1 in the first column (Whole Ore Leach). This indicates that the actual Beryllium assay was less than 0.1 mg/L. In this instance, the water quality calculations would have assumed the worst case and used 0.1 mg/L as the Beryllium concentration. Where multiple results were averaged, one result may have been a limit of detection assumption while the others may have been actual values hence the phrase "at least one value used in determination was based on limit of detection".
100	SW(1)-14	CEA Agency	EIS Table 3.8.3 Appendix F	Section 9.1.2	**Summary of Comment / Rationale:** Table 3.8.3 (EIS, page 3-50) is identical to Table 4.3 (Appendix F, page 24). Section 4.4 (Appendix F) explains that a PHREEQCI model was used to predict preliminary and conservative concentrations for contaminants in the tailings storage facility (TSF) solution and the model is

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Sections 4.4, 4.5, Table 4.3		based on previously discussed yearly average water balance and geochemical test work performed by Ecometrix. It further states: “Neither cyanide destruction nor tailings attenuation test work have been performed to date and therefore assumptions have been made based on industry standards”. The proponent should indicate what industry standards have been used to make the assumptions. In the MEND Report 3.50.1 - Study to Identify BATEA for the Management and Control of Effluent Quality from Mines, page 323 identifies some challenges associated with the INCO SO2/Air process. In particular, it notes that: - Addition of copper catalyst may cause non-compliance with copper limit if not adequately precipitated and separated from effluent; - Generation of sulfate may be undesirable, depending on downstream processes or receiving bodies; and - Generation of ammonia may cause non-compliance with potential future ammonia limit as well as toxicity issues if not managed. The proponent should indicate whether the increase in copper, sulfate and ammonia into the predicted tailings supernatant concentrations was factored in the data in Table 3.8.3.
					Information Request / Comment: A. Identify the industry standards which have been used to make the assumptions about cyanide destruction and tailings attenuation. B. Explain whether the increase in copper, sulfate and ammonia from the INCO SO2/Air process has been factored into the predicted tailings supernatant concentrations in Table 3.8.3 (EIS). If they have not, justify this decision.
					Response: A. The detoxification circuit discharge solution concentrations as input into in the preliminary PHREEQCI model used to determine the tailings solution chemistry were based on industry standards. As detoxification test work was not performed prior to the development of the PHREEQCI model, results presented in literature were benchmarked against two comparable free milling gold circuits that Lycopodium was currently supervising test work for, in order to determine the solution concentrations of the detoxification discharge. The following two papers were used to determine “standard” detoxification removal factors:

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					- Devuyst, E.A., B.R. Conrad, and G. Robbins. 1988. Commercial performance of Inco's SO2-air cyanide removal process. Pages 87-88 in Proceedings Randol Gold Conference. Golden, CO: Randol International Ltd. - Devuyst, E.A., B.R. Conrad, G. Robbins, and R. Vergunst. 1989. INCO SO2-Air Cyanide Removal Process Update. Pages 353-356 in Proceedings World Gold '89. Based on these results, the detox removal factors calculated were applied to the adjusted solution assays measured in the Goliath leach test work as presented in Table 4.1 Appendix F. Example removal factors used include: Zn 99%, Co and Ni 78%, and Cu 98%. B. While typical SO2/Air removal factors were assumed, additional copper added as catalyst was not included in the predicted tailings supernatant calculations. Nor were sulphate and ammonia increased. The detoxification removal factors were applied to the baseline or naturally occurring concentrations in the leach solution and presented in Table 4.1 appendix F. However, the value of 6 mg/L ammonia (presented in Table 3.8.3 original EIS) was assumed based on the typical SO2/Air detoxification circuit discharge target concentration.
101	SW(1)-15	CEA Agency	EIS Section 5.8.1, Table 5.8.2	Section 9.1.2	**Summary of Comment / Rationale:** Table 5.8.2 (EIS, page 5-58) shows total suspended solids (TSS) as one of the conventional parameters that were measured in 2010/2011 and 2012/2013. However, the 3rd paragraph of section 5.8.1 (EIS) indicates that total dissolved solids (TDS) were measured. The proponent should clarify whether TSS or TDS was measured.
					Information Request / Comment: A. Clarify whether TSS, TDS or both parameters were measured in 2010/2011 and 2012/2013.
					Response: TSS was the parameter measured within the 2010/2011 and 2012/2013 surface water quality program.
102	SW(1)-16	CEA Agency	EIS Table 6.4.2	10.1.2	**Summary of Comment / Rationale:** Table 6.4.2 (EIS) under the potential effects states: "Increased flows in Blackwater Creek in years 1 -3 due to increases in the runoff coefficient of developed areas and discharge from the secondary treatment plant, including mine dewatering and process water" and under the column labeled magnitude it states "No surface water quantity effects in receiving waters anticipated as flow changes are within natural variation and channel capacity"

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					This information is not consistent as the plant is estimated to discharge 1900-1400 m³/d over and above the natural flow, which is outside of the natural variation.
					Information Request / Comment: A. Quantify the base flow requirements in Blackwater Creek. B. Describe the methods used and provide the results of hydrologic modelling to determine effects to Blackwater Creek as a result of variable flow rates throughout all project phases. C. Clarify whether Blackwater Creek will have to handle more water than it currently does. If so, describe the possible impacts (i.e. erosion of the stream banks and sediment running downstream) and indicate how these impacts will be mitigated. D. Provide a description of the proposed monitoring plan for Blackwater Creek, including monitoring parameters, methods, sampling locations, applicable standards, duration and frequencies. These plans should clearly outline action levels that may trigger certain mitigations.
					Revised Response: A. As detailed in Appendix M of the revised EIS, Blackwater Creek has very little base flow. Blackwater Creek lies predominantly on fine-grained glaciolacustrine sediments and the lack of base flow in 2011 indicates there are no significant aquifers discharging to Blackwater Creek. B. The effects to Blackwater Creek as a result of the development and subsequent closure of the Project site were assessed in Appendix O (Hydrologic Modelling Study, which has been replaced by the Water Report (Appendix JJ) in the revised EIS. Since the submission of the original EIS, Treasury Metals have been refining the engineering of the Project, including the water balance for the Project. The refined estimated effects of the Project on surface water flows have been presented in Section 4 of the Water Report (Appendix JJ to the revised EIS). The revised evaluation considers expected variations, by month, of withdrawals and discharges identified in an updated water balance for the Project that was included as Appendix JJ to the revised EIS. C. The results of the hydrologic model presented in Appendix O of the EIS indicated that the average annual flow in Blackwater Creek will increase during both the operations phase and post-closure phase of the Project. This hydrologic model has been replaced by the hydrologic model presented in Appendix JJ of the revised EIS. As discussed in Part B to this response, the engineering and associated water balance for the Project has been refined since the submission of the original EIS. These refinements will alter the predictions of changes to surface water flows in Blackwater Creek from those presented in the original EIS. The refined estimates have been

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					presented in Section 4 of the Water Report (Appendix JJ to the revised EIS). During operations, annual flow in Blackwater Creek are expected to change between -2.2% and +1.8%, depending on the climatic conditions. Flows during post-closure are estimated to change between +11.1% and +26.1%, depending on the climatic conditions. These estimated changes in flow are well within the capability of Blackwater Creek to carry the flow and no enhanced erosion is expected at these estimated flows. The effect associated with the new surface water quantity modelling has been presented in Section 6.0 of the revised EIS. D. As stated in Part C in this response, flows in Blackwater Creek during operations are expected to change between -2.2% and +1.8% relative to current conditions, and between +11.1% and +26.1% during the post-closure phase, depending on the climatic conditions. These estimated changes in flow are well within the capacity of Blackwater Creek to carry the flow and no enhanced erosion is expected at these estimated flows. An expanded discussion of the monitoring to support the revised surface water quantity predictions has also been presented in the Section 13.9 of the revised EIS. As there are no applicable regulatory standard for changes in flow to a watercourse, no regulatory standards have been provided in Section 13.9 of the revised EIS. That stated, Treasury Metals will monitor both the stream flows in Blackwater Creek (to ensure the potential for enhanced erosion does not occur), as well as the TSS to ensure that enhanced erosion is not occurring. This monitoring would occur both upstream of the Project and downstream of effluent discharge point to allow in order to distinguish between background conditions and the effects of the Project. In the event that monitoring identifies enhanced erosion (e.g., TSS levels downstream of the effluent discharge are statistically higher than the upstream readings) Treasury Metals would implement mitigation measures that could include: • reducing the rate of discharge (the Project has the capability of managing water onsite and temporarily reducing its discharge rate); • modifying the discharge structure to reduce the potential for erosion; and • fortifying the channel downstream of the discharge location to enhance the resistance to erosion. In the event the flow monitoring identifies conditions that are likely to result in enhanced erosion (e.g., downstream flows that are more than 30% higher than upstream flows or upstream flows that are at 90% of the stream capacity) Treasury Metals would implement mitigation measures by reducing the rate of discharge (the Project has the capability of managing water onsite and temporarily reducing its discharge rate) until conditions in Blackwater Creek allow for discharges to return to normal.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
103	SW(1)-17	CEA Agency	EIS Section 6.2.1.8 Appendix C of Appendix F Section 5.5	Section 9.1.2	**Summary of Comment / Rationale:** It is unclear whether the open pit will be filled with treated effluent, surface runoff from the developed areas, water from the dewatering activities in the underground stopes, or a combination of these. Section 6.2.1.8 (EIS) indicates that during the development of the underground mine in years 4 to 12, the treated effluent will be directed to the open pit and total runoff in the Blackwater Creek will be reduced as surface runoff from the developed areas will be collected, treated, and discharged to the pit lake rather than to Blackwater Creek. However, in Appendix C of the Water Management Plan (Appendix F), it is indicated that the water from the dewatering activities in the underground stopes will be used to fill the pit and that the quality of this water is assumed to be the same as pit run-off water. Additional leaching or dissolution from the pit walls is assumed to cease once the pit wall is submersed. Therefore, the water quality within the pit lake is equivalent to the long term water quality of the underground seepage, which is very similar to the long term waste rock storage facility (WRSF) run-off. Without the inclusion of secondary reactions, it follows that the water quality within the pit lake will remain constant over time and after decommissioning, and will be roughly equivalent to the long term water quality of the waste rock run-off. The proponent should provide information on secondary reactions that could occur in the pit lake to alter its water quality, including a discussion of the magnitude, duration, and likelihood of these reactions and their potential to lead to significant adverse effects in the receiving environment downstream of the open pit.
					Information Request / Comment: A. Provide clarification on the method and source of water to be used to fill the open pit. B. Provide information on any secondary reactions that could occur in the pit lake to alter its water quality. Describe the potential for significant adverse effects in the receiving environment downstream of the open pit resulting from secondary reactions and propose mitigation measures to address such effects.
					Response: A. Section 3 of the Water Report (Appendix JJ) of the revised EIS provides details regarding the sources of water to be used in filling the pit. Because of operational and safety reasons, the filling of the pit will not commence until operations are complete. The pit will therefore be filled using a combination of runoff and precipitation, treated water from the tailings storage facility (TSF), and groundwater. During closure, water will be withdrawn from the TSF, treated and then discharged to the pit to aid in filling.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					B. A model of the expected water quality in the open pit, once flooded, was presented in Appendix C of Appendix F to the original EIS. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions presented in the original EIS. To capture these changes, and to reflect changes suggested by responses to the Round 1 IRs, Treasury Metals has prepared a stand-alone Water Report, which has been appended to the revised EIS as Appendix JJ.. An updated water quality model for the pit during the post-closure and abandonment phase is provided in Section 5 of the Water Report.
104	SW(1)-18	CEA Agency	EIS Section 3.8.7, Table 3.8.3	Section 9.1.2	**<u>Summary of Comment / Rationale:</u>** Section 3.8.7 (EIS) identifies reverse osmosis (RO) as the proposed method for treating the mine contact water from the tailings storage facility to achieve provincial water quality objectives (PWQO) values prior to its discharge into Blackwater creek. The Agency is not aware of any current use of RO systems to treat effluent from existing metal mines. The following is a link to a report that was published September 2014 by the Mine Environment Neutral Drainage (MEND) program: http://mend-nedem.org/wp-content/uploads/MEND_3.50.1_BATEA.pdf. A review of RO can be found from pages 363 to 369 which points to a limited amount of full-scale experience with this technology in mine effluent treatment applications and the high capital and operating costs associated with the technology. The proponent must provide examples and evidence of where RO systems have been used to treat effluent to PWQO or better values that has similar characteristics and volumes as predicted for the Project, especially since Table 3.8.3 (EIS, page 3-50) shows several parameters (aluminum, cadmium, copper, iron, mercury, phosphorus, thallium, and zinc) in the predicted tailings supernatant to exceed PWQOs and/or Canadian Water Quality Guidelines (CWQGs). Furthermore, the proponent should: - consider the feasibility of using such a treatment system beyond the intended effluent treatment time if such measures are deemed necessary based on water quality at this time; - explain how treatment would occur and what would be the effectiveness of the measure if this was deemed necessary due to water quality changes 20 years into the abandonment phase; - identify whether it will be necessary to remineralize the purified water before discharging it into the environment; and - describe and provide a quantitative analysis of the need for remineralization and the remineralization process.
					<u>Information Request / Comment:</u>

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					A. Provide examples and evidence of where RO systems have been used to treat effluent to PWQO, CWQG or better values that has similar characteristics and volumes as predicted for the Project. B. Describe the feasibility (economic and practical) of using the RO treatment system and the intended effluent treatment time if such measures are deemed necessary based on monitoring results. C. Describe conditions (e.g. water quality exceedances) that would trigger the need to treat runoff and seepage into the abandonment phase. D. If purified water requires remineralization prior to being discharged into the environment provide quantitative analysis and justification of the remineralization process.
					Response: A and B. Reverse osmosis (RO) treatment systems are commercially available from long established vendors such as GE Water and Veolia and have been used for both short-term and long-term mining applications. Standard simulation modelling to predict effluent quality for given influent quality is available from suppliers, based on previous operating experience of these systems. Capital and operating costs have been compiled as part of the Optimization Study, further details and costs associated with RO treatment will be released publicly as part of the feasibility report prior to construction. Section 3.8 of the revised EIS describes the strategy that will be used to reduce ammonia and TDS in influent, thereby reducing the burden on the RO treatment system. Section 3.8 also describes the recycling of water at the mine site, thereby reducing the annual effluent discharge volume and the associated treatment requirements. The reject water from the RO treatment system will be re-used in the mill process, as described in Section 3.8 of the revised EIS, prior to deposition in the tailings storage facility (TSF). C. Runoff from the Operations Area, which effectively includes all of the mining and processing site, will be diverted to the open pit at closure. This water will be consolidated in the pit with backfill, sources of alkalinity to neutralize potential ARD and treated water from the TSF that meets monthly effluent criteria in Schedule 4 of the Metal Mining Effluent Regulations. Post-closure, water in the TSF supernatant pond would be treated using a mobile effluent treatment system such as Veolia's Aquamove system (http://www.veoliawatertechnologies.ca/en/industrial/aquamove/) to biologically oxidize ammonia via a Moving Bed Biological Reactor ("MBBR") process, precipitate and remove metals using a clarifier and ensure that effluent that is not acutely lethal. This mobile treatment system will replace RO treatment and would not generate a large volume of treatment residuals (i.e. reject brine) that would require disposal. The sludge that is generated from the portable treatment system would be consolidated in a Geotube for dewatering (permeate from the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Geotube would report to open pit) prior to placement in a designated area on the waste rock storage area (WRSA) prior to covering with an engineered low-permeability dry cover in accordance with provincial approvals including a closure plan that is certified in accordance with Ontario Regulation 240/00 (as amended). When the open pit is flooded to the spillway elevation, it will decant to Blackwater Creek via the existing channel, as described in the revised EIS. An enhanced pit water quality model has been provided in Section 5 of the Water Report (Appendix JJ to the revised EIS). This model looks at the quality of water within the pit as it is filling, as well as the long-term water quality expected to discharge from the pit lake well into the post-closure phase. The assessment of the discharges from the pit lake to surface waters, specifically Blackwater Creek is captured in a refined surface water quality model presented in Section 6 of the Water Report. The potential effects of the Project on surface water quality is described in Section 6.0 of the revised EIS. Further to this the revised EIS identifies the mitigation, follow-up monitoring, and management plans associated with surface water quality (Section 12, Section 13). The Project will include a proactive monitoring program and adaptive management plan during the flooding of the open pit will ensure that actions are taken in a timely manner to ensure that pit overflow water quality does not impact the receiving waters. If the pit needs to be drawn down or treated in-situ, a portable treatment system will be used to treat water from the pit, as described in part A. & B. Large diameter, vertical well screen will be installed in the backfilled open pits to facilitate monitoring and pumping if necessary. D. While the RO treatment system is in use for the construction and operational phase of the Project, treated water will contain low total dissolved solids that are below background concentrations in Blackwater Creek and this presents a toxicity risk. To mitigate this risk, treated effluent will be re-mineralized by passing it through a filter canister containing crushed limestone. Based on experience of suppliers such as GE Water, this step typically increases hardness to above 40 mg/L. This detailed design of the re-mineralization step and the target hardness concentration will be subject to provincial approvals including the sewage Environmental Compliance Approval that is issued by the Ministry of the Environment and Climate Change (MOECC).
105	SW(1)-19	CEA Agency	EIS Sections 6.4.1.8, 13.8.1	Sections 6.4, 9.1.2	**<u>Summary of Comment / Rationale:</u>** The description of the effluent discharge is unclear. The proponent states that treated water will initially be discharged into Blackwater Creek during the development of the open pits (years 1 to 3) which will result in slightly higher than natural flows, but that afterward there will be a reduction in Blackwater Creek flow from years 4 to 12 since the water/effluent will be redirected into the pit to accelerate filling. The way it is described it seems that there would be no effluent discharged to the environment after year 3. The proponent needs to clarify this.

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					The proponent should note that if a mine has more than one final discharge point, effluent and water quality monitoring has to be conducted at all final discharge points. Effluent discharged into Blackwater Creek is eventually discharged into a section of Keplyn Bay that is transected by a Canadian Pacific Rail causeway. This section of the bay drains under the causeway via a set of three culverts into the main waterbody of Wabigoon Lake. The proponent should provide evidence that the three culverts are capable of handling effluent discharge volumes in addition to natural flow. If it will be necessary to modify the causeway to provide increased drainage the necessary modifications should be described.
					Information Request / Comment: A. Describe the effluent discharges that are planned throughout the life of the project over time and by project phase. B. Provide predicted effluent chemistry for the point of discharge to Blackwater Creek. This should include, but not be limited to, metals, sulphate and general chemistry parameters. C. Confirm whether treated effluent will only be discharged into Blackwater Creek for 3 years (during the development of the open pits, years 1 to 3) and indicate where the final effluent will be discharging starting in Year 4. D. Provide an effluent water quality monitoring plan that accounts for all final discharge points. E. Provide evidence that the three culverts are capable of handling effluent discharge volumes in addition to natural flow. Describe the necessary modifications, if it will be necessary to modify the causeway to provide increased drainage.
					Response: A. The following describes the water discharges that are planned during the various phases of the Project: • Site preparation and construction phase: Industry standard sediment and erosion control measures will be applied during the initial site development while the water management structures are being constructed. A perimeter runoff and seepage collection system will be constructed early in the site preparation and construction phase. Once constructed, there would be no further discharges to surface water during this phase.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• Operations phase: All site runoff and collected seepage from potentially acid generating (PAG) mining areas (i.e., tailings storage facility (TSF), waste rock storage area, low-grade ore (LGO) stockpile) will be collected and directed to the water management system. Water resulting from the dewatering of the open pit and underground mine workings will also be collected and directed to the water management system. Where feasible, collected water will be used in the extraction process. All excess water not required for use in the process will ultimately be treated in the effluent treatment plant prior to discharging to the receiving environment (Blackwater Creek), which will be a single effluent discharge point location. • Closure phase: During closure, all runoff from the site will be directed towards the open pit to help speed filling. There will be no releases from the site to surface water during closure. • Post-closure phase: During post-closure, all runoff from the operations area will continue to be directed to the open pit. As the pit is filling, Treasury Metals will test the quality of the water to determine whether treatment will be required. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a stand-alone Water Report, which has been appended to the revised EIS as Appendix JJ.. Updated annual discharge flows to the environment are provided in Section 2 of the Water Report. B. The effluent discharge quality during the operations phase were including in Table 3.8.8-1 of the revised EIS. Treasury Metals has committed to ensuring that the discharges from the Project during operations will meet the Provincial Water Quality Objectives (PWQO). C. Refer to the response provided above in (A), which outlines a summary of effluent discharge by Project phase, and which indicates that treated effluent will discharge to Blackwater Creek during the entire operations phase. D. Refer to Section 13.8 of the EIS for an effluent quality monitoring plan. E. Culverts are typically designed to safely convey the peak flow from a given return period event. Expected peak flows to the Canadian Pacific Rail causeway would be significantly larger than the expected effluent discharge rate from the mine. Table 3.6 of Appendix G in the originla EIS provides an estimate of peak flows for various catchment areas for the Project site; the estimated 10 year peak flow at TL3 (located at the lower end of Blackwater Creek) is shown to be 1.7 m^3/s. Note that TL3 is located upstream of TransCanada Highway 17, and that the Canadian Pacific Rail causeway, would be designed to pass an even higher peak flow. The anticipated effluent discharge rate is expected to be

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					approximately 2,057 m^3/day or 0.024 m^3/s (Table 3-6 of Appendix O in the original EIS), which represents a peak flow increase (in relation to TL3) of approximately 1.4% during the 10 year event. The effluent discharge would therefore represent less than 1.4% of the flow at the three culverts under the Canadian Pacific Rail causeway under a 10 year peak flow. Assuming that the causeway has been designed to pass a more severe event (i.e., a 25 year storm), the discharge would represent an even smaller percentage of the peak flow at the causeway, and therefore the three culverts under the Canadian Pacific Rail causeway are expected to be capable of handling the extra effluent volume from the Project site. Although the exact design criteria for the three culverts under the Canadian Pacific Rail causeway is unknown, it is likely in excess of the 10 year storm. Typically, drainage culverts for higher use roads, such as a highway, would be designed to convey the peak flow from a 50 to 100 year event, while culverts for local roads would be designed to convey the peak flow from a 10 to 25 year event (MTO Drainage Manual, 2008). As part of the final engineering design phase, detailed calculations on the capacity of these three culverts and water crossing downstream from the Project site will be evaluated and the findings shared with the relevant agencies.
106	SW(1)-20	CEA Agency	Table 12.4.1	Section 12	**Summary of Comment / Rationale:** The proponent only provides a general statement in regards to the surface water quality monitoring program that they will undertake during pre-development to abandonment. They do not provide any specific parameters or frequency of sampling in the information that has been presented. Water quality monitoring for environmental effects monitoring (EEM) under the MMER is only conducted at an exposure and reference area for each discharge point, thus not all receivers listed would be monitored as part of the MMER. For environmental assessment (EA) purposes, a certain amount of detail should be provided on monitoring programs that form the basis of EA follow-up. While the specifics of monitoring protocols can be developed at a later stage, a robust framework for the follow-up should be described. The ability to monitor for and adaptively manage against adverse water quality impacts before they become significant is a key factor in managing to reduce the potential for significant adverse environmental effects. Given the amount of potentially acid generating material associated with the site and the potential for significant impacts to water quality through acid rock drainage/metal leaching, the ability to detect and manage impacts to water quality is important. The surface water quality monitoring framework should include but not be limited to: the valued components of concern for follow-up on water quality changes, rationale for inclusion of water quality monitoring, potential adaptive management measures to consider if monitoring results indicate or forecast the occurrence of adverse effects, the regulatory instruments that relate to this

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					aspect of the follow-up program and responsibilities for producing, reviewing and making decisions on the information that is produced.
					Information Request / Comment: A. Provide a framework that can be used to develop the water quality aspects of the follow-up monitoring program for the Project.
					Revised Response: The requested water quality monitoring framework is provided in the response to IR TMI_451-AC(1)-125 and duplicated herein for completeness. TMI_451-(AC)-1-125 A map has been provided as Figure 13.8.3-1 of the revised EIS that provides the twelve surface water sampling locations (attached as TMI_106-SW(1)-20_Attachment_1 for reference) . The sampling parameters and frequencies for each location have been provided as part of the surface water quality and quantity follow-up programs follow-up programs in Sections 13.8 and 13.9 of the revised EIS, respectively. Table 1 provides a summary of each sampling location, parameters and sampling frequencies proposed in the surface water quality follow-up program and Table 2 provides a summary of each sampling location, parameters and frequencies proposed in the surface water quantity follow-up program. These locations, parameters and frequencies are subject to later MOECC approval and may change with input from regulatory agencies.

Table 1: Summary of Surface Water Quality Follow-up Programs

Sample Location	Parameter Group	Frequency
SW-TL1A, SW-JCT, SW-2, SW-TL3, SW-4, SW-7, SW-8, SW-9	Group A Group B Group C	Monthly
SW-10, SW-11	Group A Group B	Monthly
SW-5, SW-6	Group A Group B Group C	Annually
Effluent Discharge	Group D	Thrice Weekly

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	Group E	Weekly
	Group B Group F	Monthly

Parameter Listings:

Group A: pH, acidity, alkalinity, dissolved oxygen, chloride, conductivity, dissolved and total organic carbon, hardness, nitrate, nitrite, phosphate, sulphate, temperature (field), total and un-ionized ammonia, total dissolved solids, total suspended solids, turbidity.

Group B: Total ICP metals scan.

Group C: free cyanide, total cyanide, weak acid dissociable cyanide.

Group D: pH, total cyanide, total suspended solids

Group E: copper, lead, nickel, zinc, arsenic

Group F: Acute toxicity testing (Rainbow Trout and *Daphnia magna*)

Table 2: Summary of Surface Water Quantity Follow-up Programs		
Sample Location	Parameter Group	Frequency
SW-JCTa	Flow Rate	Discrete
Discharge from irrigation ponds on Thunder Lake Tributaries 2 and 3	Flow Rate	Continuous when water taking occurs
Volume of Effluent Discharged into Blackwater Creek	Volume	Daily

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
107	SW(1)-21	CEA Agency	Table 12.4.2	Section 12	**Summary of Comment / Rationale:** For the monitoring of total suspended solids (TSS) and turbidity, the proponent only specifies that this will be monitored downstream of active construction areas, however, higher flows are predicted into Blackwater Creek that also have the potential to contribute TSS and increase turbidity in the downstream through the process of erosion. As such, it is recommended that the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					proponent develop plans to monitor, and, if necessary, mitigate for impacts of these higher flows into Blackwater Creek.
					Information Request / Comment: A. Develop a plan to monitor TSS, turbidity, and erosion and if necessary, mitigate against the impact of higher flow rates into Blackwater Creek.
					Revised Response: Four surface water quality monitoring stations are proposed for Blackwater Creek. These include two stations upstream of the effluent discharge location (SW-11 and SW-TL1A) and two downstream stations (SW-JCTa and SW-TL3). Station locations are shown in Figure 13.8.2-1 of the revised EIS (attached as TMI_106-SW(1)-20_Attachment_1 for reference) . As per the response to TMI_451-AC(1)-125 and duplicated herein for completeness, monthly monitoring samples will be collected from these four stations for a variety of parameters, including TSS and turbidity. Relative to erosion potential, expected changes to creek flows are minor and well within the natural variability of the creek flow. There are also several active and historic beaver impoundments along the creek channel that will dissipate flow energy. In addition, the creek is not susceptible to erosion because of its low gradient, and wide (typically 30 to 50 m) well vegetated flood plain. For other creek systems that have higher gradients and narrower floodplains, there is often merit in installing sediment erosion pins downstream of effluent discharges as a means of monitoring erosion at the site, along with maintaining photographic records. The planned discharge location was selected at a location where the creek floodplain expands to greater than 100 m upstream of a large beaver pond (see Figure 3.8.11-1 of the revised EIS, attached as TMI_107-SW(1)-21_Attachment_1) This configuration will naturally dissipate any effluent flow energy. For Blackwater Creek, there are no obvious locations where sediment erosion pins could be installed because of the wide vegetated floodplain, and attempting to install sediment erosion pins or to maintain photographic records would serve no purpose. No mitigation measures are anticipated to be needed under any circumstance to manage erosion, other than to ensuring that flow energy of the discharge pipe is dissipated at the discharge location itself, such as through the use of a rockfill pad or similar functioning device. It should be noted that TSS concentrations will be further mitigated, by the strict effluent quality requirements of Ontario Regulation 560/94 and MMER which stipulate that the monthly average TSS concentration must be less 15 mg/L. TMI_451-(AC)-1-125

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					A map has been provided as Figure 13.8.2-1 of the revised EIS that provides the twelve surface water sampling locations. The sampling parameters and frequencies for each location have been provided as part of the surface water quality and quantity follow-up programs follow-up programs in Sections 13.8 and 13.9 of the revised EIS, respectively. Table 1 provides a summary of each sampling location, parameters and sampling frequencies proposed in the surface water quality follow-up program and Table 2 provides a summary of each sampling location, parameters and frequencies proposed in the surface water quantity follow-up program. These locations, parameters and frequencies are subject to later MOECC approval and may change with input from regulatory agencies.

Table 1: Summary of Surface Water Quality Follow-up Programs

Sample Location	Parameter Group	Frequency
SW-TL1A, SW-JCT, SW-2, SW-TL3, SW-4, SW-7, SW-8, SW-9	Group A Group B Group C	Monthly
SW-10, SW-11	Group A Group B	Monthly
SW-5, SW-6	Group A Group B Group C	Annually
Effluent Discharge	Group D	Thrice Weekly
	Group E	Weekly
	Group B Group F	Monthly

Parameter Listings:

Group A: pH, acidity, alkalinity, dissolved oxygen, chloride, conductivity, dissolved and total organic carbon, hardness, nitrate, nitrite, phosphate, sulphate, temperature (field), total and un-ionized ammonia, total dissolved solids, total suspended solids, turbidity.

Group B: Total ICP metals scan.

Group C: free cyanide, total cyanide, weak acid dissociable cyanide.

Group D: pH, total cyanide, total suspended solids

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Group E: copper, lead, nickel, zinc, arsenic
Group F: Acute toxicity testing (Rainbow Trout and Daphnia magna)
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<tr><th colspan="3">Table 2: Summary of Surface Water Quantity Follow-up Programs</th></tr>
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<tr><td>108</td><td>SW(1)-22</td><td>CEA Agency</td><td>Table 12.4.2</td><td>Section 12</td><td>
<u>Summary of Comment / Rationale:</u>
For water quality monitoring the proponent states that the various method detection limits for parameters will be to Canadian Council of Ministers of the Environment (CCME) standards. Environment Canada’s target method detection limit (during environmental effects monitoring) for the sampling of total mercury in water quality and effluent quality is 0.00001 mg/L (0.01 µg/L), which is lower than that under CCME. Environment Canada recommends that the proponent use a method detection limit of 0.00001 mg/L (0.01 µg/L) for mercury as stated in the comments provided on the proponent’s baseline report on May 21, 2014.
Additional information is needed to assess the potential impact of mercury loadings to surface water receivers. This information should include, but not necessarily be limited to, consideration of the following:

Establishing pre-development mercury loadings from the various watersheds;
Estimating the potential concentrations of mercury within the final effluent and other associated drainages;
The potential impact that increased sulphates may have on increasing the methylation rates;
Potential mitigation measures to reduce the discharge of mercury from the site;
The development of a monitoring plan that considers mercury in, at a minimum, the water column and fish tissue. Criteria should be developed that would trigger remedial measures;

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TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• Data should be collected using advanced sampling and analytical protocols for mercury to define baseline conditions, determine potential loadings, and to monitor the potential impacts of the project over time.
					Information Request / Comment: A. Use a method detection limit of 0.00001 mg/L (0.01 µg/L) for mercury and revise water quality studies accordingly. B. Provide additional information on the following to assess the potential impact of mercury loadings to surface water receivers: • Establishing pre-development mercury loadings from the various watersheds; • Estimating the potential concentrations of mercury within the final effluent and other associated drainages; • The potential impact that increased sulphates may have on increasing the methylation rates; • Potential mitigation measures to reduce the discharge of mercury from the site; • The development of a monitoring plan that considers mercury in, at a minimum, the water column and fish tissue. Criteria should be developed that would trigger remedial measures; • Data should be collected using advanced sampling and analytical protocols for mercury to define baseline conditions, determine potential loadings, and to monitor the potential impacts of the project over time.
					Response: A. The reviewer has identified a typographical error in Table 12.4.2, which lists the biological monitoring proposed as part of the environmental management plan. The column entitled "standard" is intended to indicate the relevant standards against which the monitored values will be compared. During the site preparation and construction and closure phases, the monitored results will be compared to the relevant Canadian Council of Ministers of the Environment (CCME) standards. Details of the baseline water quality sampling results are presented in Appendix G (KCB, 2012) and Appendix P (DST, 2014). These appendices show the following ranges of laboratory MDL values for mercury: • Table 4.4 of Appendix G (KCB, 2012) indicates that all of the mercury measurements conducted in 2011 were below the laboratory MDL of 0.00005 mg/L (0.05 µg/L). • Table 2.2 of Appendix P (DST, 2014) indicates that sampling conducted in 2012 and 2013 used a laboratory MDL of 0.00010 mg/L (0.1 µg/L). • Result summary tables in Section 3 of Appendix P (DST, 2014) show three laboratory MDL levels for mercury. The column entitle "MDL" indicates an MDL of 0.0005 mg/L (0.05 µg/L). However, this value appears to be a typographical error when the actual laboratory results are

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					investigated. The actual laboratory results appended to the Appendix P show that for the vast majority of the samples (82%) the laboratory MDL for mercury was 0.00001 mg/L (0.01 µg/L), or the MDL recommended by Environment Canada (EC). For the remaining 18% of the samples the laboratory MDL for mercury was 0.00010 mg/L (0.1 µg/L). For the more recent baseline surface water studies (DST, 2014), 82% of the samples collected were analyzed using a laboratory MDL of 0.00001 mg/l (0.01 µg/L), or at the MDL recommended by EC. All future surface water sampling programs that include mercury will be conducted using the EC recommended MDL, where feasible. B. As described in the response to part A (above), advanced sampling and analytical protocols for mercury were used for the vast majority (82%) of the samples collected as part of the baseline surveys completed by DST (2014). These samples were analyzed using a laboratory MDL value consistent with the EC recommended MDL level of 0.00001 mg/L (0.01 µg/L). The pre-development mercury levels in the watercourses around the Project site were determined from the baseline monitoring data presented in Appendix P to the EIS (DST, 2014). This document was considered more appropriate, as the analytical techniques and protocols used for the vast majority (82%) of the samples are consistent with current EC recommendations. A series of tables summarizing the baseline water quality sampling is provided in TMI_108-SW(1)-22_Attachment_1.pdf. The attachment includes the following four tables: • Table 1a provides a summary of the baseline dissolved mercury concentrations, organized by watercourse and waterbody. The individual numbers in the table correspond to the averages presented in Table 1b. • Table 1b provides a list of the dissolved mercury concentrations presented in Appendix P (DST, 2014). All of the concentrations of dissolved mercury presented in Appendix P have been reproduced in the table. The averages for each location have been calculated using two methods. The first approach averages all of the data, with values below the laboratory MDL levels assumed to be equal to the MDL levels. The second approach calculates the averages for only those samples (82%) for which the laboratory MDL levels meet the EC recommended levels of 0.00001 mg/L (0.01 µg/L). Again concentrations below the relevant MDL were assumed to be equal to the MDL. • Table 1c provides a summary of the baseline total mercury sampling results, organized by watercourse and waterbody. The individual numbers in the table correspond to the averages presented in Table 1d. • Table 1d provides a complete list of the total mercury concentrations presented in Appendix P (DST, 2014). The averages for each location have been calculated using all of the concentrations and only those concentrations (82%) where the laboratory MDL levels meet the EC recommended levels of 0.00001 mg/L (0.01 µg/L). The concentrations below the relevant MDL were assumed to be equal to the MDL.

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					Treasury Metals has committed to achieve mercury concentrations in the effluent that are at, or below, the baseline mercury concentrations in Blackwater Creek (Table 10.0.1 of the revised EIS). The specific value identified in the EIS was 0.00002 mg/L (0.02 µg/L), which is the average pre-disturbance mercury concentration at SW11, upstream of the Project. Treasury Metals is confident that the technology proposed for water treatment can achieve this level of mercury treatment. There will be no other discharges from the Project during operations, as all runoff from the site will be collected, managed, and ultimately treated before being discharged to Blackwater Creek. Specific estimates of mercury in seepage during the post-closure phase were not provided as part of the EIS, nor were the resulting effects of the small volumes of seepage predicted to reach surface watercourses during the post-closure phase. These concentrations can be found in the Water Report. The Water Report (Appendix JJ of the revised EIS) is a document prepared by Treasury Metals to accompany the Round 1 IR responses to capture refinements to the water balance since the submission of the original EIS, and to reflect changes suggested by the responses to the Round 1 IRs. An updated surface water quality model for the receiving waters is provided in Section 6 of the Water Report. Methyl mercury is principal state of mercury of most concern from an environmental perspective as it can be readily taken up and biomagnified by fish and wildlife. The methyl mercury in the environment derives primarily from the conversion of inorganic mercury in reducing environments by sulphate reducing bacteria (SRB). Sulphate levels are in the range of 10 to 50 mg/L (Ulrich et al. 2001) were found to be the optimum range for methylation by SRB. Therefore, increasing sulphate levels to the optimal range could have the effect of increasing the rate of methylation. In contrast, increases in sediment sulphide concentrations eventually limit the availability of mercury for methylation (Krabbenhoft et al. 2006). For methylation by SRB to take place, there needs to be a supply of organic material present. It is expected that any organic material within the tailings storage facility (TSF) will be rapidly covered with deposited tailings, removing the supply of organic material required by the SRB. Regardless of the presence or absence of organic materials in the TSF, or the relative concentration of sulphates, the risk assessment completed to support the revised EIS (see Appendix W) conservatively assumed that all mercury present would be bioavailable in the methyl mercury form. Even with these conservative assumptions it was demonstrated the Project would not represent an unacceptable incremental risk. Treasury Metals has already committed to a water treatment system they are confident can limit the concentration of mercury in the effluent released during operations to the background concentrations of mercury in Blackwater Creek. During the post-closure phase, releases from the site are predicted to be relatively small, with the only practical mitigation being efforts to limit the volume of seepage expected. A more thorough re-evaluation of the available mitigation measures for protecting surface water quality is provided in Section 6 of the revised EIS. Section 13 of the revised EIS provides a framework for the environmental monitoring programs to be conducted as part of the environmental management plan for the Project. The EIS identifies,

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					under physical monitoring (Table 13.8), sampling for water quality, including metals, during all phases of the Project. The EIS also identifies, under biological monitoring (Table 13.13), sampling for water quality, including metals, during construction and closure, and fish tissue sampling during operation and closure. Section 13 of the revised EIS provides a summary of the environmental monitoring suggested by the predicted effects of the Project. Section 13.8 discusses the surface water quality monitoring at a high level. The details of any required surface water monitoring program will be developed as part of the provincial regulatory permitting process with the Ministry of the Environment and Climate Change (MOECC) and through compliance with the federal Metal Mining Effluent Regulations (MMER). Additional details regarding proposed monitoring programs can be found in the revised EIS. References Krabbenhoft, D.P, B.A. Branfireun and A. Heyes. (2006). Chapter 8: Biogeochemical Cycles Affecting the Speciation, Fate and Transport of Mercury in the Environment, p. 139-156. In: M.B. Parsons and J.B. Percival, eds. Mercury: Sources, Measurements, Cycles and Effects. Mineralogical Association of Canada, Short Course 34, Halifax, Nova Scotia. Ullrich, S.M., T.W. Tanton and S.A. Abdrashitova. 2001. Mercury in the Aquatic Environment: A Review of Factors Affecting Methylation. Critical Reviews in Environmental Science and Technology 31(3): 241-293.
109	SW(1)-23	CEA Agency	Appendix F Section 3.2.1	Sections 5.6, 7.1.2, 10.1.1, 11	**Summary of Comment / Rationale:** The cyanide destruction circuit is anticipated to be designed to meet the Metal Mining Effluent Regulations (MMER) discharge limits at the point of discharge to the tailings storage facility (TSF). In the event that anticipated cyanide destruction cannot be attained in this manner, retention time of water in the TSF should be considered as a contingency for natural attenuation of cyanide.
					Information Request / Comment: A. Provide an estimate of the retention time of TSF water and the anticipated effluent concentration and discharge rates as it relates to natural attenuation of cyanide for the purposes of a contingency for the cyanide destruction circuit.
					Response: An estimate of the retention time of the tailings storage facility (TSF) water has been completed in accordance with Ontario Regulation 560/94, "Effluent Monitoring and Effluent Limits – Metal Mining Sector. Operation of the TSF will consist of deposition of tailings solids resulting in variations in the tailings beach surface area over time. A water cover is planned for the TSF operations and the minimum required volume of water, to maintain the cover, will also vary during operation resulting from the variations in beach surface area. The retention time within the TSF will also vary resulting from the variations in the tailings beach surface area. The water treatment rate for the Project was identified in the original EIS in Appendix F, Figure 2-2 (Page 10) as 1,467 t/day. The estimated

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retention time over the life of the facility will vary with a minimum of 271 days, maximum of 451 days with an average over the 12 years of operations of 394 days. This has been updated and included in the revised conceptual water balance presented in Appendix F of the revised EIS>

As detailed within section 3.6in the revised EIS, the process plant cyanide detoxification is intended to be designed to destroy the CIL tailings cyanide levels to < 1mg/L CN_{WAD}. This level will meet the current Metal Mining Effluent Regulations (MMER) limit for maximum authorized monthly mean concentration. The preliminary detoxification circuit feed and discharge design cyanide levels are summarized in Table 1, below.

Table 1: Preliminary Cyanide Detoxification Circuit Design and Target Parameters

Parameter	Unit	Value
Feed Cyanide Concentration	CN_T (mg/L)	200
Feed Cyanide WAD Concentration	CN_{WAD} (mg/L)	150
Target Discharge Cyanide Concentration	CN_{WAD} (mg/L)	< 1

In the unplanned or upset process event of the detoxification circuit being offline, CIL tailings could potentially be discharged to the TSF for short period of time at the feed concentrations nominated above while still meeting the MMER limits. While there may be times when the detoxification circuit may not reach 100% efficiency and discharge could occur in the range of 10-50 mg/L CN_{WAD}, Treasury Metals will strive to maintain an the average target cyanide concentration within the TSF over the long term basis.

Future air/SO_2 cyanide detoxification test work will be completed during the next stage of plant feasibility study to confirm the plant CN_{WAD} discharge target of 1mg/L can be achieved and to confirm the detoxification circuit design parameters.

As described in Section 3.8 of the revised EIS, the operating strategy will be to minimize the need for effluent discharge from the TSF by segregating mine water in the minewater pond and runoff / seepage in the runoff collection ponds. In the event that there is surplus water in the TSF due to precipitation, the precipitation would dilute the cyanide concentration significantly. In the event of a water surplus in the TSF and a need for treatment and discharge, the following contingencies will be utilized to reduce cyanide concentrations.

- Hydrogen peroxide treatment to the TSF supernatant pond and/or incorporation into the reverse osmosis ("RO") effluent treatment process, if RO treatment is insufficient. The treatment process and contingency treatments will be reviewed as part of the sewage Environmental Compliance Approval process with the Ministry of the Environment and Climate Change (MOECC).
- Consolidation of the TSF surplus water with other surplus water at the site (i.e. runoff collection ponds, minewater pond) prior to RO treatment would reduce cyanide concentrations.

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110	SW(1)-24	CEA Agency	Appendix F Sections 4.1.1, 4.1.5	Section 10.1.2	**Summary of Comment / Rationale:** Nutrients from blasting residue and from treated sewage wastewater (proposed to be discharged into the tailings pond) can potentially cause eutrophication within the tailings pond. Depending on the design of the effluent treatment system, this could potentially interfere with the functioning and effectiveness of the system. The proponent should assess the potential for eutrophication to occur within the tailings pond, and the problems that eutrophication may cause with the effluent treatment process and its ability to achieve provincial water quality objective values (as stated by the proponent) when discharging to the receiving environment. The assessment should consider potential loadings of nutrients into the tailings pond and whether these loadings pose a potential for eutrophication. If the potential for eutrophication is high, it is recommended that the proponent provide information concerning the implications this has for the performance of the effluent treatment system.
					Information Request / Comment: A. Assess the potential for eutrophication to occur within the tailings pond, and the problems that eutrophication may cause with the effluent treatment process and its ability to achieve provincial water quality objective values when discharging to the receiving environment. B. Provide mitigation measures to ensure tailings pond effluent meets water quality standards in the event that eutrophication occurs.
					Response: A. The limiting nutrient for algal blooms and eutrophication (in waters such as those found in Northern Ontario) is typically phosphorus and not nitrogen (Horn and Goldman, 1994). Phosphorus is not present in blasting agents, process plant reagents or leachate from rock based on shake flask extraction tests with de-ionized water (refer to Appendix C of the geochemistry report presented in Appendix K of the revised EIS). The shake flask extraction tests with de-ionized water are regarded as more representative of field conditions compared to the acid wash extraction because the tailings storage facility (TSF) water from a Carbon in Leach (CIL) gold recovery process is alkaline. Although grey water will be pumped to the TSF, phosphorus free soaps and detergents will be used at the Project site and grey water is not expected to contain a significant amount of phosphorus. B. Contingency measures to quickly reduce phosphorus concentrations in the TSF supernatant pond would include the addition of metal based coagulants or other non-toxic water treatment chemicals that are used to precipitate or sorb phosphorus and render it non-biologically available. These measures can be implemented on short notice and do not require significant lead time or suitable conditions (*i.e.* temperature, pH, water chemistry) as is often the case with biological treatments.

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					The reclaim pump in the TSF supernatant pond will be over-sized so that it can circulate water within the supernatant pond and reduce the likelihood of it becoming anoxic. In the event that anoxic conditions prevail in any of the on-site ponds and phosphorus in sediment is solubilized into the water column, TMI would deploy industrial aerators to increase dissolved oxygen and prevent this occurrence. Examples of industrial aerators include Octo-Air aerators: https://canadianpond.ca/products/aeration-en/octoair-10-industrial-diffuser-aeration/ Aerators would be deployed carefully to avoid increasing suspended solids concentrations. The reverse osmosis ("RO") effluent treatment plant that is planned includes a pre-treatment step that uses backwashing multi-media filters. In the event that there are elevated suspended solids in influent water due to algal growth, influent would be chemically conditioned *(i.e.* addition of coagulant and/or flocculant) to agglomerate the suspended matter and ensure it is effectively removed by the filters. Backwash frequency would be increased if the load of suspended solids is increased. The multi-media filters serve to protect the RO membranes from deteriorating influent quality due to elevated suspended solids. References A.Horn and C.Goldman (Horn and Goldman), 1994. *Limnology.* Published by McGraw-Hill.
111	SW(1)-25	CEA Agency	Appendix F Sections 4.4, 11, Table 4.3 F	Sections 9.1.2, 10.1.2	**Summary of Comment / Rationale:** Although the proponent has committed to a collection system for their seepage, there will be a percentage of seepage that cannot be collected and will discharge to the watershed. Anticipated seepage water quality indicates that some contaminants of concern (COCs) will exceed provincial water quality objectives (PWQO) in the seepage from some mine facilities. Because the small tributaries within the project area have no assimilative capacity, seepage will be required to meet very stringent criteria at the point of discharge to surface waters (i.e., PWQO or background concentrations). The proponent will need to provide expected receiver loading calculations. Updated source concentrations and calculated discharge loadings to surface water receivers will need to be incorporated into the assessment to evaluate the impact to surface waters. Section 4.4 (Appendix F) states: "These concentrations, along with corresponding MMER and PWQO guidelines, are presented in Table 4.3 Predicted Tailings storage facility Supernatant Concentrations Based on Preliminary Data and Worst Case Assumptions." Table 4.3 (Appendix F) does not include PWQO criteria values as claimed in section 4.4. When comparing the values in the table to PWQO, concentrations of most COCs exceed or significantly exceed the criteria in this scenario.
					Information Request / Comment: A. Describe seepage water quality during operations, decommissioning and abandonment from the major mine features, including the pit lake, WRSA, TSF, and LGO stockpile, surface water impacts

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					associated with explosives, and seepage loadings to receivers. Include conservative estimates of loadings to surface water, predicted effects to offsite surface water and feasible mitigation measures. B. Quantify and assess potential impacts to surface water from the pit lake and TSF discharges. Provide a monitoring program and a contingency plan, and include trigger criteria and feasible mitigation and remediation measures. C. Update Table 4.3 (Appendix F) to include PWQO criteria and discuss the significance of the PWQO exceedances in this scenario and the impact on TSF effluent treatment.
					<u>Revised Response:</u> As per commitment 034 stated in Section 10 of the revised EIS: During operations, effluent discharged from the Project to Blackwater Creek will meet the Provincial Water Quality Objectives (PWQO) for the parameters listed below, or background concentrations if background levels are above the PWQO. Where there is no PWQO for a parameter, the commitment will be to meet the Canadian Water Quality Guidelines (CWQG). For total mercury, the commitment will be that effluent discharged to Blackwater Creek will meet background concentrations for that watercourse. Background concentrations for Blackwater Creek are defined as the 75th percentile in accordance MOECC receiving water assessment policy. Detailed parameters will be determined through engagement with appropriate Provincial and Federal regulatory bodies • Aluminum • Antimony • Arsenic • Beryllium • Boron (total) • Cadmium • Chloride • Chromium • Cobalt • Copper • Cyanide • Iron • Lead

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					• Mercury (total) • Molybdenum • Nickel • Nitrate • Phosphorus • Selenium • Silver • Thallium • Uranium • Vanadium • Zinc Pit water and TSF discharges during the mine operations phase will be directed to the effluent treatment plant which will operate in three distinct process steps: advanced oxidation process for residual cyanide destruction, multimedia filtration and reverse osmosis membrane filtration (or equivalent). Predictions of water quality changes to the receiver (nearest Blackwater Creek downstream station BW1, corresponding to monitoring station SW-JCTa) are provided in Table 6-11 of the Water Report (Appendix JJ) for both operating and post-closure conditions. In Table 6-11 of Appendix JJ of the revised EIS, predicted values are compared with the existing baseline condition values. Four surface water quality monitoring stations are proposed for Blackwater Creek. These include two stations upstream of the effluent discharge location (SW-11 and SW-TL1A) and two downstream stations (SW-JCTa and SW-TL3). Station locations are shown in Figure 13.8.3-1 of the revised EIS. As per the response to TMI_451-AC(1)-125 and duplicated herein for completeness, monthly monitoring samples will be collected from these four stations for a variety of parameters, including TSS and turbidity. The level and type of water treatment proposed for the mine operations phase is the best proven treatment processes that are available (in-plant cyanide destruction and metals precipitation, followed by residual cyanide oxidation, multimedia filtration and reverse osmosis membrane filtration). Further treatment contingencies are not practically available and a contingency plan, including trigger criteria and feasible mitigation and remediation measures is not proposed. The only contingencies and mitigations available are to ensure that practices and procedures are in place to ensure that these treatment works are operated efficiently, as intended. During the post-closure phase, water quality projections for Blackwater Creek are similar to those predicted for the mine operations phase (Table 6-11 of the Water Report) or remain below the

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					Provincial Water Quality Objectives for the protection of aquatic life or below background levels or the Canadian Environmental Quality Guidelines where there are no Provincial objectives. Should post-closure monitoring find an effect greater than expected (that suitable water quality is not being maintained in Blackwater Creek), further treatment of the TSF overflow, or other site drainages would be implemented, potentially including continued operation of the reverse osmosis water treatment plant. Trigger values for additional treatment in the post-closure condition would be achieving (within a discrepancy of 15%) Provincial Water Quality Objectives or background conditions within Blackwater Creek. TMI_451-(AC)-1-125 A map has been provided as Figure 13.8.3-1 of the revised EIS that provides the twelve surface water sampling locations. The sampling parameters and frequencies for each location have been provided as part of the surface water quality and quantity follow-up programs follow-up programs in Sections 13.8 and 13.9 of the revised EIS, respectively. Table 1 provides a summary of each sampling location, parameters and sampling frequencies proposed in the surface water quality follow-up program and Table 2 provides a summary of each sampling location, parameters and frequencies proposed in the surface water quantity follow-up program. These locations, parameters and frequencies are subject to later MOECC approval and may change with input from regulatory agencies.

Table 1: Summary of Surface Water Quality Follow-up Programs		
Sample Location	Parameter Group	Frequency
SW-TL1A, SW-JCT, SW-2, SW-TL3, SW-4, SW-7, SW-8, SW-9	Group A Group B Group C	Monthly
SW-10, SW-11	Group A Group B	Monthly
SW-5, SW-6	Group A Group B Group C	Annually
Effluent Discharge	Group D	Thrice Weekly
	Group E	Weekly
	Group B Group F	Monthly

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					Parameter Listings: Group A: pH, acidity, alkalinity, dissolved oxygen, chloride, conductivity, dissolved and total organic carbon, hardness, nitrate, nitrite, phosphate, sulphate, temperature (field), total and un-ionized ammonia, total dissolved solids, total suspended solids, turbidity. Group B: Total ICP metals scan. Group C: free cyanide, total cyanide, weak acid dissociable cyanide. Group D: pH, total cyanide, total suspended solids Group E: copper, lead, nickel, zinc, arsenic Group F: Acute toxicity testing (Rainbow Trout and *Daphnia magna*)
112	SW(1)-26	CEA Agency	EIS Sections 3, 5	Section 5	**Summary of Comment / Rationale:** There is considerable confusion and a number of inconsistencies in the EIS and appendices regarding where the proponent will source fresh water for mining operations. Studies outlining the ability of irrigation ponds and their tributaries (Lola Lake Nature Reserve) to supply needed water to the project site have not been conducted. The proponent states in section 3.8.3 (EIS) once operations commence an additional 600m^3/d of fresh water will be required and will be taken from either underground wells or irrigation ponds. Section 3.8.4 (EIS) then states that the 600 m^3/d will come from groundwater wells without mentioning ponds. Other sections of the EIS then suggest that additional mine processing water will be taken only from the irrigation ponds.

Table 2: Summary of Surface Water Quantity Follow-up Programs

Sample Location	Parameter Group	Frequency
SW-JCTa	Flow Rate	Discrete
Discharge from irrigation ponds on Thunder Lake Tributaries 2 and 3	Flow Rate	Continuous when water taking occurs
Volume of Effluent Discharged into Blackwater Creek	Volume	Daily

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Information Request / Comment: A. Conduct and provide surface water studies on Lola Lake Nature Reserve's ability to supply the appropriate amount of mine process water via Thunder Lake Tributary #3 without adversely affecting the wetland in the Nature Reserve. B. Clearly describe all source(s) of mine processing water and include the justification for the assertion the sources are able and available to supply the demand. Update relevant sections of the EIS to provide consistency across sections.
					Response: A. No water level changes as a result of the Project are predicted for the Lola Lake Provincial Park. The Project is located within the Blackwater Creek watershed, which drains into Wabigoon Lake. The Lola Lake Provincial Park is located within the watershed that drains into Thunder Lake Tributary 3, and eventually drains into Thunder Lake via Thunder Lake Tributary 2. Withdrawing water from the irrigation ponds, at the former Ontario Ministry of Natural Resources and Forests (MNRF) tree nursery, downstream of the existing drainage structures, as described in the response to Information Request TMI_84-GW(1)-21, will not affect the water levels or flows at Lola Lake, which is upstream of the irrigation ponds. As discussed in the response to TMI_146-WL(1)-03, baseline data collection in Lola Lake Provincial Park is not considered warranted as it is not expected that the Project will have any effect on the water levels within the park. B. Sources of process water include the two (2) tributaries of Thunder Lake (maximum of 5% of flow), the runoff collection ponds surrounding the mine site, the minewater pond and the tailings storage facility (TSF). This is described in Section 3.8.6 of the revised EIS, which describes the strategy to source adequate process water during a design dry year and an average hydrologic year are presented. During the design dry year, the following contingencies may have to be implemented. • Water in the runoff collection ponds may have to be filtered to remove TSS using the pre-treatment system for the reverse osmosis ("RO") treatment system. • Mine water may have to be treated using the RO system prior to use in the mill process. • TSF water may have to be treated using the RO system prior to use in the mill process.
113	SW(1)-27	CEA Agency	Appendix O Sections 2.5, 3.4	Section 9.1	**Summary of Comment / Rationale:** Many approaches have been used by the proponent to estimate the runoff coefficient. The runoff coefficients estimated from the measured data (Table 2-10, Appendix O, page 15) range from 0.04 (station HS5) to 0.65 (station HS4). The runoff coefficients estimated using the Ontario Ministry of Transportation (MTO) Northern Ontario Hydrology Method (NOHM) range from 0.18 (station HS4) to 0.47 (station HS7). However, for the three stations located on the Blackwater

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Creek, i.e. TL1A, JCTA and TL3, the estimated runoff coefficients are in a close range (0.36 to 0.37). The runoff coefficient estimated on the Blackwater Creek using the NOHM method are consistent with the regional runoff coefficients derived from the data of the hydrometric station 05QD016 (0.29) and the Hydrological Atlas of Canada (0.33). There seems to be a consensus for the values of runoff coefficients between 0.3 and 0.4. However, there seems to be some discrepancies between the observed runoff coefficients reported in Tables 2-10 and 3-4 (Appendix O, pages 15 and 22). It is our understanding that the runoff coefficients were used as a means of validating the hydrologic model. It is not clear whether they were used, or will be used, for the sizing and design of the project's infrastructure. If they were used, it is also not clear what long-term runoff coefficients were used for calculations. This information is needed to assist in the analysis of the site surface water run-off predictions and capacity of the infrastructure to manage surface water.
					Information Request / Comment: A. Report the long-term estimate that is being used and elaborate on the discrepancies between the observed runoff coefficients reported in Tables 2-10 and 3-4 (Appendix O, pages 15 and 22) if runoff coefficients are used, or will be used, in the sizing and design of the project's infrastructure.
					Response: Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions, including the modelling of surface water quantity (i.e., hydrology). To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report (Appendix JJ to the revised EIS) to accompany the Round 1 IR responses. An updated hydrologic model of surface water quantity for all phases of the Project is provided in Section 4 of the Water Report.
114	SW(1)-28	CEA Agency	Appendix O Section 3.3	Section 9.1	**Summary of Comment / Rationale:** The results of the baseline model showed that flows from simulated events generally peaked higher than observed data. Adjusting input parameters during model calibration, the proponent found that the model could not estimate the peak flow for rainfall events. For example, Figure 3-3

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					(Appendix O, page 20) shows that the model overestimated the peak flow resulting from the July 25, 2013 rainfall event by around 50% while the discharge for the August 29, 2013 rainfall event was underestimated by around 40%. The Green Ampt infiltration method used in the model to take into account losses by infiltration is more suitable to single event simulations (USACE 2000. HEC-HMS technical reference manual). The Continuous Soil-moisture Accounting (SMA) Model is reported to be more adapted to continuous simulations (See Chu, X. and A. D. Steinman. 2009. Combined event and continuous hydrologic modeling with HEC-HMS. American Society of Civil Engineers Journal of Irrigation and Drainage Engineering 135:119–124).
					Information Request / Comment: A. Clarify whether any alternative infiltration loss method was applied to assess whether concurrence between simulated and observed peak flows could be improved. B. Describe the suitability of using peak flow estimates from the hydrologic model in the sizing and design of the project's infrastructure.
					Response: A. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions, including the modelling of surface water quantity (i.e., hydrology). To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a standalone Water Report, which has been appended to the revised EIS as Appendix JJ.. An updated hydrologic model of surface water quantity for all phases of the Project is provided in Section 4 of the Water Report. B. Treasury Metals were confident that the engineering available at the time the original EIS was filed was suitable for evaluating the potential effects of the Project on the environment. Since the filing of the original EIS, Treasury metals has advanced the engineering of the Project, and will continue to refine the engineering to help supplement a final Feasibility study. Subsequently to the Feasibility study, Treasury Metals will complete an engineering design for all components of the Project including the site infrastructure. Each of the aforementioned components will take into account the most current engineering practices and will require the approval of a professionally designated engineer prior to construction.
115	SW(1)-29	CEA Agency	Appendix O	Section 9.1	**Summary of Comment / Rationale:**

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Although the hydrologic model is based on accepted practices, the possibility for its validation is limited given that the flow monitoring period at the site is over a short period of time. Part of the baseline data used to validate the hydrologic model was questioned by Environment Canada in the comments submitted May 21, 2014. Further information is required concerning the impact of uncertainties that could result from the baseline data on the model results. This information could be presented in the form of a sensitivity analysis on the main input parameters.
					Information Request / Comment: A. Provide a sensitivity analysis on the main input parameters or conduct some other test in order to provide further information on the impact of uncertainties on the effects assessment, mitigation, and follow-up that could result from the baseline data.
					Response: The hydrologic analysis provided in Appendix O was completed to support the original EIS. The modelling was done using the best information available. Since the submission of the original EIS, an updated feasibility level water balance has been developed to reflect the current design of the evolving project. This water balance modifies some of the water predictions. To capture these changes, and to reflect changes suggested by the responses to Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ. Section 4 of the Water Report includes an evaluation of the range of hydrologic conditions expected over the life of the Project by including an expected wet and dry year in the analysis, along with the evaluation of the average conditions.
116	SW(1)-30	CEA Agency	Appendix O	Section 9.1	**Summary of Comment / Rationale:** In its present state the absolute value of peak flow predicted by the model is not validated. Therefore, the model should not be used for determining the size of structures such as ditches, storage ponds, etc. Other methods, or combination of methods, for determining the extreme flows such as the one presented in sections 3.5.2.3 and 3.5.2.4 (Appendix G) should be preferred.
					Information Request / Comment: A. Validate the absolute value of peak flow predicted by the model if the model is to be used in determining the size of structures such as ditches, storage ponds, etc.
					Response: The hydrologic model was developed to determine water quantity impacts from mine development. As indicated in Section 5.0 (Appendix O to the original EIS), "the model is suitable for long-term

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					hydrology only and should not be used for developing storage pond outlet works in response to short duration, high intensity rainfall events". Therefore, the hydrologic model will not be used for determining the size of structures such as ditches, storage ponds, etc. The hydrologic modelling presented in Appendix O of the original EIS has been replaced by the Water Report (Appendix JJ) to the revised EIS. Sizing of the structures, such as ditches and storage ponds, will be completed at the detailed design stage of the Project and will utilize industry standard sizing methods.
117	SW(1)-31	CEA Agency	EIS Section 6.4.1.8	Section 9.1	**Summary of Comment / Rationale:** Section 6.4.1.8 (EIS) reports the effects of the Project on surface water quantity at different stages of the mine life. A quantification of the effect of the mine on both flow rates and water levels is required to improve understanding of the Project's effect on water quantity over time and to support the arguments being made. To better understand the effect of the Project on surface water, the proponent should present a summary table showing the flow rates/water levels at different monitoring stations for each of the following stages of the mine cycle: baseline (long term conditions), construction, operations, decommissioning and abandonment. The proponent should also describe the major changes to the baseline conditions using numbers that can identify their significance. This could be done by presenting the baseline values, the values at each phase of the mine life, and the change from the baseline values (absolute values and percentage).
					Information Request / Comment: A. Provide a summary table showing the flow rates/water levels at different monitoring stations for each stage of the mine cycle. B. Describe the major changes to the baseline conditions using numbers that can identify their significance.
					Response: Since the submission of the original EIS, an updated feasibility level water balance has been developed to reflect the current design of the evolving project. This feasibility level water balance modifies some of the water predictions presented in the original EIS. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ. The Water

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Report (Section 4) includes an assessment of water quantity effects on Blackwater Creek at various monitoring stations, and during the various phases of the mine life. The Round 1 IRs also asked a number of questions regarding the approach used in the original EIS for characterizing the predicted effects of the Project, including the approaches used to describe or characterize the "magnitude" of predicted changes. In addition to responding to the Round 1 IRs, Treasury Metals have prepared a revised EISrevised effects assessment for the Project that has been included as Sections 6, 7 and 8 of the revised EIS that addresses the questions related to the impact methodology. Section 6.9 of the revised EISrevised EIS provides a summary of the changes in water quantity detailed in the Water Report (Appendix JJ). Section 8.1 of the revised EISrevised EIS describes the specific numbers used for assigning levels of magnitude to the predicted changes. The determination of significance includes other parameters than magnitude, all of which are considered in Section 8.1.
118	SW(1)-32	CEA Agency	Appendix O Section 2.4.3	Section 9.1	**Summary of Comment / Rationale:** Evaporation is an important meteorological element in water balance and hydrological impact assessments. However, only the long-term annual average evaporation rate was reported in the assessment and used in hydrologic modeling. Rationale should be provided for the application of long-term mean evaporation data as the inputs chosen for the analysis. The analysis should include a broad range of inter-annual evaporation values (well beyond annual mean values) to demonstrate that the system is robust enough to withstand a range of climate situations including wet and drought conditions. There can be a substantial variation in annual evaporation rates from year to year and understanding this temporal range is important to support the selection of suitably conservative evaporation rate(s) for subsequent water balance calculations. The proponent should provide additional analysis in the water balance assessments and hydrological impact modeling using a range of inter-annual evaporation data (i.e. the minimum and maximum annual lake evaporation from the observed historical period). Specifically, the observed lake evaporation data at Rawson Lake station (ID: 6036904, approximately 80 km southwest of the project site) are available for the period 1969–1999. During the period the minimum and maximum observed annual evaporation values are 432.4 mm and 629.8 mm, respectively in 1993 and 1987.
					Information Request / Comment: A. Provide additional analysis in the water balance assessments and hydrological impact modeling using a range of inter-annual evaporation data.
					Response: Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the site water balance. The refined water balance will affect a

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					number of water related predictions, including those for surface water quantity (i.e., hydrology). As a result, Treasury Metals has refined the hydrologic modelling. This refined surface hydrology model will modify some of the water related predictions and is carried though the updated calculations. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ. An updated model in regards to surface water hydrology is provided in Section 4 of the Water Report, further details regarding evaporation inputs are described within this section.
119	SW(1)-33	CEA Agency	Appendix O Sections 4.2, 4.3	Section 9.1	**Summary of Comment / Rationale:** Hydrologic model outputs for four low-flow years (1979, 1989, 2005, 2013) and four high-flow years (1974, 1991, 1996, 2000) were presented in the report to represent the dry and wet conditions at the project site. These analyses are important because the dry and wet conditions influence hydrological impact and water balance. However, the information regarding evaporation data used for those years' model runs is missing from the report. The evaporation data should be the observed or estimated values for each of the individual years rather than the long-term average value for every year of the analysis. Annual evaporation rates vary greatly from year to year; for example, annual evaporation rates are 438.1 mm and 592.0 mm, respectively for 1979 (low flow year) and 1991 (high flow year).
					Information Request / Comment: A. Identify and report the evaporation data used in hydrologic modeling study for these 8 years.
					Revised Response: Since the submission of the original EIS, an updated feasibility level water balance has been developed to reflect the current design of the evolving project. The updated water balance analysis modifies the water predations presented in the original EIS. As a result, the hydrologic modelling presented in Appendix O to the original EIS have been superseded, and Appendix O has been discarded in the revised EIS. To capture the changes to the operational water balance, as well as changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a new hydrologic model. A description of the new hydrologic modelling has been provided in Section 4 of the Water Report, which has been appended to the revised EIS as Appendix JJ. The hydrologic modelling is also summarized in Section 6.9 of the revised EIS. The revised hydrologic model does not focus on individual years of data, but evaluates the effects of the Project on surface water quality (i.e., hydrologic conditions) during an average climatic year, a 1 in 20 (95th percentile) dry year (95th percentile), and a 1 in 20 (95th percentile) wet year. Section 4.2.1 of the Water Report describes the climate data used in the hydrologic modeling, including lake evaporation rates. Lake evaporation data from Rawson Lake monitoring station (6036904) was used to estimate the annual and monthly lake evaporation for the Project for average, dry and

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					wet climatic years. This Rawson Lake monitoring station (6036904) is located approximately 80 km west of the site and collected lake evaporation data between 1969 and 1999 and as such represents a suitable proxy for the Goliath Project. The evaporation rates used in the hydrologic modelling are provided in Table 4-2 of the Water Report, and are replicated below.

Table 4-2: Lake Evaporation

Month (1)	Monthly Lake Evaporation (mm)		
	Average (1)	Dry (3)	Wet (3)
January	0.0	0.0	0.0
February	0.0	0.0	0.0
March	0.0	0.0	0.0
April	8.7	11.2	6.3
May	100.4	128.3	72.5
June	117.1	149.7	84.6
July	130.7	167.0	94.4
August	105.8	135.2	76.4
September	55.5	70.9	40.1
October	30.4	38.9	22.0
November	0.0	0.0	0.0
December	0.0	0.0	0.0
Total	**548.6**	**701.0**	**396.2**

Notes:
(1) The distribution of monthly lake evaporation is based on the monthly distribution of the observed data (average condition).
(2) Monthly average lake evaporation was calculated from daily lake evaporation data 1969 to 1999 for Rawson Lake (6036904), obtained from Environment Canada. Missing days were ignored from the monthly average.
(3) Total lake evaporation for average and 1:20 year wet and dry scenarios were determined using a normally distributed random variable with a mean of 548.6 mm and a standard deviation of 92.6 mm was fit to the annual evaporation totals.

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120	SW(1)-34	CEA Agency	EIS Section 3.7.1 Appendix D Section 2.5	Section 9.1	**<u>Summary of Comment / Rationale:</u>** The proponent reported that the 1000-year return period value for the 24-hour storm extreme rainfall is 125 mm for the project area. This return value appears low for a 1:1000 year event. This value is closer to the 1:100 year event expected for the area. For example, the 100-year return values of the 24-hour storm extremes are 160 mm and 123 mm, for Kenora and Thunder Bay respectively, based on data through 2004. The Ontario Ministry of Transportation provides an on-line rainfall Intensity-Duration-Frequency look-up utility. This utility estimates that the on-site, interpolated 100-year return 24-hour rainfall value is 123 mm (http://www.mto.gov.on.ca/IDF_Curves/terms.shtml). The rainfall extreme return values for the project area presented in the assessment reports were derived based upon the methods and estimated coefficients/maps in “Rainfall Frequency Atlas For Canada” (Hogg and Carr, 1985). The Rainfall Frequency Atlas uses data ending before 1985. The use of the Hogg and Carr IDF maps is suspect due to the age of the data.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					It is important that Intensity-Duration-Frequency calculations include the most recent rainfall data and extremes available. For example, a 24-hour rainfall amount of 153.5 mm was recorded at Kenora on July 27, 1993. The proponent should also be careful about deriving a 1000-year rainfall extreme return value since uncertainty is increased when deriving long return period rainfall values (>100 years) from relatively short data records (<50 years).

Information Request / Comment:

A. Revise analysis using Environment Canada's or Ministry of Transportation's rainfall extreme return values which include recent rainfall extreme data

Response:

Work completed for to support the original EIS utilized existing data for the site that included IDF values presented in the Environmental Baseline Study 2010/2011 (original EIS Appendix G) for consistency. A check of the data was completed with Hogg and Carr, 1985. The recommended MTO reference, above (http://www.mto.gov.on.ca/IDF_Curves/terms.shtml), was used to identify the IDF curves for the Project and the results with comparison to data provided in the EIS are provided in the Table 1.

Table 1: Comparison of Return Period Storm Depths

Return Period (years)	Storm Depth (mm)		
	Hogg and Carr (1985)	Dryden Meteorological Station (6032117)	MTO
2	43	44	57
5	-	62	77
10	67	74	90
25	79	90	107
50	87	101	119
100	96	113	131
200	105	—	—
1,000	125	—	—
PMP	320	—	—

The results of the comparison are showing that the MTO values are higher than other data for the site and can be adopted for the Project.

<table>
<tr><th>TMI #</th><th>Agency Reference #</th><th>Parties Asking Questions</th><th>Reference to EIS</th><th>Reference to EIS Guideline</th><th>Comment / Information Request / Response</th></tr>
<tr><td>121</td><td>SW(1)-35</td><td>CEA Agency</td><td>EIS Section 6.4.1.12</td><td>Sections 4, 10.1.2</td><td>

<u>Summary of Comment / Rationale:</u>

Section 6.4.1.12 (EIS) suggests that the impacts of different flows are reversible. However, there is no consideration of loss of flow to groundwater fed streams such as Hughes Creek. If this is reversible, describe the timeframe for reversibility and how this may change the duration score of the significance analysis.

<u>Information Request / Comment:</u>

A. Clarify the effects of altered flows on fish and fish habitat, taking into account the loss of flow to groundwater fed streams and using the framework to determine significance of adverse environmental effects.

<u>Revised Response:</u>

The effects of the project on surface water flows and fish and fish habitat are intimately connected and the EIS has been substantially revised since the original EIS submission to reflect this. Full details of the effects of the project on fish and fish habitat are provided in Section 6.14 of the revised EIS. Changes in groundwater quantity could have an effect on surrounding waterbodies, although the existing groundwater conditions described in Section 5.6.2.3 of the revised EIS suggest that the majority of the watercourses in the area are runoff dominated, and underlain with a combination of silts and clays making them less susceptible to changes in groundwater levels. For this reason, the effects of the Project on the amount of groundwater discharge to surface watercourses near the Project has been predicted as part of the description of the effects of the Project on surface water quantities. However, "decreasing contribution to surface flow patterns" is not identified as an indicator for groundwater quantity. Instead, the predicted changes in groundwater discharge are used as inputs when describing the effects of the Project on surface water quantities (Section 6.9).

<u>Valued Components Used in the Assessment of Effects</u>

In the revised EIS, the effects of the Project on surface water quantity were assessed using the following valued components, indicators and measures. This is Table 6.1.3.8-1 in the revised EIS.

<table>
<tr><th>Valued Components (VCs)</th><th>Indicators</th><th>Measures</th></tr>
<tr><td rowspan="3">Surface water quantity</td><td>Increase in surface water flows</td><td>Change in annual flow (%)</td></tr>
<tr><td>Decrease in surface water flows</td><td>Change in monthly flow (%)</td></tr>
<tr><td>Change in lake levels</td><td>Change in annual inflow (%)</td></tr>
</table>

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

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					In the revised EIS, the effects of the Project on surface water quantity were assessed using the following valued components, indicators and measures. This is Table 6.1.3.13-1 I the revised EIS, and you can see that the changes in flows or water levels assessed for surface water quantity were used as indicator for fish and fish habitat.

Valued Components (VCs)	Indicators	Measures
Stream-resident fish population	Direct loss or alteration of habitat	Stream length (km)
		Pond area (ha)
		Fish mortality proportion (%)
	Changes in flows or water levels	Stream length (km)
		Pond area (ha)
	Changes in water quality	Stream length (km)
		Pond area (ha)
		Fish mortality proportion (%)
	Blasting	Fish mortality proportion (%)
Migratory fish populations	Direct loss or alteration of habitat	Stream length (km)
		Pond area (ha)
		Fish mortality proportion (%)
	Changes in flows or water levels	Stream length (km)
		Pond area (ha)
	Changes in water quality	Stream length (km)
		Pond area (ha)
		Fish mortality proportion (%)
	Blasting	Fish mortality proportion (%)
Lake-resident fish populations	Direct loss or alteration of habitat	Lake area (ha)
		Fish mortality proportion (%)
	Changes water levels	Lake area (ha)
	Changes in water quality	Lake area (ha)
		Fish mortality proportion (%)
	Blasting	Fish mortality proportion (%)
Fish species-at-risk	Direct loss or alteration of habitat	Stream length (km)
		Pond or lake area (ha)
		Fish mortality proportion (%)
	Changes in flows or water levels	Stream length (km)
		Pond or lake area (ha)
	Changes in water quality	Stream length (km)

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		Pond or lake area (ha)
		Fish mortality proportion (%)
	Blasting	Fish mortality proportion (%)

Predicted Effects on Fish and Fish Habitat

The predicted effects of the Project on fish and habitat as a result of changes to surface water flows are on Blackwater Creek and Tributary 2 and 3 of Blackwater Creek.). In preparation of for mining the open pit, portions of Blackwater Creek Tributary 1 will be overprinted. The construction of the perimeter ditch will isolate those sections of Blackwater Creek Tributary 1 overprinted by the Project, effectively eliminating flow in the downstream sections of the tributary. This will result in the direct loss of habitat in the overprinted portions and the reduction of flows in the downstream reaches of the tributary. Construction of the tailings storage facility (TSF) and minewater pond will overprint sections of Blackwater Creek Tributary 2. The construction of the perimeter ditch will isolate those sections of Blackwater Creek Tributary 2 overprinted by the Project, effectively eliminating flow in the downstream sections of the tributary. This will result in the direct loss of habitat and the effective elimination of flow in the downstream reaches of the tributary. A reduction in flow of 20.6% is predicted on Blackwater Creek immediately downstream of the planned discharge point and a reduction in flow of 13.0% is predicted near the point where Blackwater Creek discharges into Wabigoon Lake. A detailed discussion is provided in Section 6.14.4 of the revised EIS.

Residual Adverse Effects on Fish and Fish Habitat

The residual adverse effects of the project on surface water quantity is presented ion Section 6.9.6, and on fish and fish habitat in Section 6.14.6. In the context of the CEAA, 2012, the fisheries offsetting would be considered mitigation that would offset and mitigate the adverse effects of the Project on fish habitat. The revised Conceptual Fish Compensation plan is included as Appendix II in the revised EIS. Therefore, following offsetting the only residual adverse effects that remains would be the potential for mortality of stream-resident fish during the site preparation and construction phase. Specifically, these would be the stream-resident fish in the portions of Blackwater Creek Tributary 1 and Blackwater Creek Tributary 2 that remained in the portions of these watercourses that would be overprinted by the Project and could not be salvaged. Table 6.14.6-1 of the revised EIS summarizes the residual adverse effects for fish and fish habitat.

Determination of Significance:

Section 13.1 of the EIS Guidelines (CEAA, 2013) describe the elements that should be considered when determining environmental significance under CEAA 2012. These include the following:

- Magnitude;
- Geographic extent;

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• Timing and duration; • Frequency; • Reversibility; • Ecological and social context; and • Existence of environmental standards, guidelines or objectives for assessing the impact. The guideline indicates that for those where a significant effect is identified, "…the EIS will set out the probability (likelihood) that they will occur". This is consistent with general environmental assessment practice that conservatively assumes that all potential effects, except those related to accidents, will occur (i.e., they have a likelihood of 1). Each of these individual elements are described in the following sections, while the approach used for combining the effects are described in Section 6.1 of the revised EIS. In the revised EIS the determination of significance as a result of changes of flow on fish and fish habitat are discussed in Section 8.14. Based on professional experience, we are confident that fish mortality will occur when the watercourses portions of Blackwater Creek Tributary 1 and Blackwater Creek Tributary 2 are overprinted and flows are diminished in the downstream portions during the Construction Phase of the Project. Both the application of the decision tree approach and the use of a reasoned argument approach yield the same conclusion, the Project will not result in significant adverse effects to fish or fish habitat.
122	FH(1)-01	CEA Agency	EIS Summary section 4.5.1, Figure ES.5.2	Sections 4, 10.1.2	**Summary of Comment / Rationale:** Section 4.5.1.1 (EIS Summary) indicates that the tree nursery ponds, connected to Thunder Lake Tributary 3, are the preferred water source for operations of the mine. Figure ES.5.2 (EIS Summary, page ES-54) shows that the tree nursery ponds are connected to Thunder Lake Tributary 2. Water taking has the potential to impact fish and fish habitat within the tree nursery ponds and the associated tributary of Thunder Lake as well as areas upstream from the tree nursery ponds. The water intake structures also have potential to impact fish and fish habitat.
					Information Request / Comment: A. Clarify whether the tree nursery ponds are located on the Unnamed Thunder Lake Tributary 2. B. Describe the impacts to fish and fish habitat in the tree nursery ponds, the associated unnamed tributary of Thunder Lake and upstream reach of the tributary from the tree nursery ponds, resulting from water taking.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					C. Confirm whether impacts to fish and fish habitat from water taking have been accounted for in the total amount of area lost. If not, include it in the assessment of fish habitat lost within the fish habitat compensation and offsetting plans.
					<u>Response:</u> A. There are three irrigation ponds located at the former Ontario Ministry of Natural Resources and Forests (MNRF) tree nursery. One of the ponds is located on Thunder Creek Tributary 2, while two are located on Thunder Lake Tributary 3. B. The sources of process water for the Project will include the irrigation ponds at the former MNRF tree nursery located on Thunder Lake Tributary 2 and Thunder Lake Tributary 3. Withdrawals from these ponds will vary during the year, and will be no more than of 5% of average flow per month. As a result, no impacts are predicted to fish and fish habitat in either the ponds or associates tributaries. As described in the response to TMI_112-SW(1)-26 and the revised EIS, alternative sources of water to maintain operations are available during dry periods. Blackwater Creek (maximum of 5% of flow), the runoff collection ponds surrounding the mine site, the minewater pond and the tailings storage facility (TSF). Treasury Metals has provided a refined assessment of the effects of the Project on fish and fish habitat has been provided in the revised EIS, as detailed in Table 1. C. Given that less than 5% of the average monthly flows will be withdrawn from Thunder Lake Tributary 2 and Thunder Lake Tributary 3, no impacts to fish and fish habitat are expected. As a result, neither the irrigation ponds nor the tributaries on which they reside are expected to require consideration within the offsetting plans. Treasury Metals will continue to consult with the relevant agencies and stakeholders to develop the final offsetting plans. revised EIS
123	FH(1)-02	CEA Agency	EIS, Section 3.3.4.1 Appendix G Section 10.4.2.2.1, Figure 10.4	Section 10.1.2	**<u>Summary of Comment / Rationale:</u>** Section 3.3.4.1 (EIS) indicates that a small laydown area may be used to accommodate larger items for spare parts and other maintenance necessities and will be located within the general footprint of the maintenance and mill facilities. Figure 3.0.1 (EIS, page 3-2) shows the Laydown Area overprinting the main channel of Blackwater Creek. The creation of the small laydown area over the main channel of Blackwater Creek may impact water quality and fish and fish habitat. In addition, Appendix G notes that commercial baitfish licenses are tied to the pond (site 7 on Figure 10.4 of Appendix G, page 255) on the main channel of Blackwater Creek upstream of Norman Road. If the laydown area is built over the main channel of Blackwater Creek, fish habitat will be destroyed and the passage of fish to and from the pond will be restricted. No information is given in regard to surface water runoff and seepage from this area(s) and whether or not it will be collected.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Information Request / Comment: A. Quantify the impacts to fish and fish habitat as a result from the construction and operation of the laydown area. B. Evaluate the effects to fish and fish habitat from this activity, using the framework to determine significant adverse environmental effects. C. Identify how avoidance measures to fish and fish habitat were considered in choosing the location for the small laydown area. If the impacts to fish and fish habitat are unavoidable, identify mitigation measures that will be implemented to minimize the impacts on fish and fish habitat. D. Provide a description of the planned duration for which the laydown area will be used. E. Assess the need for surface water runoff and seepage collection systems in the laydown area(s). Describe how runoff and seepage from these areas will be collected and update relevant map(s)/figure(s).
					Revised Response: A. The Project footprint has been updated in the revised EIS, and Appendix II has been revised to reflect these changes. The laydown area will be within the Project footprint. The entire Project footprint will be contained by a perimeter ditch and berm, preventing unintended discharge/runoff into the surrounding environment. All of the fish habitat within the berm and ditch will be lost. Laydown areas will have no additional impact on fish and fish habitat as the fish and fish habitat within the Project footprint will be lost once the surrounding ditch and berm are constructed. A laydown area is no longer discussed in Appendix II. B. The laydown areas within the revised Project footprint will have no effect on fish or fish habitat, as discussed in the response to Part A. C. Treasury Metals has revised their Project footprint with avoidance of fish and fish habitat in mind. The current laydown area will not impact fish and fish habitat, as discussed in the response to Part A. D. The laydown area will remain within the Project footprint throughout the operation phase of the Project, but will be reclaimed post-closure. E. The entire Project footprint, including the laydown area, will be contained by a perimeter ditch and berm, preventing unintended discharge/runoff into the surrounding environment.
124	FH(1)-03	CEA Agency	EIS Summary, EIS Section 4.10 Figure	Section 4, 10.1.2	**Summary of Comment / Rationale:** Figures ES4.19 (EIS Summary, page ES-42) and 3.11.1. (EIS, page 3-57) show a created water structure just south of the collection pond (south of Norman Road) in the main channel of

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			ES4.19 EIS, Figure 3.11.1		Blackwater Creek. The purpose of this created water structure is not clear and is not described in the narrative text.
					Information Request / Comment: A. Describe the purpose and details of the created water structure. B. Evaluate the effects on fish and fish habitat from the creation of this water structure, if applicable. C. Provide information on any mitigation measures that will be implemented to reduce the effects on fish and fish habitat during the construction and use of the created water structure, if applicable.
					Response: A. This structure was to be created to dissipate the discharge from the volume in such a way as to avoid erosion within Blackwater Creek. The Project design presented in Section 4 of the Executive Summary of the EIS represents the understanding of the Project at the time of filing. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project. A summary of the refinements to the Project since the completion of the original EIS are presented in a stand-alone revised EIS to accompany the Round 1 responses. The water structures detailed within Figures ES4.19 (EIS Summary, page ES-42) and 3.11.1. (EIS, page 3-57) are no longer part of the design. An update of planned water structures is presented within the revised EIS within Section 3.8, and delineated within Figure 3.0-1A. B. There would be no adverse effects associated within this structure to fish and fish habitat. C. As described in the response to Part A, this structure was to be constructed to reduce the potential effects of discharges to Blackwater Creek. The procedures used to mitigate and monitor the effects of in-stream construction are provided in the revised EIS sets out the assessment of effects and impacts associated with the Project in a clear and traceable manner.
125	FH(1)-04	CEA Agency	EIS Summary Sections 4.7, 4.7.6, 4.13, 4.13.9 Figures ES4.17, ES4.18	Section 4, 8	**Summary of Comment / Rationale:** Section 4.7.6 (EIS Summary) and Figure ES4.17 (EIS Summary, page ES-39) indicate that only one minor watercourse realignment of approximately 429 m in Blackwater Creek Tributary 2 is needed to carry out the project. Figures ES4.17 and ES4.18 (EIS Summary, page ES-40) do not provide any detail regarding the design of the new channel, other than to state the new channel will be trapezoidal and provide like for like habitat. The channel will not provide like for like habitat unless it is designed and engineered to do so.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			EIS Appendix F Section 4.1.4		Section 4.13 (EIS Summary) indicates that the new alignment of Blackwater Creek will naturalize over the life of the mine and become the permanent creek channel. In section 4.7.6 and Figure 4.17, the EIS Summary indicates that the only watercourse realignment required is in Blackwater Creek Tributary 2.
					<u>Information Request / Comment:</u> A. Provide habitat mapping (all life history requirements: spawning, nursery, rearing, food supply, migration areas) for Blackwater Creek and its tributaries that will be impacted by the mine and mine infrastructure. B. Clarify which watercourses, wetlands, or waterbodies will be diverted or dewatered to accommodate the mine site. C. Describe the effects of fish and fish habitat from the watercourse and wetland alterations or disruptions for the life of the mine and identify mitigation measures. D. Clarify whether or not a watercourse re-alignment, other than that in Blackwater Creek Tributary 2, is proposed in Blackwater Creek. Provide the conceptual designs for the proposed watercourse realignments, including fish habitat features.
					<u>Revised Response:</u> <u>Part A:</u> TMI_125-FH(1)-04_Figure_1 illustrates the locations of fish habitat that will be impacted by the Project footprint. With the exception of potential White Sucker spawning habitat, mapping of habitat by life-history function has not been undertaken because the fish species present are habitat generalists and the habitat that will be impacted consists of small streams and beaver ponds with fine substrate. A textual description of fish habitat types associated with Blackwater Creek is presented below. The fish communities in Blackwater Creek Tributary 1 and Blackwater Creek Tributary 2 are dominated by Phoxinus spp. (Northern Redbelly Dace and Finescale Dace), Pearl Dace and Brook Stickleback in both of these watercourses. Fathead minnow and 11 individuals identified as shiners were also captured in Blackwater Creek Tributary 1. Spawning, nursery, rearing, and food supply habitat occur for these resident habitat generalists occur throughout Blackwater Creek Tributary 1 and Tributary 2. Although they may move locally they are not typically considered migratory. Therefore no migratory habitat has been identified. A small number of White Sucker were observed spawning in Blackwater Creek Tributary 2 on patches of gravel associated with the Norman's Road crossing in 2011. No White Sucker were observed at this location in 2013 or 2017 and a fyke net set in Blackwater Creek downstream of

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					this tributary during the 2017 White Sucker spawning period did not catch any White Sucker. It is thought that the White Sucker that were observed spawning in Tributary 2 in 2011 were resident in Blackwater Creek. Nursery. Rearing and food supply habitat for resident White Sucker occur throughout Blackwater Creek and Blackwater Creek Tributary 1 and Tributary 2, especially where beaver ponds provide deeper habitat. In addition to the spawning habitat identified in Tributary 2, there is a larger area of coarse substrate suitable for White Sucker spawning Blackwater Creek itself, a short distance downstream from the confluence with Tributary 2, at the Tree Nursery Road crossing. No evidence of White Sucker spawning at that location was observed in 2013 or 2017 either. White Sucker presence/abundance in Blackwater Creek probably varies with the amount of deep habitat that is present in beaver ponds and therefore numbers may vary considerably. Part B B. As described in the revised EIS (Appendix II), there are two tributaries of Blackwater Creek that will be overprinted as a result of the Project. The upper reaches of Blackwater Creek Tributary 1 will be overprinted by the open pit mine (see Table 2). The middle reaches of Blackwater Creek Tributary 2 will be overprinted by the tailings storage facility (TSF), while the sections below the TSF will be overprinted by the minewater pond (see Figure 3.0.1A of the revised EIS).

Table 2: Blackwater Creek Tributary 1

Potential Effects	Mitigation	Offsetting	Return to Pre-disturbance
• Overprinting of a section of watercourse by the open pit mine	• Effect cannot be avoided	• Offsets as required under Section 35(2) Fisheries Act authorization	• There will be a permanent loss in watercourse

Table 3: Blackwater Creek Tributary 2

Potential Effects	Mitigation	Offsetting	Return to Pre-disturbance
• Overprinting of a section of watercourse by the construction of (TSF)	• Effect cannot be avoided	• Fishery offset and under Schedule 2 of MMER • Offsets as required under Section 35(2) Fisheries Act authorization	• There will be a permanent loss in watercourse
• Overprinting of a section of watercourse by the construction of the minewater pond	• Effect cannot be avoided	• Fishery offset and under Schedule 2 of MMER • Offsets as required under Section 35(2)	• There will be a permanent loss in watercourse

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					(continued table)

		Fisheries Act authorization	

Part C

A refined assessment of the effects of the project on fish and fish habitat has been provide in Section 6.14 of the revised EIS. Please refer to TMI_125-FH(1)-04_Table_1 (attached). The mitigation measures to reduce fish mortality include: drawing down the existing beaver ponds prior to isolating these reaches with a ditch and berm, constructing the ditch and berm during the warm-water fish timing window, and conducting fish salvage. Offsetting will be required for the habitat losses.

A refined assessment on the effects of the project on fish and fish habitat is provided in Section 6.14 of the revised EIS. Mitigation measures are provided in Section 6.14.5 of the revised EIS and residual effects in Section 6.14.6 of the revised EIS.

The following mitigation measures (stated in Section 6.14.5 of the revised EIS) are incorporated into the design and planned implementation of the Project to avoid the effects to fish and fish habitat:

- Prior to overburden removal, any beaver dams within the Project footprint will be removed and the impoundments will be allowed to draw down. [Mit_077].
- Activities and the construction of Project components that will impact or overprint watercourses will occur during the fisheries timing window when in-stream work is permitted. [Mit_078].
- To the extent practicable, fish in the sections of Blackwater Creek Tributary 1 that will be isolated by the construction of the perimeter ditch and overprinted by the removal of overburden from the open pit will be captured and relocated to the same tributary downstream from the operations area, or to the main branch of Blackwater Creek. [Mit_079].
- To the extent practicable, fish in the sections of Blackwater Creek Tributary 2 that will be isolated by the construction of the perimeter ditch and overprinted by the construction of the TSF and minewater pond will be captured and relocated to the same tributaries downstream from the operations area, or to the main branch of Blackwater Creek. [Mit_080].
- Project design incorporates a compact footprint. [Mit_050].

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• Progressively construct a perimeter ditch and seepage collection system around the operations area to capture and direct all runoff from the site to the water management system. [Mit_008]. • Effectively manage water collected on-site using constructed storage facilities, reducing the need for fresh water withdrawals and discharges of treated water. [Mit_057]. • Fresh water takings from tree nursery irrigation ponds on Thunder Lake Tributaries 2 and 3 will not exceed 5% of the flow entering the ponds. [Mit_059] • Pump intakes in the irrigation ponds at the former MNRF tree nursery will be fitted with fish screens to prevent entrainment. [Mit_081]. • During operations, excess water not required in the process will be treated to concentrations that meet Provincial Water Quality Objectives (PWQO) or Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life, or background if background levels exceed the PWQO, prior to discharging to Blackwater Creek. In the case of mercury, effluent will be treated to meet the background concentrations in Blackwater Creek. [Mit_053]. • An engineered structure, designed to dissipate flows and avoid erosion, will be constructed to discharge effluent during operations into Blackwater Creek. [Mit_058]. • The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek. [Mit_024]. • Once the open pit has been filled, excess water from the open pit will be passively released through an engineered spillway into the existing channel of Blackwater Creek Tributary 1 [Mit_060]. • Provide offsetting of fisheries habitat losses as part of the authorization required under the Fisheries Act. [Mit_083]. In addition, the Project will require a *Fisheries Act* authorization and will likely require Treasury Metals to mitigate the losses of fish habitat that it causes as a condition of that authorization. Typically, the offsetting involves the creation of new habitat or the enhancement of existing habitat that is commensurate with the habitat losses. The *Fisheries Act* authorization, which is issued by DFO, details the offsetting measures to be completed and, typically also specifies monitoring to be conducted. DFO uses a letter of credit to provide a financial assurance mechanism in the event that an offsetting plan is not completed [Mit_083]. <u>Part D</u>

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					There are no watercourse re-alignments other than the diversion of the upper catchment of Blackwater Creek Tributary 2. Treasury Metals has substantially revised Appendix II- the fish compensation plan as part of the devised EIS package to provide the conceptual designs for the proposed watercourse realignments, including fish habitat features. An example of the level of detail is attached to this IR as Figure TMI_125-FH(1)-04_Figure_2.
126	FH(1)-05	CEA Agency	EIS Summary Section 6.6	Section 4	**Summary of Comment / Rationale:** Section 6.6 (EIS Summary) indicates that groundwater drawdown due to open pit mine development is predicted to cause base flow reductions around 5% and 1% in Thunder Lake tributaries 2 and 3 and Hughes Creek respectively. Losses of groundwater input in watercourses reliant on recharge, especially in low flow times, for example the winter, could impact fish and fish habitat. **Information Request / Comment:** A. Quantify effects to fish and fish habitat as a result of groundwater drawdown in Thunder Lake tributaries 2 and 3 and Hughes Creek. B. Provide a description of the environmental monitoring plan for effects of groundwater drawdown on fish and fish habitat during the operation and decommissioning phases, including monitoring parameters, methods, sampling locations, applicable standards, duration and frequencies. These plans should clearly outline action levels that may trigger certain mitigations. **Revised Response:** A. As described in the response to TMI_71-GW(1)-08 and TMI_72-GW(1)-09, groundwater was determined to provide a limited role in surface water flows within the study area, especially in dry years. At times during dry years, flows in these streams will reduce to effectively zero, a situation that would not occur if significant amounts of groundwater flows were flowing into the watercourses. As groundwater is not a significant contributor to flows in the surface water courses, the drawdown of the water table as a result of dewatering the open pit and underground mine is not expected to measurably affect the flows in Thunder Lake Tributary 2, Thunder Lake Tributary 3, or Hughes Creek. Additionally, the watercourses mentioned in the question are at, or beyond, the limits of the conservative drawdown cone (see Figure 21 of Appendix M to the revised EIS. Consequently, no detectable impacts to fish or fish habitat are anticipated. Follow-up monitoring is proposed as described below. B. The effect of the project on groundwater elevations in the vicinity of the project will be monitored and modeling will be used to predict the effect of any observed changes in groundwater elevations that are attributable to the project on flows in the watercourse within the zone of influence. Flows in the permanently flowing watercourses will also be monitored during the project.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Monitoring of fish and fish habitat will have four components as described in Section 13 of the revised EIS – water temperature, fish habitat, benthic invertebrate community and fish community, at each monitoring location. Water temperature will be monitored with temperature loggers that include out of water detection (Onset HOBO TidbiT MX Temperature 400' or similar) from June 1 through September 30 each year, with temperature logged at 0.5 hour intervals. Fish habitat will be monitored using the Site Features, Channel Morphology module of the Ontario Stream Assessment Protocol ((Point-Transect Sampling for Channel Structure, Substrate and Bank Conditions - S4:M1; Stanfield, L. (editor). 2013. Ontario Stream Assessment Protocol. Version 9.0. Fisheries Policy Section. Ontario Ministry of Natural Resources. Peterborough, Ontario. 505 p.). The primary purpose of the habitat data is to provide context for the fish community. Other monitoring, for example the erosion monitoring, is intended to detect changes in physical habitat that might arise from the project. The benthic invertebrate community will be assessed following the Ontario Benthic Biomonitoring Network protocol (Jones, C., K.M. Somers, B. Craig and T.B. Reynoldson. 2007. Ontario Benthos Biomonitoring Network: Protocol Manual. Queen's Printer for Ontario, 109p.). Samples will be collected using quantitative sampling methods. Organisms will be identified to lowest practical level. Abundance and standard indices of community composition (diversity, evenness, Hilsenhoff Biotic Index) will be calculated will be calculated and compared in order to assess change or lack thereof. The fish community will be monitored using the single pass method of the Ontario Stream Assessment Protocol (Section 3 – Module 1). Total and relative abundance of species in the catches will be used to assess change or lack thereof Monitoring of fish and fish habitat will be undertaken, at a minimum, at the following locations: • four representative reaches (2 upstream reference reaches and two potentially impacted reaches) of Blackwater Creek, one reach in Blackwater Creek Tributary 1, between the project footprint and Blackwater Creek, • one reach in the upper catchment of Blackwater Creek Tributary 2 • one reach in Blackwater Creek Tributary 2 between the project footprint and Blackwater Creek, • one reach in Little Creek • one reach in Hoffstrom's Bay Tributary, • one reach in Thunder Lake Tributary 2 Fish and fish habitat Monitoring will commence in 2018, and be conducted annually for a minimum of three years. Subsequently, the monitoring will be conducted on a three-year cycle, to coincide with Environmental Effects Monitoring (EEM) that is required under the Metal Mining Effluent

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Regulation (MMER) of the Fisheries Act. Monitoring will continue until it is demonstrated that there are no unpredicted harmful effects on fish and fish habitat post-closure.
127	FH(1)-06	CEA Agency	EIS Summary sections 12.4.2, 12.4.2.12 EIS, Sections 6.2.1.12, 6.4.1.12 Appendix II Section 3.3	Sections 4, 9, 9.1, 9.1.2	**Summary of Comment / Rationale:** Sections 12.4.2 (EIS Summary) and 6.2.1.12 (EIS) indicate that the Project will result in approximately 6 ha of fish habitat loss due to the location of the tailings storage facility and pit excavation and that both a Fisheries Act authorization and an amendment to Schedule 2 of the Metal Mining Effluent Regulations will be required. However, Appendix II indicates that the total amount of habitat lost will be 9.5 ha. Section 3.3 (Appendix II) presents uncertainty in relocating the stream channel in the footprint of the current location of the overburden stockpile, thus, the impacts of the proposed mine waste disposal alternatives cannot be fully understood and therefore it cannot be determined if the proposed mitigation measures are appropriate. Section 5.0 (Appendix II) states that "no current locations for in-kind offset habitat locations have been selected due to non-finalized Project design, and lack of First Nation and public input into the design of the NNLP." However, section 6.4.1.12 (EIS) states that potential candidate sites for fish habitat compensation are Thunder Lake, Thunder Creek and Wabigoon Lake. There is not enough detail to quantitatively assess whether the habitat lost can be mitigated. In the absence of conceptual details of the fish habitat compensation/ offsetting measures, the significance conclusions for fish and fish habitat are not supported by evidence of mitigation measures. The conceptual plans for fish habitat offsetting/ compensation, taking into consideration Aboriginal and public input are required to ensure that the amount of habitat lost can be offset and mitigated. Appendix II provides limited information on proposed offsetting/ compensation strategies. The appendix states "The local fish species sampled within the LSA may not represent or support commercial, recreational, or Aboriginal value, and therefore may not be of interest to DFO, and there is only inconclusive evidence to support the presence of large bodied fish". To clarify, the Fisheries Act prohibition against causing serious harm to fish states "No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery or to fish that support such a fishery".
					Information Request / Comment: A. Provide detailed outline of the effects to fish and fish habitat in each watercourse, waterbody, and wetland as a result of the mine and mine infrastructure. B. Provide updated tables that identify the fish habitat effects by mine component, the amount of habitat created or restored to offset the loss of fish habitat, a summary breakdown of project components with consideration under Fisheries Act section 35(2) or the Metal Mining Effluent Regulations Schedule 2 amendment.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					C. Provide an updated figure that shows the watercourses, waterbodies and wetlands impacted by project components. D. Clarify the intent with respect to the overburden stockpile and the stream channel realignment. E. Describe proposed fish habitat compensation/offsetting measures for Thunder Lake, Wabigoon Lake and Thunder Creek and any other measures that have incorporated Aboriginal and public input. Provide a map that shows the potential locations of the fish habitat compensation measures in relation to the project site. F. Responses comment E above need to integrate results of discussions with Fisheries and Oceans Canada, Environment Canada, and the Ontario Ministry of Natural Resources and Forestry (MNRF) and engagement with the Aboriginal groups and the public prior to finalizing the response to FH-06. G. Provide baseline information regarding all commercial, recreational or Aboriginal fisheries present in the Local Study Area and Regional Study Area, including all forage and baitfish that support said commercial, recreational or Aboriginal fisheries. H. Provide a map that identifies any commercial bait fisheries within the Local Study Area. Provide effects assessment on all commercial bait fisheries within the Local Study Area and identify mitigation measures that will prevent significant adverse environmental effects. I. Provide a description of the environmental monitoring plan for effects to fish, commercial bait fisheries, and fish habitat, including monitoring parameters, methods, sampling locations, applicable standards, duration and frequencies. These plans should clearly outline action levels that may trigger certain mitigations.
					Revised Response: A. A refined assessment of the potential effects of the Project on fish and fish habitat is provide in Section 6.14 of the revised EIS. This section will describe the effects to fish and fish habitat in each watercourse, waterbody, and wetland as a result of the mine and mine infrastructure. Appendix II "Conceptual Fish Compensation Plan" has also been revised at the request of the agency. B. TMI_127-FH(1)-06_Table_1 (attached) identifies fish habitat effects by mine component and indicates whether the effect is a consideration under Fisheries Act section 35(2) or the Metal Mining Effluent Regulations Schedule 2 amendment.. The amount of habitat that will be created or restored to offset the loss of fish habitat has not yet been determined. Three feasible offsetting options have been proposed and MNRF Dryden has indicated that all three are worth consideration as final offsetting (presented in Appendix II and summarized in Part E, below). C. The location of watercourses and beaver ponds where serious harm or loss of fish habitat will occur are shown in TMI_127-FH(1)-06_Figure_1, to be viewed in conjunction with TMI_127-FH(1)-06_Table_1.

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					D. There is no stream channel realignment resulting from the overburden stockpile. E. A conceptual fish habitat offsetting plan has been presented in Appendix II of the revised EIS. To facilitate review, the pertinent information is presented below. Three potential offsetting measures are currently under consideration for the project. They are: • shoreline stabilization on Wabigoon Lake, • creation of fish habitat, after mine closure, in ponds adjacent and connected to Blackwater Creek, and • removal of the dam on Thunder Lake Tributary 2, to allow upstream fish passage. Each of these concepts is deemed to be worthy of consideration as offsetting for the project by MNRF Dryden, recognizing that the final offsetting plan will be determined during the detailed design phase of the project and that consultation will occur during its preparation. MNRF Dryden also indicated that there are no other habitat restoration projects that are considered a management priority at this time that should be considered as potential offsetting (J. Van Wallegham, Management Biologist, MNRF Dryden District. Personal communication with C. Portt, March 21, 2018). The final offsetting plan will be determined subsequently, in consultation with DFO, EC, MNRF and Aboriginal peoples. F. The three offsetting concepts are described briefly below. Additional information is provided in Appendix II of the EIS. It should be noted that removal of an existing dam on Thunder Creek, which flows from Thunder Lake to Wabigoon Lake, which was proposed as a possible offsetting measure in an earlier conceptual offsetting report is no longer under consideration. The removal of that dam, which was proposed as a method to restore upstream fish passage between the two lakes, would not be effective because there is a natural falls in Thunder Creek that blocks upstream fish migration. Shoreline stabilization on Wabigoon Lake Stabilizing shoreline of Wabigoon Lake is a management objective of MNRF. This option can be considered habitat restoration, as it addresses problems created in the past. Wabigoon Lake is very turbid due to high levels of suspended sediment. The Wabigoon Chain Fisheries Background Report (MNRF, 2014) describes the situation as follows: The Wabigoon Chain Fisheries Background Report (MNRF, 2014) states: “Any opportunities to stabilize the shoreline and prevent erosion should be pursued. Management discussions should consider that the sedimentation may negatively impact the spawning success of a variety of species.” Creation of fish habitat, after mine closure, in ponds adjacent and connected to Blackwater Creek

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					Post-closure, fish habitat could be created where water collection ponds 2 and 2B are located during operations (TMI_127-FH(1)-06_Figure_2). Currently, it is proposed to restore these areas by filling in the ponds and restoring terrestrial vegetation. An alternative approach would be to leave these ponds in place, or even to expand them if necessary to achieve the necessary offsets. It would be necessary to remove any contaminated material that may have accumulated during operations. Different substrate could be added if desired. Water that discharges from the pit, which it is currently proposed to discharge to Blackwater Creek Tributary 1, could be directed to the ponds and then from the ponds to Blackwater Creek Tributary 1. Habitat could be created that is very similar to the habitat in beaver ponds and therefore suitable for the fish species that are present. Removal of the dam on Thunder Lake Tributary 2, to allow upstream fish passage A dam located on Thunder Lake Tributary 2 is a barrier to upstream fish passage (TMI_127-FH(1)-06_Figure_2). Its removal would reconnect the upstream reaches of this system, which are extensive, with Thunder Lake. Removal of anthropogenic barriers to fish migration is identified as a habitat restoration activity that is appropriate as an offsetting measure by DFO (DFO, 2013). G. TMI_125-FH(1)-04_Figure_1 illustrates the locations of fish habitat that will be negatively impacted by the Project footprint. With the exception of potential White Sucker spawning habitat, mapping of habitat has not been undertaken because the fish species present are habitat generalists. A textual description of fish habitat types associated with Blackwater Creek is presented below. The fish communities in Blackwater Creek Tributary 1 and Blackwater Creek Tributary 2 are dominated by Phoxinus spp. (Northern Redbelly Dace and Finescale Dace), Pearl Dace and Brook Stickleback in both of these watercourses. Fathead minnow and 11 individuals identified as shiners were also captured in Blackwater Creek Tributary 1. Spawning, nursery, rearing, and food supply habitat occur for these resident habitat generalists occur throughout Blackwater Creek Tributary 1 and Tributary 2. Although they may move locally they are not typically considered migratory. Therefore no migratory habitat has been identified. A small number of White Sucker were observed spawning in Blackwater Creek Tributary 2 on patches of gravel associated with the Norman's Road crossing in 2011. No White Sucker were observed at this location in 2013 or 2017 and a fyke net set in Blackwater Creek downstream of this tributary during the 2017 White Sucker spawning period did not catch any White Sucker. It is thought that the White Sucker that were observed spawning in Tributary 2 in 2011 were resident in Blackwater Creek. Nursery. Rearing and food supply habitat for resident White Sucker occur throughout Blackwater Creek and Blackwater Creek Tributary 1 and Tributary 2, especially where beaver ponds provide deeper habitat. In addition to the spawning habitat identified in Tributary 2, there is a larger area of coarse substrate suitable for White Sucker spawning Blackwater Creek itself, a short distance downstream from the confluence with Tributary 2, at the Tree Nursery Road

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					crossing. No evidence of White Sucker spawning at that location was observed in 2013 or 2017 either. White Sucker presence/abundance in Blackwater Creek probably varies with the amount of deep habitat that is present in beaver ponds and therefore numbers may vary considerably. H. The potential effects of the Project on commercial bait fisheries potentially affected by the Project are described in Section 6.16 of the revised EIS. Effects of the project on Baitfish are discussed in Section 6.14 of the revised EIS, the effects of changes to baitfish determined in Section 6.14 were used in the assessment of effects of the Project on land use in Section 6.16 of the revised EIS, and on Aboriginal Peoples in Section 6.21. The effects of the project on each Indigenous community who currently or historically use the land for traditional bait fishing purposes has been assessed in Section 6.22 of the revised EIS. The results indicate that the Project will not have a meaningful effect on the ability of Indigenous communities to baitfish as part of their traditional uses of land and resources. I. Provide a description of the environmental monitoring plan for effects to fish, commercial bait fisheries, and fish habitat, including monitoring parameters, methods, sampling locations, applicable standards, duration and frequencies. These plans should clearly outline action levels that may trigger certain mitigations. The effect of the project on groundwater elevations in the vicinity of the project will be monitored and modeling will be used to predict the effect of any observed changes in groundwater elevations that are attributable to the project on flows in the watercourse within the zone of influence. Flows in the permanently flowing watercourses will also be monitored during the project. Monitoring of fish and fish habitat will have four components – water temperature, fish habitat, benthic invertebrate community and fish community, at each monitoring location.. Water temperature will be monitored with temperature loggers that include out of water detection (Onset HOBO TidbiT MX Temperature 400' or similar) from June 1 through September 30 each year, with temperature logged at 0.5 hour intervals. Fish habitat will be monitored using the Site Features, Channel Morphology module of the Ontario Stream Assessment Protocol ((Point-Transect Sampling for Channel Structure, Substrate and Bank Conditions - S4:M1; Stanfield, L. (editor). 2013. Ontario Stream Assessment Protocol. Version 9.0. Fisheries Policy Section. Ontario Ministry of Natural Resources. Peterborough, Ontario. 505 p.). The primary purpose of the habitat data is to provide context for the fish community. Other monitoring, for example the erosion monitoring, is intended to detect changes in physical habitat that might arise from the project. The benthic invertebrate community will be assessed following the Ontario Benthic Biomonitoring Network protocol (Jones, C., K.M. Somers, B. Craig and T.B. Reynoldson. 2007. Ontario Benthos Biomonitoring Network: Protocol Manual. Queen's Printer for Ontario, 109p.). Samples will be collected using quantitative sampling methods. Organisms will be identified to lowest practical level. Abundance and standard indices of community composition (diversity, evenness, Hilsenhoff

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					Biotic Index) will be calculated will be calculated and compared in order to assess change or lack thereof. The fish community will be monitored using the single pass method of the Ontario Stream Assessment Protocol (Section 3 – Module 1). Total and relative abundance of species in the catches will be used to assess change or lack thereof Monitoring of fish and fish habitat will be undertaken, at a minimum, at the following locations: • four representative reaches (2 upstream reference reaches and two potentially impacted reaches) of Blackwater Creek; • one reach in Blackwater Creek Tributary 1, between the project footprint and Blackwater Creek; • one reach in the upper catchment of Blackwater Creek Tributary 2; • one reach in Blackwater Creek Tributary 2 between the project footprint and Blackwater Creek; • one reach in Little Creek; • one reach in Hoffstrom's Bay Tributary; and • one reach in Thunder Lake Tributary 2. Fish and fish habitat Monitoring will commence in 2018, and be conducted annually for a minimum of three years. Subsequently, the monitoring will be conducted on a three-year cycle, to coincide with Environmental Effects Monitoring (EEM) that is required under the Metal Mining Effluent Regulation (MMER) of the Fisheries Act. Monitoring will continue until it is demonstrated that there are no unpredicted harmful effects on fish and fish habitat post-closure. This monitoring will be conducted in 2018, and then on a three-year cycle, to coincide with Environmental Effects Monitoring (EEM) that is required under the Metal Mining Effluent Regulation (MMER) of the Fisheries Act (Environment Canada, 2012. Metal mining technical guidance for environmental effects monitoring, ix+539 p.) until closure is complete. A decrease in fish abundance or change in community composition that is outside of the range observed at the reference locations will trigger the development of a study to determine cause. EEM requires biological (fish population health and benthic invertebrate community) monitoring, on a three-year repeating cycle, and the study design for each cycle must be reviewed and approved by Environment Canada prior to the study taking place. The established EEM triggers will be used to determine if additional actions (confirmation of effects, determination of cause, elimination of cause) are required. In addition to the field investigations, monitoring of effluent quality and laboratory testing of effluent toxicity which is a legal requirement of EEM under the MMER, will be conducted.

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					Monitoring of mercury in fish flesh in Blackwater Creek will be undertaken, in accordance with MMER Environmental Effects Monitoring protocols, if the concentration of total mercury in the effluent is equal to or greater than 0.10 µg/L. The effectiveness of the fish habitat offset plan (detailed in Appendix II) will be depend upon the offsetting that is conducted and will be developed through discussion with MNRF, DFO, and Environment Canada and become conditions of the Fisheries Act authorization and Schedule 2 permitting. That monitoring will continue until it is demonstrated that the offsetting has been effective. Criteria for considering adaptive management measures would include the following: • Final effluent quality does not meet PWQO, such that adverse water quality effects to aquatic life in Blackwater Creek may be anticipated, or shown to occur; • Baseflow reductions in Project area creeks due to groundwater drawdown effects, linked to open pit dewatering, are greater than anticipated and detrimental to fish habitat; • Fish community changes is observed in which a dominant species, defined as a species that comprised more than 20% of the total numbers caught during baseline, does not appear in the catch, • Benthic invertebrate community indices fall outside of the normal range for similar habitats., and • Fish habitat offset measures fail to perform as intended.
128	FH(1)-07	CEA Agency	EIS Summary Sections 12.4.2, 12.4.2.12 EIS section 6.4.1.12, Table 6.4.2 Appendix G Appendix Q	Sections 4, 9 , 9.1, 9.1.2	**Summary of Comment / Rationale:** Sections 12.4.2.12 (EIS Summary) and 6.4.1.12 (EIS) state that a potential effect to fish during the operation phase is fish mortality resulting from changes in water quality due to increased sediment from runoff and/or release of deleterious substances and from potential degradation of habitat availability and quality. The proponent predicted these effects to be significant. Mitigation measures identified in section 6.4.1.12 (EIS) include the implementation of comprehensive EMP measures (including erosion and sediment control measures) that minimize the potential for habitat disturbance; equipment used will be well-maintained and will carry appropriately stocked spill kits; operators will be trained in their use and have a spill response plan in place; and, disturbed soils will be stabilized where possible to limit potential for erosion and sediment mobilization. These mitigation measures are too vague to assess whether they are sufficient in preventing significant adverse environmental effects. Section 6.4.1.12 (EIS) states that the residual effect on fish mortality from changes in habitat quality is predicted to be significant and that the proponent will carry out monitoring to detect ongoing or potential adverse effects and manage such issues when they arise. Section 6.4.1.12 (EIS) also states that follow up fish surveys to assess species distribution and species composition

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					will be undertaken. These measures require further detail to allow the Agency to assess whether they are sufficient in preventing significant adverse environmental effects.
					<u>Information Request / Comment:</u> A. Provide details of additional mitigation measures (e.g. sediment and erosion control plan) to prevent increased sediment and release of deleterious substances into a waterbody. B. Provide detail on proposed monitoring plan, include duration (years), data collection methods (sampling methods), and means of analyzing data which will be implemented to detect ongoing or potential adverse effects. Include the proposed mitigation strategies or adaptive management or adaptive management strategies that will be used if adverse effects are detected. C. Describe all future fish survey plans
					<u>Revised Response:</u> *Part A: Provide details of additional mitigation measures (e.g. sediment and erosion control plan) to prevent increased sediment and release of deleterious substances into a waterbody.* The EIS has been revised substantially since the original submission and meaningful improvements have been made to the assessment of the effects of the project on fish and fish habitat. The fish habitat compensation plan has also been revised (Appendix II). The following mitigation measures are described in Section 6.14.5 for the effects of the project on fish and fish habitat: • Prior to overburden removal, any beaver dams within the Project footprint will be removed and the impoundments will be allowed to draw down. [Mit_077]. • Activities and the construction of Project components that will impact or overprint watercourses will occur during the fisheries timing window when in-stream work is permitted. [Mit_078]. • To the extent practicable, fish in the sections of Blackwater Creek Tributary 1 that will be isolated by the construction of the perimeter ditch and overprinted by the removal of overburden from the open pit will be captured and relocated to the same tributary downstream from the operations area, or to the main branch of Blackwater Creek. [Mit_079]. • To the extent practicable, fish in the sections of Blackwater Creek Tributary 2 that will be isolated by the construction of the perimeter ditch and overprinted by the construction of the TSF and minewater pond will be captured and relocated to the same tributaries downstream from the operations area, or to the main branch of Blackwater Creek. [Mit_080].

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					• Project design incorporates a compact footprint. [Mit_050]. • Progressively construct a perimeter ditch and seepage collection system around the operations area to capture and direct all runoff from the site to the water management system. [Mit_008]. • Effectively manage water collected on-site using constructed storage facilities, reducing the need for fresh water withdrawals and discharges of treated water. [Mit_057]. • Fresh water takings from tree nursery irrigation ponds on Thunder Lake Tributaries 2 and 3 will not exceed 5% of the flow entering the ponds. [Mit_059] • Pump intakes in the irrigation ponds at the former MNRF tree nursery will be fitted with fish screens to prevent entrainment. [Mit_081]. • During operations, excess water not required in the process will be treated to concentrations that meet Provincial Water Quality Objectives (PWQO) or Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life, or background if background levels exceed the PWQO, prior to discharging to Blackwater Creek. In the case of mercury, effluent will be treated to meet the background concentrations in Blackwater Creek. [Mit_053]. • An engineered structure, designed to dissipate flows and avoid erosion, will be constructed to discharge effluent during operations into Blackwater Creek. [Mit_058]. • The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek. [Mit_024]. • Once the open pit has been filled, excess water from the open pit will be passively released through an engineered spillway into the existing channel of Blackwater Creek Tributary 1 [Mit_060]. • Provide offsetting of fisheries habitat losses as part of the authorization required under the Fisheries Act. [Mit_083]. In addition, the Project will require a *Fisheries Act* authorization and will likely require Treasury Metals to mitigate the losses of fish habitat that it causes as a condition of that authorization. Typically, the offsetting involves the creation of new habitat or the enhancement of existing habitat that is commensurate with the habitat losses. The *Fisheries Act* authorization, which is issued by DFO, details the offsetting measures to be completed and, typically also specifies monitoring to be conducted. DFO uses a letter of credit to provide a financial assurance mechanism in the event that an offsetting plan is not completed [Mit_083].

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					Part B: Original Request- "Additional details of the proposed management plans are provided in Section 12 of the revised EIS" *Second Request" Provide detail on proposed monitoring plan, include duration (years), data collection methods (sampling methods), and means of analyzing data which will be implemented to detect ongoing or potential adverse effects. Include the proposed mitigation strategies or adaptive management or adaptive management strategies that will be used if adverse effects are detected.* As part of the revised EIS, Management Plans are separate distinctly different from Follow-Up and Monitoring Plans. The Fish Management Plan is provided in Section 12.10 of the revised EIS: The Fish Management Plan will apply to all aspects of the Project that could affect fish or fish habitat and will include detailed protocols and procedures on how these potential effects will be managed during all phases of Project development. This plan will be developed in accordance with the Metal Mine Effluent Regulations (MMER) (DFO 2002) under the Fisheries Act, along with all other applicable permit, regulation, or act. The actions of this plan will detail the roles and responsibilities of key personnel with regards to the management of potential effects to fish and fish habitat. Additionally, this plan will be equipped with procedures that will clearly identify the ways in which Treasury Metals' will limit adverse environmental effects to fish and fish habitat, including fish habitat offset required under the MMER. The Fish Management Plan will be developed prior to the start of construction activities. The following are the trigger levels to warrant action with respect to fish and fish habitat • Effluent or water quality is worse than predictions in the EIS and which may have harmful effects to fish and fish habitat. • The sample taking from the discharge location fails the sub-lethal toxicity testing (>50% mortality) A Follow-Up and Monitoring program for fish and fish habitat has been included in Section 13.14 of the revised EIS with the objective of confirming the predictions made within the EIS. A follow-up Program for monitoring fish and fish habitat will include the following: The effect of the project on groundwater elevations in the vicinity of the project will be monitored and modeling will be used to predict the effect of any observed changes in groundwater elevations that are attributable to the project on flows in the watercourse within the zone of influence. Flows in the permanently flowing watercourses will also be monitored during the project.

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					Monitoring of fish and fish habitat will have four components – water temperature, fish habitat, benthic invertebrate community and fish community, at each monitoring location. Water temperature will be monitored with temperature loggers that include out of water detection (Onset HOBO TidbiT MX Temperature 400' or similar) from June 1 through September 30 each year, with temperature logged at 0.5 hour intervals. Fish habitat will be monitored using the Site Features, Channel Morphology module of the Ontario Stream Assessment Protocol ((Point-Transect Sampling for Channel Structure, Substrate and Bank Conditions - S4:M1; Stanfield, L. (editor). 2013. Ontario Stream Assessment Protocol. Version 9.0. Fisheries Policy Section. Ontario Ministry of Natural Resources. Peterborough, Ontario. 505 p.). The primary purpose of the habitat data is to provide context for the fish community. Other monitoring, for example the erosion monitoring, is intended to detect changes in physical habitat that might arise from the project. The benthic invertebrate community will be assessed following the Ontario Benthic Biomonitoring Network protocol (Jones, C., K.M. Somers, B. Craig and T.B. Reynoldson. 2007. Ontario Benthos Biomonitoring Network: Protocol Manual. Queen's Printer for Ontario, 109p.). Samples will be collected using quantitative sampling methods. Organisms will be identified to lowest practical level. Abundance and standard indices of community composition (diversity, evenness, Hilsenhoff Biotic Index) will be calculated will be calculated and compared in order to assess change or lack thereof. The fish community will be monitored using the single pass method of the Ontario Stream Assessment Protocol (Section 3 – Module 1). Total and relative abundance of species in the catches will be used to assess change or lack thereof Monitoring of fish and fish habitat will be undertaken, at a minimum, at the following locations: • four representative reaches (2 upstream reference reaches and two potentially impacted reaches) of Blackwater Creek • one reach in Blackwater Creek Tributary 1, between the project footprint and Blackwater Creek, • one reach in the upper catchment of Blackwater Creek Tributary 2 • one reach in Blackwater Creek Tributary 2 between the project footprint and Blackwater Creek, • one reach in Little Creek

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					• one reach in Hoffstrom's Bay Tributary, • one reach in Thunder Lake Tributary 2 Fish and fish habitat Monitoring will commence in 2018, and be conducted annually for a minimum of three years. Subsequently, the monitoring will be conducted on a three-year cycle, to coincide with Environmental Effects Monitoring (EEM) that is required under the Metal Mining Effluent Regulation (MMER) of the Fisheries Act. Monitoring will continue until it is demonstrated that there are no unpredicted harmful effects on fish and fish habitat post-closure. This monitoring will be conducted in 2018, and then on a three-year cycle, to coincide with Environmental Effects Monitoring (EEM) that is required under the Metal Mining Effluent Regulation (MMER) of the Fisheries Act (Environment Canada, 2012. Metal mining technical guidance for environmental effects monitoring, ix+539 p.). EEM requires biological (fish population health and benthic invertebrate community) monitoring, on a three-year repeating cycle, and the study design for each cycle must be reviewed and approved by Environment Canada prior to the study taking place. The established EEM triggers will be used to determine if additional actions (confirmation of effects, determination of cause, elimination of cause) are required. In addition to the field investigations, monitoring of effluent quality and laboratory testing of effluent toxicity is a legal requirement of EEM under the MMER. Effluent and water quality monitoring requirement is captured by the surface water quality monitoring program outlined in Section 13.8.3. Biological monitoring will include: • <u>Effluent</u>: Acute and sub-lethal toxicity sample taken from end of pipe location will be conducted for plant, benthic invertebrate and fish species, as prescribed by O. Reg. 560/94 and the MMER.
129	FH(1)-08	CEA Agency	Appendix C of Appendix Q	Section 9.1.2	**<u>Summary of Comment / Rationale:</u>** Appendix C of Appendix Q shows site photographs of Hoffstrom's Bay and Kelpyn Bay. However, Appendix D of Appendix Q provides fish habitat data sheets for the waterbodies mentioned above as well as Blackwater Creek and the tributaries of Thunder Lake. Site photographs of Blackwater Creek and its tributaries and those of Thunder Lake are mentioned in the fish habitat data sheets but not provided.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					This information will assist the Agency in understanding the existing conditions within Blackwater Creek and its tributaries and those of Thunder Lake.
					Information Request / Comment: A. Provide the site photographs of Blackwater Creek and its tributaries and the tributaries of Thunder Lake.
					Response: A. Please refer to the following figures: • TMI_129-FH(1)-08_Figure_1 – View of Blackwater Creek north of Normans Road. • TMI_129-FH(1)-08_ Figure_2 – View of Blackwater Creek south of operations area during spring freshet. • TMI_129-FH(1)-08_ Figure_3 – View of Blackwater Creek at Anderson Road during spring freshet. • TMI_129-FH(1)-08_ Figure_4 – View of Blackwater Creek north of surface water collection site JCTA. • TMI_129-FH(1)-08_ Figure_5 – View of Blackwater Creek south of crossing on Normans Road. • TMI_129-FH(1)-08_ Figure_6 – View of Blackwater Creek at crossing at Tree Nursery Road (typical summer condition). • TMI_129-FH(1)-08_ Figure_7 – View of Blackwater Creek south of surface water collection site JCTA. • TMI_129-FH(1)-08_ Figure_8 – Aerial view of Blackwater Creek north of Normans Road.
130	FH(1)-09	CEA Agency	EIS Summary Sections 12.4.2, 12.4.2.12	Section 4	**Summary of Comment / Rationale:** Section 12.4.2 indicates that changes to water quantity could have an effect on downstream habitats and that mitigation through on-site water management plans will maintain the water balance.
					Information Request / Comment: A. Provide the water management plans for water diversions on, and around the mine site to address any downstream fish habitat impacts. B. Describe all potential mitigation measures.
					Revised Response: Part A: Water management plans

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					The water diversions referenced in the information relate to water captured in the operations area, reducing the catchment areas to surrounding creeks and tributaries. Section 6.14 of the Revised EIS contains the effects assessment for fish and fish habitat, along with the mitigation measures to be put in place to reduce or eliminate potential Project impacts. Effects on fish from changes in flow has been assessed for the site preparation and construction phase, operations phase, closure phase, and post-closure phase of the Project. Section 6.14.6 provides the residual adverse effects from the Project on fish and fish habitat and shows that, with the implementation of the mitigation measures outlined, there will be no residual effect to fish and fish habitat from changes in flows. Additionally, Section 12.10 Fish Management Plan of the Revised EIS provides information regarding water management plans for water diversions to address any downstream fish habitat impacts. Part B: Describe all potential mitigation measures. Section 6.14.5 Identified Mitigation of the Revised EIS describes mitigation measures incorporated into the design and planned implementation of the project to avoid effects to fish and fish habitat. Section 6.14.5 states: • Prior to overburden removal, any beaver dams within the Project footprint will be removed and the impoundments will be allowed to draw down. [Mit_077]. • Activities and the construction of Project components that will impact or overprint watercourses will occur during the fisheries timing window when in-stream work is permitted. [Mit_078]. • To the extent practicable, fish in the sections of Blackwater Creek Tributary 1 that will be isolated by the construction of the perimeter ditch and overprinted by the removal of overburden from the open pit will be captured and relocated to the same tributary downstream from the operations area, or to the main branch of Blackwater Creek. [Mit_079]. • To the extent practicable, fish in the sections of Blackwater Creek Tributary 2 that will be isolated by the construction of the perimeter ditch and overprinted by the construction of the TSF and minewater pond will be captured and relocated to the same tributaries downstream from the operations area, or to the main branch of Blackwater Creek. [Mit_080]. • Project design incorporates a compact footprint. [Mit_050]. • Progressively construct a perimeter ditch and seepage collection system around the operations area to capture and direct all runoff from the site to the water management system. [Mit_008].

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					• Effectively manage water collected on-site using constructed storage facilities, reducing the need for fresh water withdrawals and discharges of treated water. [Mit_057]. • Fresh water takings from tree nursery irrigation ponds on Thunder Lake Tributaries 2 and 3 will not exceed 5% of the flow entering the ponds. [Mit_059] • Pump intakes in the irrigation ponds at the former MNRF tree nursery will be fitted with fish screens to prevent entrainment. [Mit_081]. • During operations, excess water not required in the process will be treated to concentrations that meet Provincial Water Quality Objectives (PWQO) or Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life, or background if background levels exceed the PWQO, prior to discharging to Blackwater Creek. In the case of mercury, effluent will be treated to meet the background concentrations in Blackwater Creek. [Mit_053]. • An engineered structure, designed to dissipate flows and avoid erosion, will be constructed to discharge effluent during operations into Blackwater Creek. [Mit_058]. • The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek. [Mit_024]. • Once the open pit has been filled, excess water from the open pit will be passively released through an engineered spillway into the existing channel of Blackwater Creek Tributary 1 [Mit_060]. • Provide offsetting of fisheries habitat losses as part of the authorization required under the Fisheries Act. [Mit_083]. *In addition, the Project will require a Fisheries Act authorization and will likely require Treasury Metals to mitigate the losses of fish habitat that it causes as a condition of that authorization. Typically, the offsetting involves the creation of new habitat or the enhancement of existing habitat that is commensurate with the habitat losses. The Fisheries Act authorization, which is issued by DFO, details the offsetting measures to be completed and, typically also specifies monitoring to be conducted. DFO uses a letter of credit to provide a financial assurance mechanism in the event that an offsetting plan is not completed [Mit_083].*
131	FH(1)-10	CEA Agency	EIS Sections 5.0, 5.8.4, Table 5.8.14	Section 4	**Summary of Comment / Rationale:** There were several surveys done of fish and fish habitat presented in various appendices, e.g. Appendix G, Appendix Q, and Appendix II.

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					In addition, the baseline work in Appendix G suggests that further field surveys should be considered as the majority of streams within the local study area were not assessed for their total lengths due to access, fish captures in several tributaries were not representative, and the captures were completed only over one field season. However, Appendix Q indicates additional field work was undertaken in 2012 that concentrated on Thunder Lake, Wabigoon Lake, Thunder Creek, Blackwater Creek and Thunder Lake Tributary 3. Without a summary, it is difficult to interpret whether these surveys were adequate in determining a baseline awareness of habitat types and fish occurrences. This information is required to properly assess effects to fish and fish habitat as a result of the project.
					Information Request / Comment: A. Provide a summary of fish and fish habitat information collected for the Project both within and outside of the Local Study Area–similar to Table 5.8.14–including habitat mapping (all life history requirements: spawning, rearing, migration areas, food supply, nursery), fish species assemblages, and all baseline data collected.
					Revised Response: TMI_131-FH(1)-10_Table_1 attached to this IR revised response summarizes the fish habitat and fish communities for the waterbodies and watercourses in the study area. This information is included in the revised EIS in Section 6.14 of the revised EIS, *Effects on Fish and Fish Habitat*.
132	FH(1)-11	CEA Agency	Appendix G EIS Summary Sections 12.4.2, 12.4.2.13	Sections 9, 9.1, 9.1.2 Section 4	**Summary of Comment / Rationale:** Four (4) wetland communities of significance are identified within the EA baseline data; Lola Lake Wetland, Hughes Creek Wetland, Thunder Lake Wetland and Thunder Lake, Blackwater Creek and Nugget Creek Wetlands. The EIS states a permanent loss of 39.5 ha of wetlands as a result of the project.
					Information Request / Comment: A. Clarify the potential fish habitat within the four wetland communities. B. Identify connectivity of the wetlands to commercial, recreational or Aboriginal fisheries. C. Identify fish species present in the wetlands. D. Identify potential effects and mitigation measures to prevent significant adverse environmental effects to fish and fish habitat.

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					E. Provide a description of the environmental monitoring plan for impacts to fish and fish habitat identified in these wetlands, including monitoring parameters, methods, sampling locations, applicable standards, duration and frequencies. These plans should clearly outline action levels that may trigger certain mitigations.
					Revised Response: *A. Clarify the potential fish habitat within the four wetland communities.* The wetland assessment in the original EIS focused on 4 wetland areas. However, Treasury Metals has made substantial improvements to the overall EIS of the project since the initial submission, including the wetlands assessment, The wetlands assessment in the revised EIS focused on 11 discrete wetlands near the LSA, as opposed to broad, general "wetland areas". The 11 wetlands are illustrated in Figure 5.9.3.2-1 in the revised EIS, and attached to this IR as TMI_132-FH(1)-11_Figure_1. The fish habitat and fish community in each of the wetlands are described in TMI_132-FH(1)-11_Table_1 (attached). *B. Identify connectivity of the wetlands to commercial, recreational or Aboriginal fisheries.* The fish habitat and fish community in each of the wetlands are described in Table TMI_132-FH(1)-11_Table_1. Since the time of the original EIS submission, Treasury Metals has participated in a number of meaningful engagement activities. Treasury Metals as revised the EIS substantially to reflect the traditional knowledge and traditional land and resource use information shared since the original EIS submission. Traditional knowledge regarding to commercial, recreational or Aboriginal fisheries was added into Section 5- Existing Environment, which was in turn used in the valued component selection described in Section 6.1.3 of the revised EIS. The VCs were used in the revised assessment of potential effects of the projects which is located in Section 6.21 of the revised EIS. An assessment of the ability of each Indigenous community, including to practice their traditional land and resource use is provided in Section 6.22 of the revised EIS. Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment) (i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment);

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					o Traditional knowledge with respect to wetlands is provided in Section 5.9.9 and traditional knowledge with respect to aquatic resources is provided in Section 5.8.5. Commercial fisheries and effects on socio-economic factors are also considered in Section 5.12.5-Human Environment. A few examples of traditional knowledge with respect to fisheries includes Members of Wabigoon Lake Ojibway Nation, Eagle Lake First Nation, Whitefish Bay First Nation, and Wabauskang First Nation have indicated that: Fish spawning and sanctuaries are located in areas surrounding the project; Thunder Lake is cold water trout habitat; Fishing supports tourism and businesses in the area providing fishing and guiding experiences, Wabigoon Lake First Nation and Whitefish Bay First Nations have fishing licenses on Thunder and Wabigoon Lake • Traditional land and resource use is discussed for each Indigenous community is located in Section 5.13.3; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Aboriginal peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential to the selection of Valued Components (VCs) as discussed in Section 6.1.3 of the revised EIS. • All engagement activities to date are summarized in Section 9 of the revised EIS and provided in detail in Appendix DD. Engagement logs for all indigenous communities are attached to Appendix DD. • The executive summary has been updated to reflect the meaningful engagement activities with indigenous communities Based on the information shared with Treasury Metals, it is Treasury Metals' understanding that many communities are specifically interested in the potential effects on the project on their ability to practice their traditional land and resource uses. From the engagement activities completed to date traditional land and resource uses include but are not limited to harvesting/gathering of plants, hunting and trapping, cultural and spiritual practices, and fishing. Treasury Metals has revised the EIS to reflect the valued traditional knowledge and traditional land and resource information shared by the Indigenous communities to-date and will continue to work with all communities to ensure that any potential impacts of the project on their traditional land and resource use are properly mitigated. *C. Identify fish species present in the wetlands.* The fish community in each of the wetlands is described in Table TMI_132-FH(1)-11_Table_1.

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					D. Identify potential effects and mitigation measures to prevent significant adverse environmental effects to fish and fish habitat. The following mitigation measures are described in Section 6.14.5 of the revised EIS to prevent significant adverse environmental effects on fish and fish habitat and will apply to Wetland WLD2, WLD4 and a portion of WLD3. • Prior to overburden removal, any beaver dams within the Project footprint will be removed and the impoundments will be allowed to draw down. [Mit_077]. • Activities and the construction of Project components that will impact or overprint watercourses will occur during the fisheries timing window when in-stream work is permitted. [Mit_078]. • To the extent practicable, fish in the sections of Blackwater Creek Tributary 1 that will be isolated by the construction of the perimeter ditch and overprinted by the removal of overburden from the open pit will be captured and relocated to the same tributary downstream from the operations area, or to the main branch of Blackwater Creek. [Mit_079]. • To the extent practicable, fish in the sections of Blackwater Creek Tributary 2 that will be isolated by the construction of the perimeter ditch and overprinted by the construction of the TSF and minewater pond will be captured and relocated to the same tributaries downstream from the operations area, or to the main branch of Blackwater Creek. [Mit_080]. • Project design incorporates a compact footprint. [Mit_050]. • Progressively construct a perimeter ditch and seepage collection system around the operations area to capture and direct all runoff from the site to the water management system. [Mit_008]. • Effectively manage water collected on-site using constructed storage facilities, reducing the need for fresh water withdrawals and discharges of treated water. [Mit_057]. • Fresh water takings from tree nursery irrigation ponds on Thunder Lake Tributaries 2 and 3 will not exceed 5% of the flow entering the ponds [Mit_059] • Pump intakes in the irrigation ponds at the former MNRF tree nursery will be fitted with fish screens to prevent entrainment. [Mit_081]. • During operations, excess water not required in the process will be treated to concentrations that meet Provincial Water Quality Objectives (PWQO) or Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life, or background if background levels exceed the PWQO, prior to discharging to Blackwater Creek. In the

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					case of mercury, effluent will be treated to meet the background concentrations in Blackwater Creek [Mit_053]. • An engineered structure, designed to dissipate flows and avoid erosion, will be constructed to discharge effluent during operations into Blackwater Creek. [Mit_058]. • The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek. [Mit_024]. • Once the open pit has been filled, excess water from the open pit will be passively released through an engineered spillway into the existing channel of Blackwater Creek Tributary 1. [Mit_060]. • Provide offsetting of fisheries habitat losses as part of the authorization required under the Fisheries Act. [Mit_083]. In addition, the Project will require a Fisheries Act authorization and will likely require Treasury Metals to mitigate the losses of fish habitat that it causes as a condition of that authorization. Typically, the offsetting involves the creation of new habitat or the enhancement of existing habitat that is commensurate with the habitat losses. The Fisheries Act authorization, which is issued by DFO, details the offsetting measures to be completed and, typically also specifies monitoring to be conducted. DFO uses a letter of credit to provide a financial assurance mechanism in the event that an offsetting plan is not completed [Mit_083]. *E. Provide a description of the environmental monitoring plan for impacts to fish and fish habitat identified in these wetlands, including monitoring parameters, methods, sampling locations, applicable standards, duration and frequencies. These plans should clearly outline action levels that may trigger certain mitigations.* No monitoring of fish or fish habitat is proposed for WLD4 that will be overprinted or the portion of WLD2 that will be overprinted. Follow-up monitoring sites will be established on Blackwater Creek Tributary 1 in WLD3 and on Blackwater Creek in or adjacent to WLD3 as well as in o adjacent to the portion of WLD2 that is upstream from the containment berm and ditch. Monitoring of fish and fish habitat will have four components – water temperature, fish habitat, benthic invertebrate community and fish community, at each monitoring location. Water temperature will be monitored with temperature loggers that include out of water detection (Onset HOBO TidbiT MX Temperature 400' or similar) from June 1 through September 30 each year, with temperature logged at 0.5 hour intervals.

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					Fish habitat will be monitored using the Site Features, Channel Morphology module of the Ontario Stream Assessment Protocol ((Point-Transect Sampling for Channel Structure, Substrate and Bank Conditions - S4:M1; Stanfield, L. (editor). 2013. Ontario Stream Assessment Protocol. Version 9.0. Fisheries Policy Section. Ontario Ministry of Natural Resources. Peterborough, Ontario. 505 p.). The primary purpose of the habitat data is to provide context for the fish community. Other monitoring, for example the erosion monitoring, is intended to detect changes in physical habitat that might arise from the project. The benthic invertebrate community will be assessed following the Ontario Benthic Biomonitoring Network protocol (Jones, C., K.M. Somers, B. Craig and T.B. Reynoldson. 2007. Ontario Benthos Biomonitoring Network: Protocol Manual. Queen's Printer for Ontario, 109p.). Samples will be collected using quantitative sampling methods. Organisms will be identified to lowest practical level. Abundance and standard indices of community composition (diversity, evenness, Hilsenhoff Biotic Index) will be calculated will be calculated and compared in order to assess change or lack thereof. The fish community will be monitored using the single pass method of the Ontario Stream Assessment Protocol (Section 3 – Module 1). Total and relative abundance of species in the catches will be used to assess change or lack thereof. Thunder Lake Tributaries 2 and 3: • Survey of fish species composition using the same techniques used for baseline studies once every three years; and • Monitoring of mercury in fish is not expected to be required under the MMER due to low mercury concentrations in effluent (<0.10µg/L), pending confirmation of effluent testing. Little Creek and Hoffstrom's Bay Tributary: • Survey of fish species composition using the same techniques used for baseline studies once every three years; and • Monitoring of mercury in fish is not expected to be required under the MMER due to low mercury concentrations in effluent (<0.10µg/L), pending confirmation of effluent testing. Control Site: • Acute and sub-Lethal toxicity testing on benthic invertebrate and fish species, and • Survey of fish species composition using the same techniques used for baseline studies once every three years.

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					The effectiveness of the fish habitat offset plan (detailed in Appendix II) will be monitored using fish and fish habitat surveys that: • Will be conducted using the same sampling techniques used for baseline sampling, and • Are to be conducted 1 and 5 years following the construction of the habitat offset.
133	FH(1)-12	CEA Agency	Appendix Q Appendix G	Sections 9, 9.1, 9.1.2	**Summary of Comment / Rationale:** Fisheries surveys present in this appendix focused on Thunder Lake, Wabigoon Lake, Thunder Creek, Blackwater Creek and two tributaries to Thunder Lake. The baseline data in Appendix G states that a dam north of Highway 17 excludes the upstream migration of fish from Wabigoon Lake to Thunder Lake. DFO noted that the proponent could consider re-establishing connectivity within Thunder Creek to allow fish migration between Wabigoon Lake and Thunder Lake as an offsetting strategy.
					Information Request / Comment: A. Provide information on the feasibility of re-establishing connectivity within Thunder Creek to allow fish migration between Wabigoon Lake and Thunder Lake as an offsetting strategy. B. Provide further rationale and design elements for the fish habitat compensation and offsetting measures.
					Response: A. As outlined in the EIS (see also response TMI_139-FH(1)-18), the Project will result in the unavoidable loss of fish habitat that will require Treasury Metals to seek authorization under Section 35(2) of the Fisheries Act. This authorization will likely require offsetting of the lost habitat. Compensation offsets would also be required under Section 2 of the Metal Mining Effluent Regulations (MMER). Appendix II to the revised EIS provides a preliminary conceptual plan for offsetting and compensation requirements, Treasury Metals will continue to engage the appropriate agencies (Fisheries and Oceans Canada (DFO), Environment Canada (EC), Ontario Ministry of Natural Resources and Forestry (MNRF)) in defining the offsetting strategy as part of the Fish Management Plan. This may include evaluating the feasibility of re-establishing connectivity between Thunder and Wabigoon Lakes, should this action be appropriate to the scale of residual effects identified. B. See response to A.

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134	FH(1)-13	CEA Agency	Appendix DD Appendix W Appendix C of Appendix F Section 5.5	Section 10.1.2	**Summary of Comment / Rationale:** Appendix DD states: "A conceptual closure plan for the Goliath Gold Site has been developed. It is anticipated that a portion of the open pit will fill with water to create a small but very deep lake. Such a lake has the potential to support fish populations following closure of the Goliath Mine." The executive summary of Appendix W states: "Forage fish are present within Blackwater Creek and habitat quality for fish within this system is moderate. Therefore fish would likely be exposed to the mine-related COCs proposed to be discharged in effluent. Under Post-Closure conditions the Pit Lake may also support small fish and other aquatic organisms... The Post-Closure Phase analysis relied upon modelled concentrations in Pit Water that will passively discharge into Blackwater Creek." Section 5.5 (Appendix C of Appendix F) states: "Without the inclusion of secondary reactions, it follows that the water quality within the pit lake will remain constant over time and after closure, and will be roughly equivalent to the long term water quality of the waste rock run-off." It is unclear whether the habitat within the pit lake will be suitable for fish survival, and if so what the predicted contamination level of these fish will be. The impacts of the eventual overflow of the pit lake during post-closure to Blackwater Creek on fish habitat within the creek and Wabigoon Lake are unclear.
					Information Request / Comment: A. Provide information on the predicted water quality of the pit lake following decommissioning and abandonment of the mine in relation to Provincial Water Quality Objectives and Metal Mining Effluent Regulations, including pH and metal concentrations. Provide information on whether or not fish will be able to access the pit lake from natural waterways. B. Provide predictions of the contaminant concentrations in fish that may have access to the pit lake following decommissioning and abandonment phases. If the predictions of contaminant concentrations are high, identify mitigation measures to prevent this adverse environmental effect. C. Describe the effects of pit lake water entering Blackwater Creek and Wabigoon Lake during the decommissioning and abandonment phases to water quality (in relation to Provincial Water Quality Objectives and Metal Mining Effluent Regulations) and use the framework to determine significance of adverse environmental effects. Provide predictions of the contaminant concentrations in fish in these waterbodies following the decommissioning phase.

					<u>Revised Response:</u> A. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared an updated water quality model for the receiving water bodies, including Blackwater Creek and Wabigoon Lake, as well as updating the water quality modelling the pit lake. The predicted water quality in the pit lake, along a description of the modeling and the assumptions, are presented in Section 6.3 of the revised EIS. Additional details regarding the pit lake modelling are provided in Section 5 of the Water Report (Appendix JJ to the revised EIS). The model estimates that it will take between 5 and 9 years for the pit lake to fill following the cessation of dewatering activities at the end of operations. As the pit lake is filling, Treasury Metals will monitor the quality of the water in the open pit to determine whether batch treatment would be required in order for the water quality in the pit lake be able to achieve the Provincial Water Quality Objectives (PWQO). Without batch treatment and a wet cover on the TSF, the model shows that the water quality in the pit lake could exceed the PWQO for aluminum, cobalt, iron, nickel, thallium, uranium and zinc (Table 6.3.5-1 of the revised EIS), but would meet the relevant MMER Schedule 4 limits. With batch treatment, the quality of the water in the pit lake would be able to achieve the Provincial Water Quality Objectives (PWQO) and/or meet the current background quality of the surrounding water bodies. The pit lake will be connected to Blackwater Creek Tributary 1 by means of a permanent overflow spillway (revised EIS Section 3) after the pit is fully flooded. This spillway will allow water to drain passively from the pit lake to Blackwater Creek in the post-closure phase. Treasury Metals have no plans to stock fish in the pit lake, and were not planning to design the overflow spillway to accommodate fish passage. Although Treasury Metals do not plan to stock the pit lake or design the overflow spillway to accommodate fish passage, it is reasonable to assume that some form of aquatic life, including fish, will eventually colonize the pit lake during the post-closure phase. Due to the anticipated depth of the pit lake, only limited fish habitat is anticipated at the lake margins. B. Based on the refined geochemical modelling presented in Section 6.3 of the revised EIS, and further detailed in Section 5 of the Water Report (Appendix JJ to the revised EIS), the water quality in the pit lake at closure, assuming a wet cover on the TSF and batch treatment as required during the filling of the pit lake, would be able to achieve the Provincial Water Quality Objectives (PWQO) and/or meet the current background quality of the surrounding water bodies. As a result, there would be no expected change in the fish tissue concentrations for fish that accessed the pit lake in the post-closure phase. C. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will

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					modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared an updated water quality model for the receiving water bodies, including Blackwater Creek and Wabigoon Lake, as well as updating the water quality modelling the pit lake. Section 6.8 of the revised EIS describes the predicted effects of the Project on surface water quality, including the effects of the release of water from the pit lake in the post-closure phase on the water quality on the nearby waterbodies, including Blackwater Creek downstream of the Project and Wabigoon Lake. With a wet cover option for closing the TSF, and appropriate batch treatment during the filling of the pit lake, surface water quality in Blackwater Creek and Wabigoon lake would either be slightly improved relative to existing conditions (i.e., the discharges from the of lower concentration that existing conditions) or would meet PWQO, depending on the parameter. These refined predictions of Project effects on surface water quality (described in Section 6.8 of the revised EIS) were used to determine the significance of the predicted residual effects of the Project. This evaluation is presented in Section 8.8 of the revised EIS. In determining the magnitude of any predicted residual effects on surface water quality, predicted concentrations were compared to the appropriate Provincial Water Quality Objectives (PWQO) for the protection of aquatic life. In the case of indicators where no PWQO were available (i.e., chloride and nitrate), the Canadian Water Quality Guidelines (CWQG) were used as the assessment criteria (Section 8.1.1.7 of the revised EIS). The PWQO (CWQG for chloride and nitrate) were selected in preference to the MMER limits as the PWQO are more restrictive, and are developed to be protective of sensitive aquatic species. The residual adverse effects of the Project on surface water quality was determined to be “not significant” (Section 8.8.2.7 of the revised EIS), including during the post-closure phase. During operations, effluent discharged from the Project to Blackwater Creek will meet the Provincial Water Quality Objectives (PWQO), or background concentrations if background levels are above the PWQO. Where there is no PWQO for a parameter, the commitment will be to meet the Canadian Water Quality Guidelines (CWQG). For total mercury, the commitment will be that effluent discharged to Blackwater Creek will meet background concentrations for that watercourse. Background concentrations for Blackwater Creek are defined as the 75^{th} percentile in accordance MOECC receiving water assessment policy. Detailed parameters will be determined through engagement with appropriate Provincial and Federal regulatory bodies.[Cmt_034]. During operations, excess water not required in the process will be treated to concentrations that meet Provincial Water Quality Objectives (PWQO) or Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life, or background if background levels exceed the PWQO, prior to discharging to Blackwater Creek. In the case of mercury, effluent will be treated to meet the background concentrations in Blackwater Creek. [Mit_053]. The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or

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					background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek. [Mit_024]. Thus, given the identified commitments and mitigation measures, no changes to the fish tissue concentrations are expected, and thus there would be no residual adverse effects for consideration in the determination of significance.
135	FH(1)-14	CEA Agency	EIS, 6.4.1.12, Table 6.4.2	Section 10.1.2	**Summary of Comment / Rationale:** Section 6.4.1.12 (EIS) summarizes the potential effects on fish and fish habitat during construction, operations, decommissioning, and abandonment phases of the project. There is no description of effects from changes to water temperature. There are occasional references throughout the document to heating pipes to prevent freezing. There is also no description of whether or not riparian vegetation and trees adjacent to the stream will still be present to provide shade (which is important to regulate water temperature).
					Information Request / Comment: A. Clarify whether there will be any effects to water temperature either due to effluent releases, or loss of shade from riparian vegetation. Describe how water temperature will impact fish and fish habitat using the framework to determine significance of adverse environmental effects.
					Revised Response: Since the time of the original EIS submission the Project design has been revised such that a number of sections and appendices essential to the effects of the Project on fish and fish habitat have been extensively revised. They have been revised using new information provided in the fish and fish habitat study presented in Appendix Q of the revised EIS, and Appendix II “CONCEPTUAL FISH HABITAT OFFSETTING PLAN” which has been substantially re-written. Appendix II includes conceptual design of riparian vegetation and trees adjacent to the stream. With off-set plan described in Appendix II of the revised EIS in place, there are no anticipated changes to temperature of waterways and thereby effects on fish and fish habitat as a result of temperature changes. Treasury Metals has provided in Appendix II, conceptual design drawings including a typical plan view and cross sections showing riparian vegetation and trees to demonstrate conceptual fish habit offsets. The figure from Appendix II has been attached to this IR for reference as TMI_135-FH(1)-14_Attachment 1.
136	FH(1)-15	CEA Agency	EIS Section 5.11.5	Section 9.1.2	**Summary of Comment / Rationale:** Section 5.11.5 (EIS) notes that Aboriginal people fish in the vicinity of the Project. Section 5.11.5 states the following about fishing activities: “no large-bodied fish occur in Project waterbodies. However, Wabigoon Lake supports a number of large-bodied fish species of value to the public

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					and First Nations: Walleye, Muskellunge, and Northern Pike." The geographic extent of the "Project waterbodies" is not clear.
					Information Request / Comment: A. Clarify what is meant by "Project water bodies" and clarify the geographic extent of "Project waterbodies".
					Response: A. The term "Project waterbodies" does not have a specific definition, but was used to refer those waterbodies that are within, adjacent to, or in close proximity to the Project. This would include large portions of Blackwater Creek and its tributaries, as well as the portions of Thunder Lake Tributary 2 and Thunder Creek Tributary 3 in and adjacent to the former Ontario Ministry of Natural Resources and Forestry (MNRF) tree nursery.
137	FH(1)-16	CEA Agency	EIS Table 6.4.2	Section 10.1.1	**Summary of Comment / Rationale:** The frequency rating in Table 6.4.2 (EIS) may have been incorrectly considered for fish habitat. The residual effect is described as "changes to water quality due to release of deleterious substance…" The risk is the deleterious substance release – this may occur infrequently but the effect is the change to water quality which if it occurs is listed as having 'the potential to persist 10 years beyond project initiation". The frequency rating downgrades the significance to "not significant" which may be inappropriate. This comment could be repeated for multiple effects ratings throughout the table. There are also parts of Table 6.4.2 that do not agree with Table 7.3.1. For example, surface water quality is said to be Level II for magnitude in Table 7.3.1, but Level I for magnitude in Table 6.4.2. Consistency in applying the approach is important to properly understand the environmental effects of the Project.
					Information Request / Comment: A. Revisit significance ratings to ensure that the frequency column is addressing the frequency of the effect on those affected and not the frequency of the risk being considered. B. Verify the accuracy of magnitude, extent, duration, and frequency scores. Ensure there is accuracy and consistency between tables in Sections 6 and 7.

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					Revised Response: The effects of changes on water quality to fish and fish habitat was discussed in Section 6.14.4.1 to Section 6.14.4.4 of the Revised EIS for each phase of the Project, and was included under the "habitat alteration or disruption" indicator. As stated in Section 6.14.4.1 to Section 6.14.4.4 of the Revised EIS for each Project phase, the predicted surface water quality in all the adjacent watercourses (Including Blackwater Creek, Hoffstrom Bay Tributary, Little Creek, Thunder Lake Tributary 2 and 3) would be the same or improved from existing conditions, or would meet the Provincial Water Quality Objectives for the protection of aquatic life during all phases of the Project. These criteria are protective of fish and fish habitat and therefore their application constitutes an assessment of changes of water quality on fish and fish habitat. As there are no adverse effects identified through the effects assessment from changes of water quality on fish and fish habitat, it was not carried forward to the determination of significance. The only effect that was carried forward to the determination of significance for fish and fish habitat is 50% fish mortality during the isolation and dewatering of Blackwater Creek Tributaries 1 and 2 in the site preparation and construction phase. The contradiction between Section 8.14.2.3 indicating timing was assigned a level III and Table 8.14.2.7-1 indicating timing was assigned a level I was a typographic error. The correct timing level is level I, which has been changed in Section 8.14.2.3 of the Revised EIS.
138	FH(1)-17	CEA Agency	EIS Section 6.4.3.1, Table 7.3.1,	Section 5.7	**Summary of Comment / Rationale:** There are several sections of the EIS that still state water is being taken from Thunder Lake. For example: Section 6.4.3.1 (EIS) states: "On-site water management and water withdrawals from Thunder Lake have the potential to directly affect fish and fish habitat by altering flow in Blackwater Creek particularly during low-flow periods of the year and by affecting water levels in Thunder Lake." Table 7.3.1 (EIS, page 7-16) shows that "Changes to water quantity and subsequent habitat availability/quality in Thunder Lake due to Makeup Water Pipeline."
					Information Request / Comment: A. Clarify whether or not water will be taken from Thunder Lake. If water will be taken from Thunder Lake, describe the quantity and potential environmental effects and proposed mitigation measures.
					Response: A. The two items listed in the questions were a legacy of an earlier design of the Project. As described in Section 3.8of the revised EIS, the plan for taking fresh make-up water required for the Project is to withdraw the water from the irrigation ponds at the former Ontario Ministry of Natural

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					Resources and Forestry (MNRF) tree nursery. This change to the fresh water supply was also flagged in the original EIS, and was attributed to helping reduce potential environmental effects and addressing specific concerns from stakeholders regarding intakes from either Thunder Lake or Wabigoon Lake. Therefore, no mitigation is required to address withdrawals from Thunder Lake. Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ. The refined water balance for the Project, including sources of fresh water are presented in Section 2 of the Water Report.
139	FH(1)-18	CEA Agency	EIS, Section 6.4.1.12	Section 10.1.1	**Summary of Comment / Rationale:** Section 6.4.1.12 (EIS) indicates that mitigation will involve the implementation of measures to return watercourses to pre-disturbance conditions as much as is possible. It is not clear which watercourse this mitigation measure is referring to as different sections within Blackwater Creek and the Unnamed Thunder Lake Tributary 2 may be degraded.
					Information Request / Comment: A. Identify the watercourses that the proponent plans to return to pre-disturbance conditions. B. Describe the measures to be implemented to return the watercourses, identified in the request above, to pre-disturbance conditions.
					Response: A. The watercourses that will be directly impacted as a result of the Project development include: Blackwater Creek, Blackwater Creek Tributary 1, Blackwater Creek Tributary 2, Thunder Lake Tributary 2, and Thunder Lake Tributary 3. There was a typographical error in Section 6.2.1.12 of the EIS, suggesting that the irrigation ponds at the former Ontario Ministry of Natural Resources and Forestry (MNRF) tree nursery were located on Hoffstrom's Bay Tributary. This is not the case, these ponds are located on Thunder Lake Tributary 2 and Thunder Lake Tributary 3. The potential effects, mitigation, offsetting and post-closure conditions of these watercourses are discussed below. The main channel of Blackwater Creek is the proposed location for effluent discharge from the processing facility. The potential release of deleterious substances will be managed and mitigated by the commitment that effluent discharged during operations will meet Provincial Water Quality Objectives (PWQO) limits. For those parameters without PWQO values, effluent quality will meet the Canadian Council of Ministers of the Environment (CCME) limits. Treasury Metals is committing that effluent discharge meet background concentrations of mercury in Blackwater Creek. In order to safely operate the open pit and underground mine, it will be necessary to dewater the mine workings. This water will be used in the process, treated and discharged to

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Blackwater Creek. As a result, there will be an increase in flows within Blackwater Creek during the operations phase. To manage the potential effects of these increased flow rates, the effluent will be discharged through a constructed structure that is designed to dissipate the flows and reduce the velocities in order to avoid erosion risks. The effluent discharges will also be managed to remain within the capability of the watercourse. This will be achieved by using on-site storage, as required. The potential direct effects of the Project on Blackwater Creek are outlined below in Table 1.

Table 1: Blackwater Creek

Potential Effects	Mitigation	Offsetting	Return to Pre-disturbance
• Discharge of effluent to Blackwater Creek during operations	• Treat effluent to meet PWQO in discharge	• None	• Water quality will be improved from background, or would meet PWQO
• Releases from pit lake following closure	• Water in the pit lake will be tested, and if necessary treated to achieve PWQO	• None	• Water quality would be improved relative to background or would meet PWQO
• Changes in flows in Blackwater Creek during operations	• Discharge structure to dissipate velocities • Manage discharges • On-site water storage	• None	• Flows in Blackwater Creek will be higher following closure, but within the capacity of the watercourse

Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ. The updated water balance for the site, including consideration of storage requirements is provided in Section 2 of the Water Report.

Blackwater Creek Tributary 1 will be overprinted by the open pit and overburden storage areas, resulting in the unavoidable loss of sections of the watercourse. This will result in a loss of habitat that will require seek authorization under Section 35(2) of the Fisheries Act, which will likely require offsetting of the lost habitat. Compensation offsets would also be required under Section 2 of the Metal Mining Effluent Regulations (MMER). Following closure, the pit will be filled with water and will eventually drain naturally through a spillway into the watercourse. The EIS included preliminary modelling for the pit water quality that suggested it will be comparable to the quality of the water used to fill the pit, and should be suitable for aquatic life. An updated water quality model for the pit during the post-closure and abandonment phase is provided in Section 6 of the Water Report. The potential direct effects of the Project on Blackwater Creek Tributary 1 are provided in Table 2.

Table 2: Blackwater Creek Tributary 1			
Potential Effects	**Mitigation**	**Offsetting**	**Return to Pre-disturbance**
• Overprinting of a section of watercourse by the open pit mine	• Effect cannot be avoided	• Fishery offset and under Schedule 2 of MMER • Offsets as required under Section 35(2) Fisheries Act authorization	• There will be a permanent loss in watercourse
• Discharge from pit following closure	• Accelerate filling to reduce acid rock drainage/metal leaching (ARD/ML) • Wet cover for the TSF	• None	• Modelling suggests that pit water quality may need treatment to meet PWQO

There are two primary effects on Blackwater Creek Tributary 2 that result from the construction of the proposed tailings storage facility (TSF) and the construction of the minewater pond. The TSF and minewater pond will be constructed in the headwaters of Blackwater Creek Tributary 2, resulting in the unavoidable loss of habitat. Treasury Metals recognizes the need to seek authorization under Section 35(2) of the Fisheries Act, which will likely require offsetting of the lost habitat. Compensation offsets will also be required under Section 2 of the MMER. The loss of these sections would be permanent. There would also be a reduction in flow in the remaining sections of Blackwater Creek Tributary 2 during operations as runoff from the site will be collected and treated before discharge downstream in Blackwater Creek. The potential direct effects of the Project on Blackwater Creek Tributary 2 are provided in Table 3.

Table 3: Blackwater Creek Tributary 2			
Potential Effects	**Mitigation**	**Offsetting**	**Return to Pre-disturbance**
• Overprinting of a section of watercourse by the construction of (TSF)	• Effect cannot be avoided	• Fishery offset and under Schedule 2 of MMER • Offsets as required under Section 35(2) Fisheries Act authorization	• There will be a permanent loss in watercourse
• Overprinting of a section of watercourse by the construction of the minewater pond	• Effect cannot be avoided	• Fishery offset and under Schedule 2 of MMER • Offsets as required under Section 35(2) Fisheries Act authorization	• There will be a permanent loss in watercourse
• Reduced flow resulting from the loss of upstream sections	• Effect cannot be avoided	• Fishery offset and under Schedule 2 of MMER • Offsets as required under Section 35(2) Fisheries Act authorization	• Following closure, there will be a partial recovery of flows as site drainage returns to near pre-development conditions

There will be no discharges to Thunder Lake Tributary 2, and no physical alterations to the watercourse. The effects are restricted to the withdrawals of fresh water from the irrigation ponds at the former MNRF tree nursery. These effects will be managed based on the available flows at various times of the year. To ensure there is sufficient fresh water available to support operations, Treasury Metals has refined their engineering for the Project to include on-site storage to supply

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					fresh water when natural flows are too low for the full required withdrawals from the watercourse. Once the withdrawals stop at the end of operations, the watercourse will return to the pre-development conditions. Table 4 lists the potential direct effects of the Project on Thunder Lake Tributary 2.

Table 4: Thunder Lake Tributary 2

Potential Effects	Mitigation	Offsetting	Return to Pre-disturbance
• Water withdrawal during operations phase	• Manage withdrawals • On-site water storage	• None	• Will return to pre-disturbance once withdrawals stop

The potential direct effects of the Project on Thunder Lake Tributary 3 are provided in Table 5. These effects are similar to those for Thunder Lake Tributary 2 (see Table 4). There will be no effluent discharged to the stream and no physical alterations to the watercourse. Once the requirement for fresh water withdrawals ceases at the end of operations, the watercourse will return to the pre-development conditions.

Table 5: Thunder Lake Tributary 3

Potential Effects	Mitigation	Offsetting	Return to Pre-disturbance
• Water withdrawal during operations phase	• Manage withdrawals • On-site water storage	• None	• Will return to pre-disturbance once withdrawals stop

B. Planned measures to return the watercourses to pre-development conditions are described above.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
140	FH(1)-19	CEA Agency	EIS, Section 6.4.1.12	Section 11.1.1	**Summary of Comment / Rationale:** Section 6.4.1.12 (EIS) indicates that fish salvage will be conducted prior to construction, during operations, and during decommissioning phases to mitigate direct mortality of fish due to physical activities that occur within or adjacent to a watercourse. The details of this mitigation measure and where it will be implemented (i.e. which watercourse in what phase of the Project) will assist in understanding how the measure will prevent the direct mortality of fish due to project activities.
					Information Request / Comment: A. Provide the fish salvage plan with the locations and timing of its implementation.
					Revised Response: A. The fish salvage plan is provided in Section 6.14.5.1 of the revised EIS. Figure 6.14.5.1 of the revised EIS is attached to this IR as TMI_140-FH(1)-19_Figure_1 in support of the revised response. For reference, the fish salvage plan has been presented below.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Fish salvage, the physical removal of fish from an isolated in-water work area, will only occur in Blackwater Creek Tributary 1 and Blackwater Creek Tributary 2 and only during the site preparation and construction phase of the project. The locations of these watercourses are shown in TMI_140-FH(1)-19_Figure_1. Fish salvage will occur along the entire length of Blackwater Creek Tributary 1. In preparation for mining the open pit, portions of Blackwater Creek Tributary 1 will be overprinted. The construction of the perimeter ditch will isolate those sections of Blackwater Creek Tributary 1 overprinted by the Project, effectively eliminating flow in the downstream sections of the tributary. This will result in the direct loss of habitat in the overprinted portions and the reduction of flows in the downstream reaches of the tributary. For the purposes of this effects assessment, it has been assumed that the reduction in flow in the downstream sections will render them unsuitable as fish habitat. Drawdown of beaver ponds along Tributary 1 will be undertaken prior to construction of the perimeter ditch, to encourage fish to leave (i.e. move downstream). Fish remaining in Reach 2 of Blackwater Creek Tributary 1 will be collected using a variety of methods (minnow traps, seines, electofishing) and transported to Blackwater Creek where they will be released. In the downstream reach of Blackwater Creek Tributary 1, most fish are expected to move downstream to Blackwater Creek as flows diminish. This reach will be examined and fish salvage will be undertaken, if fish are present, as described above. Construction of the tailings storage facility (TSF) and minewater pond will overprint sections of Blackwater Creek Tributary 2. The construction of the perimeter ditch will isolate those sections of Blackwater Creek Tributary 2 overprinted by the Project, effectively eliminating flow in the downstream sections of the tributary. This will result in the direct loss of habitat and the effective elimination of flow in the downstream reaches of the tributary. For the purposes of this effects assessment, it has been assumed that the reduction in flow in the downstream sections will render them unsuitable as fish habitat. Drawdown of the beaver pond along this reach of stream will be undertaken prior to construction of the perimeter ditch to encourage fish to leave (i.e. move downstream). Fish salvage will be undertaken in the isolated portion of Blackwater Creek Tributary 2 (reach 2). Fish remaining in Reach 2 of Blackwater Creek Tributary 2 will be collected using a variety of methods (minnow traps, seines, electrofishing) and transported to Blackwater Creek where they will be released. In the downstream reach of Blackwater Creek Tributary 2 (Reach 1), most fish are expected to move downstream to Blackwater Creek as flows diminish. This reach will be examined and fish salvage will be undertaken, if fish are present, as described above.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
141	FH(1)-20	CEA Agency	Appendix G Section 10.2, Figure 10.1	Section 7.2.1	**Summary of Comment / Rationale:** Section 10.2 (Appendix G) states: "LSA and a RSA were established to encompass the geographic areas over which Project activities could potentially influence key aquatic resource components". As the same LSA and RSA are used for all valued components, this statement does not provide sufficient rationale for choosing the spatial boundary for the fish and fish habitat assessment. There is no description to indicate whether community and Aboriginal traditional knowledge, current land and resource use by Aboriginal groups, ecological, technical and social and cultural considerations were taken into account. Section 7.2.1 of the EIS Guidelines indicates that spatial boundaries will be defined taking into account as applicable the appropriate scale and spatial extent of potential environmental effects; community and Aboriginal traditional knowledge; current land and resource use by Aboriginal groups; and ecological, technical, social, and cultural considerations.
					Information Request / Comment: A. Provide a revised local study area and regional study area that takes into account the appropriate scale and spatial extent of potential environmental effects on fish and fish habitat; community and Aboriginal traditional knowledge; current land and resource use by Aboriginal groups; and ecological, technical, social, and cultural considerations. Provide an explanation of how these factors were taken into consideration in revising the spatial boundary. B. If the existing LSA and RSA for the fish and fish habitat assessment already take the above factors into consideration, provide an explanation for choosing the spatial boundary as shown in Figure 10.1 of Appendix G.
					Revised Response: *A. Provide a revised local study area and regional study area that takes into account the appropriate scale and spatial extent of potential environmental effects on fish and fish habitat; community and Aboriginal traditional knowledge; current land and resource use by Aboriginal groups; and ecological, technical, social, and cultural considerations. Provide an explanation of how these factors were taken into consideration in revising the spatial boundary.* Since the time of the original EIS submission Treasury Metals has substantially revised the report and in some cases the appendices to reflect the significant improvements made in response to Agency feedback. In the revised EIS, the LSA and RSA for Fish and Fish Habitat are described in Section 6.1.4.14 of the revised EIS report. For fish and fish habitat, the Local Study Area (LSA) includes the watercourses where direct effects associated with the Project could potentially occur and the lake habitats in the immediate vicinity of the mouths of these creeks. The Project design has taken a watershed approach and the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Project activities are now confined to the watersheds of Blackwater Creek and four tributaries to Thunder Lake. These include Hoffstrom's Bay tributary, Little Creek, Thunder Lake Tributary 2 and Thunder Lake Tributary 3. Thunder Lake Tributary 3 is the south branch of Thunder Lake Tributary 2, which drains from Lola Lake into Thunder Lake. Hughes Creek, which was included in the LSA in the EIS, is no longer considered part of the LSA as no activities will take place in the watershed, and no effects are expected to occur. The Regional Study Area includes Wabigoon Lake and Thunder Lake to which the watercourse in the LSA are tributaries. The RSA and LSA for fish and fish habitat are shown on Figure 6.1.4.14-1 (attached to this IR as TMI_141-FH(1)-20_Figure_1). *B. If the existing LSA and RSA for the fish and fish habitat assessment already take the above factors into consideration, provide an explanation for choosing the spatial boundary as shown in Figure 10.1 of Appendix G*. NOTE: Please do not refer to Appendix G from the original EIS submission, because the EIS has been updated. "Appendix Q - Fisheries and Habitat" now contains all pertinent fish-related information (also refer to Section 6.1 and Section 6.14 of the revised EIS). The following is an excerpt from Section 6.1.4.14 – Fish and Fish Habitat. "For fish and fish habitat, the Local Study Area (LSA) includes the watercourses where direct effects associated with the Project could potentially occur and the lake habitats in the immediate vicinity of the mouths of these creeks. The Project design has taken a watershed approach and the Project activities are now confined to the watersheds of Blackwater Creek and four tributaries to Thunder Lake. These include Hoffstrom's Bay tributary, Little Creek, Thunder Lake Tributary 2 and Thunder Lake Tributary 3. Thunder Lake Tributary 3 is the south branch of Thunder Lake Tributary 2, which drains from Lola Lake into Thunder Lake. Hughes Creek, which was included in the LSA in the EIS, is no longer considered part of the LSA as no activities will take place in the watershed, and no effects are expected to occur. The Regional Study Area includes Wabigoon Lake and Thunder Lake to which the watercourse in the LSA are tributaries." The RSA was established to capture the full extent that aquatic impacts might extend. As such, it includes the LSA (described above), as well as the entirety of Wabigoon Lake and Thunder Lake. The LSA and RSA for fish and fish habitat are shown on TMI_141-FH(1)-20_Figure_1.
142	FH(1)-21	CEA Agency	EIS, Section 6.3.1.12	Section 7.1.1, 9.1.1	**Summary of Comment / Rationale:** Section 6.3.1.12 (EIS) states there are "two fish and fish habitat valued components identified during the environmental assessment" and the rationale for choosing these valued components is "because they are protected by the Federal Fisheries Act 2012 and the Project has potential to cause significant effects". The importance of those valued components (VCs) identified in section 6.3.1.12 (EIS) is not clear. It is also not clear how Aboriginal, social, economic, recreational, and aesthetic considerations were taken into account.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					The VCs selected in Section 6.3.1.12 (EIS) do not include discussion of indicators or measurable parameters.
					<u>Information Request / Comment:</u> A. Provide further justification for the selection of the valued components identified in section 6.3.1.12 (EIS) taking into account Aboriginal, social, economic, recreational, and aesthetic considerations. B. Describe the indicators and measures of ecosystem health and integrity used to assess the potential for environmental effects on fish and fish habitat from the Project and relate the effects to the proposed mitigation, monitoring and follow-up measures.
					<u>Revised Response:</u> A. Treasury Metals recognizes that Indigenous people all communities live, work, hunt, fish, trap, and harvest throughout their lands and rely on them for their individual as well as their communities overall cultural, social, spiritual, physical, and economic well-being. Further to this Treasury recognizes that these lands are inextricably connected to a communities identify and culture, inclusive of ceremonial and spiritual recognition. Treasury in respect to this recognizes the importance of assessing any impact as it relates to traditional land use activities and practices. Treasury Metals acknowledges that the Project may impact these availability or practices within the Project area, and is committed to working with all communities to identify, mitigate, and avoid these respective aspects. These aspects tie directly to public and Indigenous stakeholders as part of the engagement, and development of the Project. Over the course of engagement activities and as identified by multiple communities the important of fish and fish habitat has been advocated. Public and Indigenous stakeholders have indicated the importance of baitfish and sportfish industries and recreational fishing within the regional area. Further to this it has been observed and acknowledge of the importance of this valued components to social, economic, and recreational aspects within the community. Appendix DD, illustrates across Indigenous communities the concern for fish and fish habitat and needs to be considered as part of the assessment. Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment(i.e. 5.1 Climate,

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community in Section 5.13; • The baseline conditions presented in Section 5 of the revised EIS were essential to the assessment of the effects of the project on Indigenous communities in Section 6 of the revised EIS. The traditional knowledge and traditional land and resource use was also essential to the selection of valued components in Section 6.1.3 of the revised EIS. Aboriginal peoples are specifically assessed in Section 6.21 of the revised EIS, and a discussion of the effects of the project on WLON is provided in Section 6.22 of the Revised EIS. The following valued components were assessed part of Section 6.21 of the revised EIS-Description of Project Effects, Aboriginal Peoples: • Human health • Gathering pf plant materials • Hunting and trapping • Fishing • Cultural and spiritual activities • Socio-economic effects. The potential effect on each one of these VCs was considered for members of indigenous communities both on and off official first nation reserves. The methods used for the effects prediction are explained in detail in Section 6.21.2 of the revised EIS. • In the revised EIS, a summary of the potential effects of the project including on traditional land and resource use for each indigenous community i.e there is a subsection specific to WLON which is provided in Section 6.22 of the revised EIS. Treasury Metals has revised the EIS to reflect the valued traditional knowledge shared by all communities and will continue to work with this community to ensure that any potential impacts of the Project on their traditional land and resource use are properly mitigated. B. Environmental effects on fish and fish habitat from the Project are assessed in Section 6.14.1 of the revised EIS. Section 6.14.5 of the revised EIS outlines the mitigation measures identified, and section 6.14.5 presents the residual effects. Effects on Fish and Fish habitat were evaluated using the following valued components as shown in Table 6.1.3.13-1 of the revised EIS (included below for completeness). The valued components were chosen considering the traditional knowledge and traditional land and recourse use obtained via the various meaningful engagement activities

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					(summarized in Section 9 and Appendix DD of the revised EIS). Traditional knowledge with respect to aquatic resources is summarized in Section 5.8.5 of the revised EIS. Traditional land and resource use with respect to fishing is summarized by Indigenous community in each subsection of Section 5.13.3 of the revised EIS. The effects on the project on aboriginal peoples is assessed in Section 6.21 of the revised EIS, this includes consideration of effects on fish and fish habitat given that fishing has been identified as a valued component for Aboriginal Peoples. The effects on the project on the ability of each Indigenous community to practice their traditional land and resource use are discussed in Section 6.22 of the revised EIS. Several Indigenous communities identified that fishing was a key traditional use of the land, and therefore effects on fish and fish habitat are also considered in Section 6.22.

Table 6.1.3.13-1: Fish and Fish Habitat VCs, Indicators and Measures

Valued Components (VCs)	Indicators	Measures
Stream-resident fish population	Habitat lost	Length (km) or area (m^2)
	Habitat adversely affected	Length (km) or area (m^2)
	Fish mortality	Fish mortality proportion (%)
Migratory fish populations	Habitat lost	Length (km) or area (m^2)
	Habitat adversely affected	Length (km) or area (m^2)
	Fish mortality	Fish mortality proportion (%)
Lake-resident fish populations	Habitat lost	Length (km) or area (m^2)
	Habitat adversely affected	Length (km) or area (m^2)
	Fish mortality	Fish mortality proportion (%)
Fish species-at-risk	Habitat lost	Length (km) or area (m^2)
	Habitat adversely affected	Length (km) or area (m^2)
	Fish mortality	Fish mortality proportion (%)

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
143	FH(1)-22	CEA Agency	EIS, Section 5.8.4.8	Section 9.1.2	**Summary of Comment / Rationale:** No detail is provided on the sources of information used to compile the Fish Species of Management Concern in the RSA. Section 9.1.2 of the EIS Guidelines state: "The following information sources on species at risk and species of conservation concern should be consulted: • SARA (); • COSEWIC; • Relevant Government agencies; • Local naturalist and interest groups; and

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• Aboriginal groups and First Nations.”
					Information Request / Comment: A. Provide the sources of information used to compile the Fish Species of Management Concern in the RSA, explaining how the following were consulted/engaged: - SARA (www.sararegistry.gc.ca); - COSEWIC; - Relevant Government agencies; - Local naturalist and interest groups; and - Aboriginal groups and First Nations. B. If engagement did not occur with the people listed above to compile the Fish Species of Management Concern in the RSA, conduct engagement activities with groups listed above with a full explanation of the results from the engagement activities. Provide a revised effects assessment on any changes to the Fish Species of Management Concern in the RSA, if applicable.
					Response: A. The sources of information for the Fish Species of Management Concern are as follows: • SARA (); The species at risk public registry (http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm) • COSEWIC; COSEWIC Species listings under their website (http://registrelep-sararegistry.gc.ca/document/default_e.cfm?documentID=586&submit=View) • Relevant Government agencies; Ontario Ministry of Natural Resources – management biologist, species at risk biologist, and regional fisheries biologist. The OMNR personnel have changed a number of times in these positions over the years, but Jill VanWellingham was consulted, as was Mark Sobchuck (regional fisheries biologist) • Local naturalist and interest groups; Thunder Bay field naturalists, local fisherman and residents; and • Aboriginal peoples and First Nations: (see Aboriginal Engagement Report). B. Not applicable
144	WL(1)-01	CEA Agency	EIS, Section 5.9.2.1 Appendix G Section 8 .2, Figure 8.1	Sections 7.2.1, 9.2.1	**Summary of Comment / Rationale:** Section 5.9.2.1 (EIS) indicates the local study area (LSA) selected for the wildlife baseline is a 5 km radius circle centered on the existing portal (Figure 8.1 of Appendix G, page 144). The LSA was selected to focus field study efforts on identifying and assessing the wildlife community, important wildlife habitat and species at risk (SAR) located within, and near, the area in which most project facilities were anticipated to be located based on the information provided by the proponent at the time the studies were being completed.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					The wildlife regional study area (RSA) is defined by the watershed boundary to the north, east, and south and by the LSA boundary to the west (Figure 8.1). The RSA was selected to examine the wildlife community, SAR, and important habitat types within a broader area, to provide a regional context for the wildlife and habitat found in the LSA. The justification for the use of a 5 km radius circle centered on the existing portal to define the LSA and a small watershed (~145 km^2) to define the RSA, which are used to assess the project effects on wildlife, is not clear. Wildlife, including migratory birds and SAR, require the presence of suitable habitat to carry out their life cycle processes; this suitable habitat is typically defined by an ecological matrix (group of habitat types). The scale of the ecological matrix is different for many species because of their specific requirements (i.e. home range). Wildlife species occupy suitable habitat, which is typically defined by an ecological matrix and likely not well represented by a buffer of a single point. The careful selection of an appropriate LSA and RSA is a crucial preliminary element that is necessary to determine potential effects of the Project on wildlife and design an appropriate sampling framework. Section 9.1.2 of the EIS Guidelines include reference to "Technical Report No. 508, A Framework for the Scientific Assessment of Potential Project Impacts on Birds (Hanson et al. 2010)", which clearly identifies that project effects within a defined study area need to be related to local and regional population trends. This can only occur when an appropriate LSA and RSA are chosen and the selection criteria for these are clearly documented. It may also be necessary to define different scales for an LSA or RSA depending on the focal species.
					Information Request / Comment: A. Provide justification for the use of a 5 km radius circle (buffer) centered on the existing portal to define the local study area and a small watershed (~145 km^2) to define the regional study area which are used to assess the project effects on wildlife.
					Revised Response: In the revised EIS, the description of the LSAs are provided in Section 6.1.4 "Selection of Study Areas". For evaluating the potential effects of the project on wildlife and wildlife habitat, a local study area (LSA) was defined as the lands and waters of the watersheds in which the proposed development footprint. The wildlife RSA is defined by the Wabigoon Ecoregion. An Ontario Ecoregion is defined as "A unique area of land and water nested within an ecozone that is defined

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					by a characteristic range and pattern in climatic variables, including temperature, precipitation, and humidity. The climate within an ecoregion has a profound influence on the vegetation types, substrate formation, and other ecosystem processes, and associated biota that live there." (Crins 2009). The LSA and RSA used for evaluating the potential effects of the Project on wildlife and wildlife habitat are illustrated on Figure 6.1.4.12-1 of the revised EIS, and is attached to this IR as TMI_144-WL(1)-01_Figure_1. As stated in the original response to this IR – the 5 km radius circle LSA, which was used during the beginning of data collection efforts, was replaced with a the more ecologically appropriate LSA consisting of the watershed containing the Project footprint. According to CEAA's Cumulative Effects Assessment Practitioners' Guide, a Study Area is defined as "the geographic limits within which an impact to a VEC is assessed". It also defines a Local Study area as "The spatial area within which local effects are assessed (i.e., within close proximity to the action where direct effects are anticipated)." Defining the LSA for this Project as the watershed within which all aquatic and terrestrial effects will occur, and where all species habitat will be directly affected, is a reasonable approach and is ecologically defensible. In addition to the development of the new LSA, a new RSA was defined in 2015 that was based on the OMNRF Ecodistrict, within which the LSA is located. Habitat for wildlife species, including birds and SAR was investigated at both scales. The LSA contained a representative distribution of the wildlife habitats found within the RSA.
145	WL(1)-02	CEA Agency	EIS Section 5.9.2.1 - 5.9.2.4, Table 5.9.1 Appendix G Section 9.1.2, Table 9.5, Figures 9.4 -9.7 Appendix R Executive Summary, Section 2.2	Section 9.1.2	**Summary of Comment / Rationale:** Throughout the EIS, only the local and regional study areas have been characterized using Ecosite (ELC) information while the project footprint has been described using broad habitat classes (terrestrial and wetland). Section 3 (EIS) indicates that the Project footprint will cover approximately 188 ha during operations; however, it is not clear what area this covers. Typically the project footprint consists of the geographic area disturbed or occupied by the physical activities and project components. The Ecosite information is necessary to determine the amount (and type) of wildlife habitat that will be lost directly as a result of the project activities, and the indirect effects such as noise and lighting. This is particularly important with respect to effects on species at risk.
					Information Request / Comment: A. Provide a map that defines the project footprint (spatially) along with the difference between the project site and project study area. B. Provide a revised version of Figure 9.4 (Appendix G) that delineates the project footprint defined in part A of this IR with respect to the local study area (LSA) and regional study area (RSA) in

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					order to visually compare wildlife habitat within these 3 areas. C. Provide a table that lists the Ecosite information of the project footprint defined in part A of this IR, the LSA, and the RSA in order to compare wildlife habitat within these 3 areas. D. Provide the total area, including wetlands by Ecosite covered by all project components and by each project component (i.e. Waste rock Storage Area, Ultimate Pit, Overburden Storage Area, Low-grade Stock Pile, Processing Plant, Tailings storage facility, and underground workings) in percentages and in square kilometres to allow for a review of effects on migratory birds and wildlife. Refer to comment WL(1)-04 for more information.
					Response: A. Maps showing the Project footprint and study areas are provided in the following attached figures: • TMI_145-WL(1)-02_Figure_1a (RSA, LSA and Project footprint) • TMI_145-WL(1)-02_Figure_1b (LSA and Project footprint) B. Revised versions of Figure 9.4 (Appendix G), delineating the Project footprint, the regional study area (RSA) and local study area (LSA) are provided in the following figures: • TMI_145-WL(1)-02_Figure_2a (Ecosite information for RSA, LSA and Project footprint) • TMI_145-WL(1)-02_Figure_2b (Ecosite information for LSA and Project footprint) The descriptions of the Ecosites listed on the figures are provided in TMI_145-WL(1)-02_Table_1. C. A listing of the areas and relative proportions of the Project footprint, LSA and RSA is provided in TMI_145-WL(1)-02_Table_2. The descriptions of the Ecosites listed in the table are provided in TMI_145-WL(1)-02_Table_1. D. The areas of various Ecosites covered by the individual Project components are provided in TMI_145-WL(1)-02_Table_3. It should be noted that the total areas provided in Part C of this response are larger than the total areas provided in TMI_145-WL(1)-02_Table_3 because the footprint consists of the area associated with all the Project components, as well as the areas between all those components. The individual components listed in TMI_145-WL(1)-02_Table_3 do not incorporate those “interstitial” spaces. The descriptions of the Ecosites listed in the table are provided in TMI_145-WL(1)-02_Table_1.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
146	WL(1)-03	CEA Agency	EIS Sections 5.9.2.4, 5.9.3 6.2.1.13, 6.4.1.13, 9.1.2, 9.2.2.3 Appendix R Figure 3.1 Appendix S Figure 2.1 Appendix G Appendix S Section 2.2	Section 9.1.2	**Summary of Comment / Rationale:** Section 5.9.3.3 (EIS) states: "Nine wetlands were identified as being potentially impacted by future development (Figure 5.9.3) and were assessed in the field using the OWES protocol." Section 2.2 (Appendix S) states: "Site visits, which included ground-truthing all accessible portions of each wetland, occurred throughout the early fall of 2012. All vegetation communities were visited in the field to confirm vegetation community boundaries and to identify vegetation forms and species." Field surveys for wetland vegetation during the early fall may not capture the species necessary to evaluate wetlands using the Ontario Wetland Evaluation System (OWES). From Figure 2.1 (Appendix S, page 10), it appears as though only nine wetlands identified to be directly affected by project activities were subsequently evaluated. Baseline surveys should have considered all wetlands within the local study area (LSA), and extended even to the regional study area (RSA) to ensure the projected areas of the groundwater drawdown are adequately sampled. An appropriate sampling framework (using the Ecosite information already available) should have been designed and documented. An important large wetland (Lola Lake Nature Reserve) was excluded from wetland surveys even though a portion of it is within the LSA, and the watershed it is within will likely be affected by project activities. Wetlands provide significant habitat for migratory birds and species at risk (SAR). In order to determine the potential effects of the Project on wildlife, including migratory birds and SAR, habitat information, including wetlands must be presented (Ecosite information), and the sampling framework must be adequately justified.
					Information Request / Comment: A. Provide dates for the wetland vegetation surveys for the nine wetlands identified and a justification that the survey period conforms to the requirements of the OWES. B. Conduct baseline surveys, with an appropriately designed sampling framework using the Ecosite information that is already available, for all wetlands within the local study area, taking into consideration the projected areas of the groundwater drawdown, water taking for mine operations and habitats for migratory birds and species at risk. . Provide the results of these surveys. C. Provide a spatial representation of the wetlands that were sampled. Provide a summary and

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					map of the wetlands by Ecosite within the project footprint. D. Provide additional information with respect to the sampling framework for wetlands to justify why only the 9 wetlands that were determined to be directly affected were sampled. In particular, explain why an important large wetland within the LSA (Lola Lake Wildlife Preserve) was excluded from wetland surveys.
					Response: A. Treasury Metals has prepared a document to accompany the Round 1 responses, referred to as the Wetlands Baseline Study (2016) (Appendix S of the revised EIS), which consolidated the information presented in Appendix S to the original EIS, and the more recent information collected since the EIS. Dates for the wetland evaluations were as follows: 2012 – September 20th to October 10th, and 2016 – June 1st to 15th. The OWES does not provide any dates during which surveys need to take place. B. Results of these surveys can be found in the Wetlands Baseline Study (2016), which has been provided as an accompanying document to the Round 1 responses. C. See attached figure (TMI_146-WL(1)-03_Figure_1.pdf) and Table 1 (below). Table 1. Summary of wetland ecosites within the Project footprint

ECOSITE	Area (km2)	%
25	0.0027	2.49
26	0.0128	11.97
29	0.0004	0.36
32	0.0312	29.13
40	0.0233	21.77
44	0.0367	34.28
Total:	**0.1071**	**100**

D. A total of eleven wetlands were surveyed in 2016: The original nine sites, as well as two additional wetlands within the LSA. The Lola Lake Nature Reserve has been excluded because the wetland is upstream of the potentially impacted watershed, and thus it is not expected that the Project will have any effect on this wetland. However, a great deal of information about Lola Lake

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					was obtained from Parks Canada including historical flora and fauna inventories, and this information has been included in the Wetlands Baseline Study (2016), provided as an accompanying document to the Round 1 responses.
147	WL(1)-04	CEA Agency	Appendix G Figure 9.1, Sections 9.2.1 - 9.2.2.1.1	Section 9.1.2	**Summary of Comment / Rationale:** Table 9.2 (Appendix G, page 193) indicates targeted vegetation surveys were conducted in the local study area (LSA) in June, July and August, 2011. General vegetation observations such as vegetation community identification, Ecosite verification and vegetation species inventories were also collected in conjunction with the other baseline studies such as the aquatic field program and the wildlife field program throughout 2010 and 2011 (Table 9.2). The vegetation sampling appears to be concentrated around roads only, and not distributed throughout all the Ecosites found within the LSA. The map in Figure 9.1 (Appendix G, page 190) should include the Ecosite mapping used in other maps provided in the EIS. A summary table presenting the distribution of sample points by Ecosite within the project footprint, LSA and regional study area (RSA) should also be provided. A description of the survey design (distribution) of sample locations is necessary to justify that the sample points are representative of the project footprint, LSA, and RSA in order to determine the characteristics of the available habitat and evaluate the effects to wildlife species and impacts to Aboriginal current use of lands and resources, including plant harvesting.
					Information Request / Comment: A. Provide a revised Figure 9.1 (Appendix G) to include Ecosite mapping used Figure 9.4 (Appendix G, page 204). B. Provide a summary table presenting the distribution of sample points within the project footprint, LSA and RSA. C. Describe the survey design (distribution) of sample locations.
					Response: A. The requested Figure is attached as TMI_147-WL(1)-04_Figure_1.pdf. B. Table 1 (below) includes the requested information. Table 1: Distribution of Sample Points.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

Ecosite	RSA		LSA		Footprint	
	Count	%	Count	%	Count	%
Developed	12.0	9.5%	22	13.2%	21	22.1%
9	5.0	4.0%	0	0.0%	0	0.0%
12	0.0	0.0%	3	1.8%	0	0.0%
13	7.0	5.6%	23	13.8%	3	3.2%
14	1.0	0.8%	1	0.6%	0	0.0%
16	4.0	3.2%	0	0.0%	0	0.0%
19	5.0	4.0%	4	2.4%	0	0.0%
20	11.0	8.7%	0	0.0%	0	0.0%
22	0.0	0.0%	0	0.0%	1	1.1%
25	3.0	2.4%	1	0.6%	2	2.1%
26	17.0	13.5%	27	16.2%	23	24.2%
27	2.0	1.6%	0	0.0%	0	0.0%
29	22.0	17.5%	27	16.2%	20	21.1%
30	2.0	1.6%	0	0.0%	0	0.0%
31	0.0	0.0%	5	3.0%	0	0.0%
32	0.0	0.0%	11	6.6%	20	21.1%
33	0.0	0.0%	7	4.2%	0	0.0%
35	1.0	0.8%	0	0.0%	5	5.3%
36	0.0	0.0%	2	1.2%	0	0.0%
40	1.0	0.8%	1	0.6%	0	0.0%
44	5.0	4.0%	14	8.4%	0	0.0%
45	8.0	6.3%	10	6.0%	0	0.0%
46	17.0	13.5%	9	5.4%	0	0.0%
47	3	2.4%	0	0.0%	0	0.0%

C. The work completed by KCB and DST is depicted in the original Figure 9.1 of Appendix G. During the field seasons of 2015 and 2016, additional areas were surveyed. All field survey locations were determined by designating the study areas into broad habitat categories (Upland, Lowland, Successional, Mixedwoods and Wetlands. The percent area for each habitat category was determined for all study areas (LSA, RSA, and footprint), then sampling efforts for each survey type were proportionally spread across the landscape, closely approximating the distribution of habitat as was reasonably possible. Because sampling locations for each survey type were proportionally spread across the study area by habitat category, some habitat categories will appear to have been oversampled. For example, bird surveys would have been spread equally among habitat categories, but wetland evaluations and marshbird monitoring would have focused solely on wetland ecosites. Therefore, when all the sample points are viewed together, wetlands may look proportionally oversampled.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
148	WL(1)-05	CEA Agency	EIS Sections 6.2.1.11, 6.4.1.11, 6.4.1.13 Appendix F	Section 9.1.2	**Summary of Comment / Rationale:** Section 6.4.1.13 (EIS) states: "As a result of being found in topographical depressions, wetlands may become the endpoint for contaminated runoff from mine operations. As waterfowl and wildlife (e.g., reptiles/amphibians) are attracted to wetlands for foraging and breeding, concentrations of contaminants could constitute an attractive nuisance to such species. This effect will be offset by diverting runoff to a tailings pool, with a fenced perimeter and possibly a screen over the top to prevent entry by migrating waterfowl." Appendix F states: "Unforeseen storm events will cause the release of cyanide to the environment in the event of TSF overflow. The tailings facility will not be fenced as it is not expected to contain water that would be harmful to wildlife coming in contact." 1. The possibility of birds, ungulates, species at risk, and other wildlife accessing the tailings storage facility (TSF) for drinking water, or otherwise is not discussed in sections 6.2.1.11, or 6.4.1.11 of the EIS. 2. As referenced above, there are two locations in the EIS that conflict on the need for fencing and netting around the TSF. In section 6.4.1.13 (EIS), reference is made to a fenced perimeter around the TSF with the possibility of netting to prevent entry of migratory birds and in Appendix F the inclusion of a fence around the TSF is not described. In particular, netting to prevent entry of migratory waterfowl from the TSF could be problematic as it has the potential to trap and cause harm or mortality to migratory birds and other wildlife. There is also reference to a "tailings pool" in section 6.4.1.13 (EIS). This terminology is not used elsewhere in the document. The location of the tailings pool is not shown on the map. This information will inform the Agency of adverse environmental effects on Aboriginal health due to the potential for wildlife, hunted by Aboriginal peoples, to drink water from the tailings management area and bioaccumulate contaminants.
					Information Request / Comment: A. Describe and analyze the possibility of birds, ungulates, species at risk and other wildlife using the tailings storage facility for drinking water and provide an analysis to determine if there is a risk to wildlife that may access the tailings storage facility. Provide a revised assessment of significant adverse effects on wildlife as described in EIS section 6.4.1.11, based on this information. B. Clarify the intent and rationale for including or not including features to exclude wildlife from the tailings storage facility.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					C. Clarify whether the tailings pool is different from the tailings storage facility. If it is indeed different, provide information on its location (shown on a map), size, and planned use and operation.

					<u>Revised Response:</u>
					
					Treasury Metals has substantially revised the EIS and associated figures and Appendices since the original EIS submission, such that any reference to the original EIS is no longer valid.
					
					Part A: Exposure of Wildlife to TSF
					
					A discussion of the TSF engineering design measures and water management systems that were incorporated into the Project design specifically for the protection of ecological health are described below. These design measures are described in Section 3 of the revised EIS. Also provided with each engineering design component listed herein, is a qualitative discussion of how these design components minimize potential risk to ecological receptors via pathway elimination or reduced chemical exposure.
					
					• During the operating life of the Project, the operations area will be fenced and no access will be permitted for security and safety reasons.
					    o This fencing will restrict access to humans and other large mammals such as ungulates (therefore there will be no wildlife exposure to the tailings and tailings water except for birds which have the ability to fly over the fence).
					• The floor of the TSF will be low-permeability;
					    o The liner provides a suitable risk management measure to prevent chemical leachate from infiltrating the aquifer and migrating to downgradient surface water bodies which may be used as a drinking water source for wildlife, or provide wildlife habitat. The liner also provides sufficient protection to plants and soil invertebrates which may have direct contact with the groundwater table.
					• The construction and staging of the TSF will be scheduled to ensure that sufficient storage capacity is provided in the facility to avoid overtopping and prevent water from exiting through the spillways during operations. This will be achieved by providing sufficient freeboard to safely accommodate the supernatant pond and design storm event, combined with wave run-up. A spillway will be positioned on the west side of the TSF so that overflow during an extreme flood event would drain to the open pit where it would be contained.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					o This reduces the potential for exposure of TSF water to ecological receptors outside of the fenced area. • The reclaim pump in the TSF supernatant pond will be over-sized so that it can circulate water within the supernatant pond and reduce the likelihood of it becoming anoxic. o This reduces the potential for algal blooms which may be toxic to birds. • Cyanide solution management is an important component of the overall water management strategy to ensure that wildlife, including waterfowl and aquatic life, are protected. Treasury Metals will employ a two part strategy for managing cyanide at Project, namely: reduce and re-use; and treatment or destruction. In addition, contingency measures, such as hydrogen peroxide treatment to the TSF supernatant water, and incorporation of hydrogen peroxide into the effluent treatment process will be considered as part of the sewage Environmental Compliance Approval (ECA) process with the Ministry of the Environment and Climate Change (MOECC). o The only wildlife receptors that may be exposed to contaminants associated with the TSF, are birds via the ingestion of supernatant water as drinking water. Consideration of the drinking water pathway is anticipated to provide a sufficient conservative approach for the assessment of direct dermal contact with supernatant water to birds whom may also land on the tailings pond. As stated in Section 3, the treatment of cyanide will be done so that the average concentration of cyanide in the TSF is in the range of 10-50 mg/L (ppm) CN_{WAD}. In Ontario, risk-based water criteria are not available specific for the protection of birds, however a back calculation from the CCME recommended TRV (of 0.21 mg/kg/day) suggests that a concentration of 0.11 ppm and 0.81 ppm, may pose potential risk to an American blackbird, and the American woodcock, respectively. These values are considered to be overly conservative as they assume that 100% of the ingestion of drinking water in the avian diet would come from the tailings facility and does not account for acute toxicity to all bird species. Therefore, the short-term potential risk to birds via ingestion of tailings supernatant water is considered to be relatively low. A more detailed site-specific ecological risk assessment as part of a follow-up or monitoring program may be used to confirm these predictions. • In-pond aerators would be positioned within runoff collection ponds, the mine water pond and the TSF supernatant pond to minimize ice build-up and promote the oxidation of ammonia. Decreasing the ice cover would increase the volume of water that is available for use in the Plant during winter months. o This reduces the potential for algal blooms which may be toxic to birds.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• At closure, the water in the TSF will be withdrawn, treated and used to help fill the open pit. The TSF will then be covered with a granular material to physically isolate the tailings. Next, either a low permeability cover (i.e., dry cover) or non-process water cover (i.e., wet cover) will be applied to ensure that the tailings are isolated from oxygen and water to preclude acidification. o This reduces the potential for acid mine drainage and the potential mobilization of metals into solution thereby reducing the chemical bioavailability of inorganics contaminants of concern such arsenic and lead. • Commitments and mitigation measures have been proposed that during operations, excess water not required in the process will be treated to concentrations that meet Provincial Water Quality Objectives (PWQO) or Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life, or background if background levels exceed the PWQO, prior to discharging to Blackwater Creek. In the case of mercury, effluent will be treated to meet the background concentrations in Blackwater Creek. [Mit_053]. The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek. [Mit_024]. o Meeting risk-based guidelines provided by the CCME or MOECC ensures that there are criteria that Treasury Metals can be used for screening, and in the event the surface water chemistry changes, and adaptive management approach may be implemented for the assessment of potential risk to ecological receptors. Part B: features to exclude wildlife from the tailings storage facility As presented in Part A, a number of features were included in the revised design of the project to limit exposure to the TSF, or potential contaminants such as cyanide in the supernatant water of the TSF. Given the revised design features indicated in A (i.e. fencing, cyanide treatment, TSF cover at closure), the potential risk to wildlife as a result of exposure to water in the TSF in intrinsically low. Part C: Figure The current design for the Project, as described in Section 3 of the revised EIS, a single location for the disposal of tailings, referred to as the tailings storage facility (TSF). The TSF, the location and relative size of which is illustrated on Figure 3.0-1A, includes subaqueous discharges of tailings with a water cover to isolate the tailings from oxygen. Figure 3.0-1A has been included in this IR response as TMI_148-WL(1)-05_Attachment_1 for reference.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					The following Table has been provided in his IR for referencing the information presented in this IR with the revised EIS.
149	WL(1)-06	CEA Agency			**Summary of Comment / Rationale:**

Topic	Sub-Section Title	Section Number of the Revised EIS
Alternatives Assessment	Tailings Storage Facility and Minewater Pond	2.4.2
Multiple Accounts Analysis	Tailings Storage Facility	D-2
Project Description	Tailings Storage Facility	3.7
	Tailings Storage Facility Water Management	3.8.5
	Cyanide Management	3.8.7
	Process Effluent and Discharge	3.8.8
Description of Project Effects	*Selection of Valued Components*	*6.1.3*
	Wildlife and Wildlife Habitat	6.1.3.11
	Migratory Birds	6.1.3.12
	Fish and Fish Habitat	6.1.3.13
	Wetlands and Vegetation	6.1.3.14
	Assessment of Effects	
	Wildlife and Wildlife Habitat	6.12
	Migratory Birds	6.13
	Fish and Fish Habitat	6.14
	Wetlands and Vegetation	6.14
Risk Assessment	Ecological Risk Assessment	Appendix W

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			EIS Sections 11.3, 13.7	Section 9.1.2, 16	Section 13.7 (EIS) states: "A wildlife monitoring plan will be implemented to ensure that effects on wildlife are properly mitigated. EMP monitoring will be based, where possible, on standard survey protocols used during baseline studies so that any changes in local species populations may be detected." The baseline information gathered is primarily presence/absence information. If population changes such as abundance are to be detected, this information needs to be collected during the baseline. The monitoring survey design should be carefully planned to ensure that it is effective in answering the questions that are being posed. No specific monitoring plans were included. This information is crucial to determining whether or not the collection of baseline data has been sufficient. In addition, no wildlife objectives for progressive rehabilitation or the decommissioning and abandonment phases are stated. There should be some measures in place to support the return of wildlife to the site that are valued components. This information is necessary to quantify the effects of the Project on wildlife in the decommissioning and abandonment phases. It will also assist the Agency in determining the potential impacts of the Project on Aboriginal peoples' current uses of lands and resources for traditional purposes. Section 6 (EIS) indicates that many of the valued components will be impacted by the mine in such a way that is reversible. For example, loss of habitat of wildlife SAR, ungulates, upland birds, wetland birds, and furbearers are said to be partially reversible. Impacts to fish abundance and distribution, and decreases in fish habitat quality are said to be partially reversible. There are no details of how these valued components (and other valued components with 'reversible' impacts) will be monitored to ensure that they are in fact reversed.
					<u>Information Request / Comment:</u> A. Describe the framework for the monitoring programs for all valued components (including wildlife species at risk, ungulates, upland birds, wetland birds, furbearers, fish and fish habitat) that are designed to properly determine whether or not the impacts are reversed as claimed in Section 6 of the EIS. Provide justification for the selection of valued components that require follow-up monitoring. Also provide justification if valued components are not selected to require follow-up monitoring. B. Provide wildlife objectives for the selected valued components for each project phase including

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					the decommissioning and abandonment phases that can be incorporated into a follow-up monitoring program.
					Response: A. Based on the feedback from CEAA and other technical reviewers provided in IR Round 1 questions, there are a number of issues related to the approach used in the EIS for organizing and presenting the relevant information regarding the potential effects of the Project. In order to effectively address these issues, Treasury Metals has prepared a revised EIS. Section 6 of the revised EIS sets out the assessment of effects and impacts associated with the Project in a clear and traceable manner. The information required to respond to this information request is set out in the revised EIS, which includes a summary of follow-up monitoring (Section 13) for the selected VCs and commitments (Section 10) made through the EIS and in response to IR Round 1. B. The objective is to avoid a significant residual adverse effect to wildlife during each phase of the Project. The revised EIS will present the objectives of the follow up monitoring though each phase of the Projects development.
150	WL(1)-07	CEA Agency	EIS Sections 6.2.1.9, 6.4.1.12, 6.4.1.13, 13.1.2, Figure 13.6.1 Appendix F Section 7.2.1 Appendix M Figure 20	Section 10	**Summary of Comment / Rationale:** Section 6.2.1.9 (EIS) does not discuss the potential effects of dewatering on the wetlands within the anticipated zone of influence (ZOI). Section 6.4.1.12 (EIS) states: "permanent loss of up to 39.5 hectares (0.4 km^2) of wetlands would occur". It is assumed that this loss is due to destruction related to mine facilities construction. However, since, it is stated that wetlands are "a dominant landcover type in this region" in section 6.4.1.13 (EIS), it is expected that other effects to wetlands are likely. Based on Figure 20 (Appendix M), the area of the 5 m drawdown cone is approximately a circle with a 1.8 km radius or an area of approximately 10 km^2. No discussion of the effects to the remaining wetlands that are within the dewatering area was provided. Appendix F proposes that using the two ponds near the proponent's office is the preferred alternative for the process plant freshwater source. There is no discussion regarding the impact of this dewatering on the wetlands associated with these ponds. There also appears to be a discontinuity in the model simulation results as shown in the southwest corners of the Base Case 5 m Drawdown and Zone of Influence (ZOI) boundaries in Figure 13.6.1 (EIS, page 13-7). This artefact was not discussed. The requested information will also be required in complete detail during the provincial permitting phase when applying for the required permits to take water.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Information Request / Comment: A. Describe the anticipated effects of water takings on the wetlands that are located within anticipated zone of influence (ZOI). B. Describe the numerical artefact observed in the model simulation results on the southwest corner of the drawdown contours as shown in Figure 13.6.1 (EIS, page 13-7) and any errors in the model results that may be associated.
					Revised Response: A. There are no residual effects of water takings on the wetlands that are located within the zone of influence (ZOI). The following paragraphs describes how Treasury Metals came to this conclusion. In the revised EIS the assessment of potential effects of the Project on Wetlands is provided in Section 6.15. Changes on surface water flows due to drawdown are assessed as part of 6.11 Groundwater Quantity on the revised EIS. Changes in surface water flows are then assessed as part of Wetlands in Section 6.15. The EIS has been revised substantially since the original submission and more clearly provides a comprehensive investigation of the effects of the project, by better connecting the various water disciplines. Full details are provided in Appendix KK (Water Report). As stated in Section 6.11 of the revised EIS, most of the watercourses in the vicinity of the Project are runoff dominated creeks that have watersheds that sit predominantly on clay. Therefore, groundwater discharge to these waterbodies is unlikely to be an important component of the flow in the nearby waterbodies. The two exceptions identified in the hydrogeological analysis were Blackwater Creek and Thunder Lake Tributaries 2 and 3. At the end of mining operations, the dewatering activities will cease and the open pit and underground mine will be allowed to start filling with water. Although the dewatering will no longer be occurring during the closure phase, the drawdown of the groundwater during operations will take more decades to fully recover to near pre-development conditions. Therefore the effects described for operations will remain throughout the closure phase. As stated in Section 6.11.3 of the revised EIS "The ZOI and drawdown zone created by the dewatering of the open pit and underground mine will not have had sufficient time to recover during the closure phase, therefore the potential effects of groundwater drawdown on surface water flows are expected to be the same as during operations." As the groundwater levels recover with time, any effects of drawdown on surface water will decrease to return to pre-development conditions. As part of the assessment of effects of the Project on Wetlands in Section 6.15, Table 6.15.6.-1 shows that there are no residual effects to wetlands due to changes in water level during any phases of the project. This table has been attached as TMI_150-WL(1)-07_Attachment 1 for reference. Thus, there are no residual effects of water takings on the wetlands that are located within the zone of influence (ZOI).

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					B. There are no numeric artifacts within the groundwater model, which is described in detail in Appendix M to the revised EIS. As described in Section 3.1.3 of Appendix M to the revised EIS, there is regional geologic structure called the Wabigoon Fault, which strikes generally east-west through the groundwater modelling domain, approximately two to three kilometres south of the open pit. What may appear to be a numeric anomaly in Figure 13.10.3.2-1 of the EIS is in fact the influence of the Wabigoon fault.
151	WL(1)-08	CEA Agency	Appendix G, section 8.3.3	Section 9.1.2	**Summary of Comment / Rationale:** Section 8.3.3 (Appendix G) states: "Moose aquatic feeding areas, calving sites, mineral licks, and animal denning sites were mapped from OMNR data." The information that has been collected by the Ontario Ministry of Natural Resources and Forestry (MNRF) in the past is minimal and has been collected for the purpose of forestry operations specifically in areas where forestry is planned. It is very likely that no surveys were done in the project area for calving sites, mineral licks, and animal denning sites. As a result, MNRF surveys in this area were extremely limited. Data collection on moose aquatic feeding areas, calving sites, mineral licks, and animal denning sites is not sufficient to determine whether or not these Significant Wildlife Habitat features occur in this area. This information will assist the Agency in determining the potential impacts of the Project on Aboriginal peoples' current uses of lands and resources for traditional purposes.
					Information Request / Comment: A. Collect data on moose aquatic feeding areas, calving sites, mineral licks, and animal denning sites to determine if Significant Wildlife Habitat features occur in the local and regional study areas. Analyze results from the data collected on moose aquatic feeding areas, calving sites, mineral licks, and animal denning sites to identify potential impacts on the ability of Aboriginal peoples to exercise traditional land use practices.
					Revised Response: The information provided in this IR revised response is included in Section 5.9.4 of the revised EIS and used in the assessment of project effects in Section 6.12 of the revised EIS. As per discussions with the Agency, all requested information is/was included in the last round of the EIS submission, however Treasury Metals has revised the EIS to better demonstrate how this information was collected and incorporated. MAFAs

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					As stated in the original response to this IR, every wetland within the LSA was surveyed to determine its value as a MAFA. Information regarding MAFAs outside of the LSA (I,e, in the RSA) was obtained through the OMNRF LIO database. MAFAs are not in short supply across the landscape in northwestern Ontario, therefore the efforts of field surveys focused on documenting all of the wetlands with high potential MAFAs (those MAFAs ranked 4 as per the direction provided in the OMNRF MAFA survey protocol) which could potentially be impacted by the Project. Figure TMI_151-WL(1)-08_Figure 1 (Moose Aquatic Feeding Areas in the LSA) illustrates the location of all MAFA surveys within the LSA. Figure TMI_151-WL(1)-08_Figure 2 (Moose Aquatic Feeding Areas in the RSA) illustrates all of the known MAFAS within the RSA as determined from the LIO database. <u>Moose Calving Sites</u> No targeted moose calving surveys were completed during the field program. This is due to the fact that there were no suitable moose calving sites within the LSA (i.e. islands and peninsulas free from disturbance or human intervention. Regardless, efforts to observe evidence of moose calving while conducting other field surveys was made. No evidence of moose calving was observed during any field surveys. Searches were made for calving evidence during all wetland evaluations and MAFA surveys. During other field surveys (bird surveys, small mammal trapping, etc) no signs of calving were observed. At no time during any field surveys were calf tracks or calf scat observed anywhere in the LSA. <u>Mineral Licks and Denning Sites</u> No targeted mineral lick or den site field surveys were completed during the field program. According to the OMNRF's Significant Wildlife Habitat Technical guide, observing and locating mineral licks and den sites, is extremely difficult. With regard to denning sites, The Significant Wildlife Habitat Technical Guide states "Exhaustive searches are not recommended, since feeding and denning sites for all these mammals are usually very hard to find. Long-term survival of these species and other carnivores with large ranges is best assured by taking a broad, landscape approach to Natural Heritage System planning by identifying and protecting large natural areas that include the best quality habitat for these species. Protection of sufficient habitat for these area-sensitive species will also help provide suitable habitat for many other species." Locating den sites can be very challenging and is usually accomplished opportunistically. If a den site was observed during any other field survey it would have been documented and marked with a GPS point. No den sites were observed during any field surveys. Mineral licks are found in association with upwelling groundwater and the soil around these seepage areas. It typically occurs in areas of sedimentary and volcanic bedrock. In areas of granitic bedrock, the site is usually overlain with calcareous glacial till. Suitable soil conditions were not observed within the LSA which would support a mineral lick.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					As no moose calving sites, mineral licks or animal denning sites were located during field surveys, it is not anticipated that the Project will have any impact on the ability of Aboriginal peoples to exercise traditional land use practices.
152	WL(1)-09	CEA Agency	EIS Section 6	Section 11	**Summary of Comment / Rationale:** Mitigation measures are vague in regard to species at risk. The proponent needs to elaborate on the following proposed mitigation: "Maintain outflow water quality standards to maintain wetland health" The specific processes to be put in place remain unclear.
					Information Request / Comment: A. Describe the specific mitigation measures to be put in place to protect plant and wildlife species at risk.
					Response: Treasury Metals has committed (Table 10.0.1 of the revised EIS) that discharges from the Project during operations will meet Provincial Water Quality Objectives (PWQO) at the point of discharge. As the PWQO were established to protect sensitive aquatic receptors, maintaining the quality of these discharges will ensure that aquatic SAR downstream of the Project are protected. An expanded discussion on mitigation measures is provided in Section 6 of the revised EIS.
153 (revised)	WL(1)-10	CEA Agency	EIS Sections 5.10, 6.3.1.11, Table 6.3.1 Appendix G Section 8.6, Table 8.12	Sections 7.1.1, 9.1.2	**Summary of Comment / Rationale:** Section 9.1.2 of the EIS Guidelines states "As background for the analysis of the project's effects on Species at Risk (SAR), the EIS will: – Identify all SARs that may be affected by the project, using existing data and literature as well as surveys to provide current field data, as appropriate; – Provide assessments of regional importance, abundance and distribution that optimize the ability to detect all species at risk and sufficient survey effort to obtain comprehensive coverage; and – Identify residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, identified critical habitat and/or recovery habitat (where applicable) and general life history of SARs that may occur in the project area, or be affected by the project." However, the information in the EIS on SAR and their habitats is unclear. For example, the EIS indicates no reptile valued components (VCs) were identified because no reptile, amphibian, or terrestrial invertebrate SAR were detected in the local study area (LSA), while Section 8.6 and Table 8.13 of Appendix G indicate that habitat for snapping turtle, a federal

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					SAR, occurs in the LSA and the species may also breed in the area. In addition, Section 5.10.2 of the EIS identifies the following SAR that are not included in the effects assessment: - Plants: Western Silvery Aster (*Symphyotrichum sericeum*) - Mammals: American Badger (*Taxidea taxus*), Grey Fox (*Urocyon cinereoargenteus*), Eastern Timber Wolf (*Canis lupus lycaon)* - Reptiles: Snapping Turtle (*Chelydra serpentina*) - Arthropods: Monarch (*Danaus plexippus*) The effects assessment for the American Badger should focus on the subspecies *Taxidea taxus taxus* since that subspecies is considered to be potentially present in the study areas for the Project. Section 7.1.1 of the EIS Guidelines states the "proponent will identify the VCs deemed appropriate to ensure the full consideration of the factors listed in subsection 19(1) of CEAA, 2012 as well as the 2012 amendment to section 79 of the *Species at Risk Act*." To comply with Section 79 of the *Species at Risk Act*, potential effects to all SAR, as well as appropriate mitigation and follow-up measures, must be identified. These measures should be consistent with the applicable federal recovery strategies (http://sararegistry.gc.ca/sar/recovery/recovery_e.cfm) and management plans (http://sararegistry.gc.ca/sar/recovery/management_e.cfm). - This information on SAR and their habitat, including a revised effects assessment, details on the potential effects, appropriate mitigation and follow-up measures, is required for the Agency to complete its analysis on the effects of the Project on all SAR.
					Information Request / Comment: A. Identify and describe residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, identified critical habitat and/or recovery habitat (where applicable) and general life history of all SAR that may occur in the project area, or be affected by the Project. Include ecosite information and maps for all SAR habitats within the project footprint and LSA. B. Provide an assessment of the regional importance, abundance, and distribution for

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					each SAR. Describe how surveys were used to obtain a sufficient level of coverage for SAR (e.g. snapping turtle), including a summary of locations and timing in relation to ecosite information and identification of the survey protocols that were followed. C. Revise the effects assessment to include all SAR species as VCs, including all bird, mammal, plant, reptile, and arthropod SAR identified in the EIS. Provide the indicators used to assess potential project effects on each VC. Use an impact matrix to describe the potential effects on each SAR species, including SAR habitats, for each project phase. D. Describe the mitigation measures to address the potential effects to all SAR, ensuring that the measures are consistent with applicable recovery strategies and management plans. E. Describe the residual effects on all SAR (including all bird, mammal, plant, reptile, and arthropod species) and their habitat and the significance of those residual effects, based on the Agency's methodology for assessing significance (including the criteria of magnitude, geographic extent, timing, duration, frequency, reversibility, and ecological and social context). Describe the follow-up program for the SAR and their habitats, including objectives and any monitoring measures that will be implemented, to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures.
					Response: The RSA presented in the original EIS was defined as the entire Wabigoon Ecoregion, providing a comprehensive representation of the conditions and species that are likely to exist in the Project area. However, this approach will also capture species with highly limited distributions that would not otherwise be associated with the Project area. Also, several SAR were mentioned in the original EIS to illustrate the due diligence of the field investigations. For instance, American Badger (*Taxidea taxus taxus*; a subspecies listed as Endangered in Ontario) and Gray Fox (*Urocyon cinereoargenteus;* listed as Threatened in Ontario) were initially mentioned in Section 2.2.4.1 of the original EIS describing the methodology employed for conducting mammal encounter surveys. Transects were placed to targeted key SAR habitats to improve the likelihood of detecting these species should they be present, but not because they were present. As such, several of the SAR presented in TMI_153-WL(1)-10 are artifacts of the EIS that were not thoroughly explain in the round 1 submission. The species presented below in this document will not occur within the Project area, either due to restrictions to geographical distribution or habitat. Detailed responses for of the

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					remaining SAR that are expected to, or may occur within the Project area have been included in the attached files. Notes Regarding IR responses - For the purposes of this assessment, SAR habitat falling within the updated Project footprint is considered "lost" for the duration of Project activities until post-closure regeneration. - For the purposes of this assessment, SAR habitat falling within the 50 dB noise contour of each project phase is considered degraded by human activity (i.e., functional habitat loss). - A critical threshold of 20% was used to assess the effects of habitat loss within the LSA. This threshold was selected as a conservative estimate for the degree of habitat loss the LSA can withstand while providing the same conditions for SAR. The cumulative effect of functional habitat loss was assessed against the same threshold. This approach to assessing the effects of habitat loss has been used successfully in existing Federal environmental impact assessments in the past (see link below for examples). - SAR biology and behavior were used as indicators for assessing the risk of direct mortality, contaminant exposure and vehicle collisions. Example of Critical Habitat Loss Threshold Use Value Creations Inc. Advanced TriStar Project - Wildlife Consultant Report, Section 3.2.4.6 - https://open.alberta.ca/dataset/e5b33b7c-1b85-448a-90bf-c594d57bdc3d/resource/cf4705ee-7e32-4ee9-a30e-bffcf4fc54b4/download/CR-11---Wildlife.pdf SAR Not Assessed Western Silvery Aster Western Silvery Aster (*Symphyotrichum sericeum*; listed as Endangered in Ontario) occurs in only two areas in Ontario, roughly 130–150 km from Dryden. In the northern Ontario portion of its range, this species is only found in Bur Oak (*Quercus macrocarpa*) savannah on shallow soil over mafic (i.e., basic) bedrock. This habitat is very uncommon, with most bedrock across the Boreal Shield composed of acidic (usually granite) rock. These observations represent the north-eastern extent of the species' global range. Although Western Silvery Aster was captured in the RSA, suitable habitat does not occur within the LSA. Project effects will not impact the existing populations. No assessment is required for this species. Gray Fox Gray Fox distribution is closely associated with the presence of deciduous forest, with denning usually occurring in shrublands close to water. Recent (i.e., within the last 20 years) observations

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					in the Wabigoon Ecoregion were located near the US and Manitoba borders, roughly 150–170 km from Dryden. This represents the northern extent of this species' global range. The primary threats to Gray Fox in northern Ontario are trapping and road mortality. Although this species was captured in the RSA and habitat capable of supporting Gray Foxes exists within the LSA, the Project footprint does not include sufficient shrubland to support a denning family unit. The Project effects will not impact existing populations. No assessment is required for this species. Eastern Wolf The Eastern Wolf (*Canis lycaon*; listed as Threatened federally)—formerly assessed as Eastern Timber Wolf (*C. lupus lycaon*), recently listed as provincially Threatened by COSSARO under Algonquin Wolf (*Canis sp.*)—was included as a statement to illustrate that they were not present in the study area. Eastern wolves exploit a relatively narrow ecological niche, inhabiting mixedwood forests with low levels of human disturbance, and requiring larger prey (e.g., White-tailed Deer [*Odocoileus virginianus*] and American Beaver [*Castor canadensis*]) to meet their energy requirements. Eastern Wolf distribution is limited to southeastern Ontario, the nearest record occurring in Killarney Provincial Park, over 900 km from Dryden. Although Eastern Wolf-Grey Wolf hybrids—the Great Lakes-Boreal Wolf (*C. lupus x C. sp. cf. lycaon*)—may extend further into central and northern Ontario, the hybrids are ecological analogues of Grey Wolves (*Canis Lupus*). Although the Great Lakes-Boreal Wolf range extends over the Project area, they are not afforded the same protection as the Eastern Wolf proper. Eastern Wolves do not occur within the local or regional study areas. No assessment is required for this species. Woodland Caribou Although historically Woodland Caribou occurred in the LSA, no caribou records have been reported in that area since 1990-1999. A portion of the existing Woodland Caribou range is captured by the RSA, but the wildlife assessment focuses on the scale at which the Project will have the greatest impact (LSA and Project footprint). The Project area is found in Cervid Ecological Zone C1. This zone is currently being managed for moderate to high densities of moose, and low densities of white-tailed deer. There are currently no management objectives for woodland caribou other than recoding and documenting any sightings. As such, no assessment for this species is required. Monarch The range of Monarch butterflies (*Danaus plexippus*; listed as Special Concern in Ontario) extends across the Project area. Monarchs require four distinct habitats for different parts of their life history, including overwintering, breeding, staging and nectar (feeding) habitats. Monarchs overwinter in Mexico, and the Project area does not appear to be an important migratory staging

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					area or exist within a high volume migratory corridor. The Project area could potentially be used for breeding and nectar habitats. Breeding habitat is confined to where milkweed (*Asclepias sp.*) grows, since this serves as the sole food for their caterpillars. Although Swamp Milkweed (*Asclepias incarnata*) was identified in the LSA, it was not abundant enough to provide high quality Monarch breeding habitat. Monarchs breeding activity within the Project area is expected to be negligible. Several flowering plants occur within the LSA, so adults may feed throughout Project area. However, adult Monarch abundance is considered very low because there were no observations during three years of fieldwork and the lack of abundant breeding habitat. Generally, species listed as "Special Concern" in Ontario are not afforded any additional protection. Nevertheless, Project effects are not expected to impact Monarchs. No Assessment is needed for this species. Skillet Clubtail Dragonfly The 2011 COSARO Species at Risk Evaluation for Skillet Clubtail Dragonflies indicated that it was present in the Rainy River area, which falls within the Kenora Forest, but there was insufficient data to accurately estimate its distribution in the area. As such, it was included in the list of potential SAR that may occur within the LSA or RSA. However, Rainy River is ~170 km southwest of the Project area, and the nearest NHIC observation of this species is >1,300 km east of the LSA. Further, Skillet Clubtail Dragonflies were not observed during the field survey programs, while 1 other provincially rare (but non-SAR) clubtail species was reported. As such, we are confident this species is not present in the Project are. No assessment is needed for this species. The responses to the specific sections of the request are as follows: A. See Table TMI_153-WL(1)-10_Table 1, and Figures TMI_153-WL(1)-10_Figures 1 to 8 B. See Table TMI_153-WL(1)-10 Table 2 C. See Table TMI_153-WL(1)-10 Table 3 D. See Table TMI_153-WL(1)-10_Table 4 E. See Section 6.12 for the assessment of effects on wildlife and wildlife habitat, Section 6.12.6 of the revised EIS for a listing of the residual effects on wildlife and wildlife habitat. and TMI_153-WL(1)-10 Table 5 A description of the proposed follow-up monitoring programs is provided in Section 13 of the revised EIS, and specifically Section 13.12 for the proposed follow monitoring for wildlife.
154	WL(1)-11	CEA Agency	Appendix R Section 2.3	Section 9.1.2	**Summary of Comment / Rationale:** Section 2.3 (Appendix R) indicates that small mammal trapping was completed in October 2013. Ontario Ministry of Natural Resources and Forestry (MNRF) protocols suggest that mammal trapping be done between July – September. If any conclusions are drawn based on the catch-per-

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					unit-effort during the small mammal trapping, the accuracy of these conclusions may be questionable.
					Information Request / Comment: A. Conduct additional small mammal trapping surveys according to Ontario Ministry of Natural Resources and Forests (MNRF) protocols and prescribed time period, and include the survey findings and results in the updates to related EIS sections and appendices.
					Response: Additional small mammal trapping occurred throughout the summer of 2016 in multiple locations throughout the LSA. Small mammal trapping surveys followed the methodologies found in the OMNR Wildlife Techniques manual and the Inventory Methods for Small Mammals: Shrews, Voles, Mice & Rats Standards for Components of British Columbia's Biodiversity No. 31. The results and methodology are presented in an updated terrestrial report, entitled Summary Wildlife Baseline Report (2011–2016), which is provided as Appendix R of the revised EIS.
155	WL(1)-12	CEA Agency	Appendix R Section 3.3.2	Section 9.1	**Summary of Comment / Rationale:** Section 3.3.2 (Appendix R) states: "Five out of six monitoring locations where the ultrasonic recorders were deployed recorded Little Brown Myotis (Myotis lucifugus), one location detected Northern Myotis (Myotis septentrioalis) .... Ultrasonic recorders only indicate presence/absence as opposed to quantity (Table 3.9)." Little Brown Bat and Northern Myotis are listed as endangered species in Part 2 of Schedule 1 of the federal Species at Risk Act. Also both these species are listed as endangered on the Species at Risk List of Ontario and receive species and habitat protection under Ontario's Endangered Species Act. The presence of bats suggests that there is potential for protected bat habitat to occur within the project footprint. Specifically, there is the potential for natural and anthropogenic maternity roosts for both species. To determine whether maternity roost habitat is present, bat roosting surveys of Little Brown Myotis and Northern Myotis during the roosting period at the abandoned structures located at UTM: 528144 E, 5511709 N are required. The old underground ramp, where exploration occurred and is now sealed may also be a potential roosting and/or hibernacula site for bats. In addition, the quantification of the quality of potential maternity roost habitat present through ELC delineation and

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					snag density calculations is required. Dryden District MNRF will provide more information for guidance on survey and habitat quantification methodologies.
					Information Request / Comment: A. Determine the use of the abandoned structures by protected bat species, using exit surveys executed in accordance with Ontario Ministry of natural Resources and Forestry (MNRF) protocols and recommended procedures. Provide documentation of results, and where signs of protected species are detected, revise the effects assessment accordingly. B. Provide Ecosite (ELC) information for potential high quality bat habitat. C. Conduct a snag survey in accordance with MNRF protocols and recommended procedures to determine the quality of bat habitat within the project footprint based on ELC information and snag tree calculations. Provide documentation of results, and revise the effects assessment accordingly.
					Response: A. Some exit surveys of structures were completed by the Dryden district of the Ontario Ministry of Natural Resources and Forestry (MNRF). Only one bat was seen (species unknown) as part of a visual survey completed by MNRF staff on June 11, 2016. The survey was completed as per directions provide to Treasury Metals and in accordance with the recommendations taken from the draft Ontario Summer Maternity Roost Monitoring Emergence Counts document (2012). B and C. A description of the ecosite information and the results of snag survey is provided in the Summary Wildlife Baseline Report (2011–2016), presented as Appendix R to the revised EIS. An updated assessment of effects and significance is provided in Section 6 of the revised EIS.
156	WL(1)-13	CEA Agency	EIS Sections 6.4.1.13, 11.3, 11.5, 12.4.2, 13.7 Appendix R	Sections 9.1.2, 11.4, 16	**Summary of Comment / Rationale:** Species at Risk (SAR) information in the project phase tables presented in section 6 (EIS) focuses primarily on bats. Considering that six bird SAR were identified in the local and regional study areas, these birds should also be discussed. Section 3.2.5 (Appendix R) states: “Avian SAR detected at the Project Study area include Bald Eagle, Common Nighthawk, Barn Swallow, Canada Warbler and Olive-sided Flycatcher (Figure 3.4). Other SAR that may occur based on available habitat but were not detected in 2012 include American White Pelican (Pelecanus erythrorhynchos – Threatened), Black Tern (Chlidonias niger – Special Concern), Bobolink (Dolichonyx oryzivorus – Threatened), Eastern Whip-poor-will (Threatened), Golden Eagle (Aquila chrysaetos – Endangered), Least Bittern (Ixobrychus exilis – Threatened), Peregrine Falcon (Falco peregrinus – Special Concern), Short-eared Owl (Asio flammeus – Special Concern), and Yellow Rail (Endangered).”

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					Follow-up monitoring is listed as none required for changes in VC populations as a result of habitat removal. A follow-up program should be designed to determine if the predictions regarding displacement of migratory birds and SAR are accurate. The monitoring plan should be informed by information collected during baseline studies and presented in the effects assessment. The effects assessment should estimate the amount of habitat (by Ecosite type) to be removed and the associated breeding bird community population (using density estimates) by species. The follow-up program should therefore assess the use of the local study area (and regional study area, if applicable) by breeding birds (including SAR) to determine if the residual effects were properly predicted during the construction and operation phases. Once reclamation has begun, habitat restoration should be monitored to determine the habitat characteristics (by Ecosite) and evaluate the breeding bird community (migratory birds and SAR) compared to the baseline conditions. Follow-up monitoring should also be considered to gauge the level of common nighthawk activity on and in the vicinity of roads. The monitoring results will inform mitigation planning, i.e. scheduling traffic to avoid peak time periods when nighthawks are observed roosting on gravel roads.
					Information Request / Comment: A. Revise the effects assessment to include bird SAR as VCs. Provide the indicators used to assess potential project effects on the VC. B. Design a follow-up program to determine if the predictions regarding displacement of migratory birds and bat and bird SAR are accurate. C. Design and provide a follow-up monitoring program to gauge the level of common nighthawk activity on and in the vicinity of roads.
					Revised Response: A. Bird SAR have been included as an additional VCs in the refined effects assessment provided in the revised EIS. The indicator used to determine the Project effects for all bird SAR was the amount of suitable habitat present. The predicted effects of the project on wildlife and wildlife habitat are summarized in section 6.12.4 of the revised EIS. B. Information regarding follow-up and monitoring program for migratory birds, bats and bird SAR is provided in Section 13.12 of the Environmental Monitoring Program of the revised EIS. Parameters for wildlife habitat monitoring will include: the number of hectares of direct habitat loss or disturbed, wildlife mortality, SAR species habitat compensation and utilization. These parameters will be monitored post- project development during all 4 project phases (as per Table 13.22-1 of the Environmental Monitoring Program). SAR may also be assessed as part of a follow-up risk assessment as described in 13.19 of the revised EIS.

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					C. Information regarding follow-up monitoring to gauge the level of common nighthawk activity on and near roads is provided in Section 13.12 of the Environmental Monitoring Program of the revised EIS. Nighthawk surveys will be completed along roads within the project footprint and the surround area within the LSA. Surveys will be completed prior to project development and during all 4 phases of the project (as per Table 13.22-1 of the Environmental Monitoring Program).
157	WL(1)-14	CEA Agency	EIS Section 5	Section 9.1.2	**Summary of Comment / Rationale:** Section 5.9.5 (EIS) states that intensive nest searches were not conducted. The proponent used evening surveys for bird IDs, which the proponent claims are allowable but admits will likely result in lower detection probability. This statement suggests additional survey work is needed. However, it is unclear whether the proponent intends to complete a more comprehensive survey. Also, the proponent should explain the difference between stick and active nests referred to in section 5.9.5 (EIS): “No active stick nests were detected within the LSA; however, active nests were detected for several species.”
					Information Request / Comment: A. Explain why current survey sampling methods are adequate and justify why further studies are not necessary to reliably predict migratory bird species and bird SAR in the project area. B. Clarify the statement from section 5.9.5 (EIS) about active stick nests and active nests.
					Response: A. We were unable to locate any reference to “evening surveys for bird IDs” in section 5.9.5. However, we assume this is in reference to the marshbird surveys that were conducted in 2013 (Section 5.10.3.2 of the original EIS). The marshbird survey protocol directs one to: “Survey either during the morning or the evening. However, survey routes that are established for morning surveys must always be surveyed in the morning, and vice versa for routes established for evening surveys” (Bird Studies Canada http://www.birdscanada.org/volunteer/glmmp/index.jsp?targetpg=glmmpbird). Conducting marshbird surveys in the evening is an acceptable survey methodology. Despite this, additional marshbird surveys were conducted throughout the LSA in 2016 in order to provide a larger data set. B. Standard practice is for intensive nest searches to be conducted immediately (within 1 to 2 weeks) before timber is due to be harvested, and only if the harvesting will be occurring during the breeding window for any potential avian species to be nesting and rearing young on site. Conducting intensive nest searches years before a site is due to be harvested has no merit, as the nest may not be active or even present when the timber is cut. At this time, timber harvesting is

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					scheduled to take place outside of any bird breeding window, therefore nest searches are not required. With regard to the active stick nests and active nests – section 5.9.5 of the original EIS is referring to the following: Active Stick Nests – nests that are comprised primarily of large sticks and that are associated with raptors and birds of prey (except owls, which are cavity nesters); Active Nests – nests associated with most other avian species, primarily songbirds, waterfowl and cavity nesters. Section 5.9.5 states that no active stick nests were found during any surveys, meaning that no raptor/birds of prey nest sites were observed, however, some active songbird nests were observed (barn swallow and common grackle) as well as a common loon nest.
158	WL(1)-15	CEA Agency	EIS Section 5.10.3.2 Appendix R Section 2.2.1	Section 9.1.2	**Summary of Comment / Rationale:** Section 5.10.3.2 (EIS) states: "The 2013 marsh bird surveys were conducted in accordance with Bird Studies Canada protocols. However, the choice of evening surveys, though allowable in the protocol, will result in lower detection probability of target species. In addition, the Bird Studies Canada protocol does not do a good job of surveying one of the target species (Least Bittern), which is why a new national Least Bittern survey protocol has been developed as part of the proposed Least Bittern Recovery Plan (Environment Canada 2011)." If the 2013 Marsh Monitoring Program surveys were not adequate to detect Least Bittern, then the proponent should provide justification as to why the national Least Bittern protocol was not used, considering it was publicly available in late 2011 with the separate release of the Proposed Least Bittern Recovery Strategy and Survey Protocol.
					Information Request / Comment: A. Provide scientific justification as to why the national Least Bittern protocol was not used.
					Response: A. In order to make the 2013 marshbird surveys comparable with the 2011 marshbird surveys, the surveys were done in the evening. These surveys included surveying for Least Bittern, although the Least Bittern protocol was not used at that time. However, Least Bittern surveys have subsequently been completed at 11 wetlands in the LSA in 2016 using the new Least Bittern protocol. These studies are detailed in the updated Summary Wildlife Baseline Report (2011 – 2016) that has been provided as Appendix R to the revised EIS.
159	WL(1)-16	CEA Agency	Appendix G EIS Section 11.3.5	Section 9.1.2	**Summary of Comment / Rationale:** The proponent states in Appendix G: "Barn swallows were observed foraging over ponds, lakes, fields and other open habitat in the LSA and were commonly observed along roads. Active nests were observed on buildings on the former tree nursery grounds in June 2011."

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					Section 11.3.5 (EIS) states: "All buildings and infrastructure will be dismantled and removed from site to a licensed landfill." and "The former Tree Nursery buildings will be retained and serve as the base of operations for closure and monitoring activities as well as ongoing mineral exploration programs." Barn swallows are migratory birds that are assessed and designated as a threatened species by the Committee on the Status of Endangered Wildlife in Canada. In addition, this species is listed as threatened on the Species at Risk List of Ontario and receives species and habitat protection under Ontario's Endangered Species Act. As such, barn swallow surveys should be conducted in accordance with MNRF protocols and recommended procedures. (See also RG(1)-19 in Table 1 of Annex A2.)
					<u>Information Request / Comment:</u> A. Complete an Information Gathering Form to provide information on any potential impacts to barn swallows on the project site. This includes nesting barn swallows within the old tree nursery buildings, as well as any other nest locations that may be found. B. Conduct surveys in accordance with MNRF protocols and recommended procedures to confirm the presence or absence of barn swallows. If barn swallows are confirmed to be present, revise the effects assessment, and the follow-up program.
					<u>Revised Response:</u> A. As of March 6th, 2018 an IGF and AAF were submitted to the Dryden district of the Ontario Ministry of Natural Resources and Forestry (MNRF) office. Treasury Metals Inc are waiting for comments on both of these documents, but it is assumed that at the time of IR review, the documents will have been submitted and accepted. B: The effects assessment was updated with the new information (Sections 6.12.4 Predicted Effects, 6.12.5 Identified Mitigation, and 6.12.6 Residual Adverse Effects). The applicable text from these sections are as follows: • <u>Section 6.12.4 of the revised EIS</u>: Barn Swallows are listed as Threatened provincially and federally. As such, they are provided protection under the ESA and the SARA. Barn Swallows have been observed in the buildings at the tree nursery as well as in some out buildings at a residence within the Project area. A concerted effort was made to close all doors and windows of the buildings at the tree nursery, which eliminated nesting opportunities for Barn Swallows. Barn Swallows are known to nest in human-built

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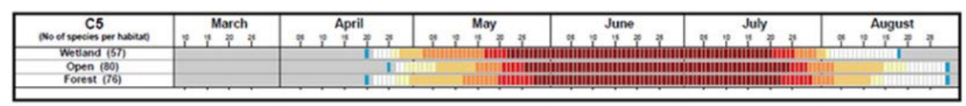
					structures such as barns, sheds and the overhangs of houses. They will also nest in culverts and under bridges, as well as natural rock faces. The residence and associated outbuildings will be removed as part of the site preparation and construction phase of the project. The removal of these buildings will displace approximately 3 to 5 breeding pairs of Barn Swallow. Mortality as a result of vehicle collisions is a serious risk to Barn Swallows, as their behaviour is directly linked to anthropomorphic structures and activities. Barn Swallows are aerial insectivores, and this behaviour puts them at high risk for collisions with vehicles. • Section 6.12.5 of the revised EIS: If habitat destruction / damage cannot be avoided, alternate nesting habitat will be provided as a provision of compensatory habitat for species protected under the ESA [Mit_075]. • Section 6.12.6 of the revised EIS: In the context of the CEAA, 2012, the offsetting of habitat for Barn Swallow would be considered mitigation that would offset and mitigate the adverse effects of the Project on this indicator. Therefore, following offsetting there are no residual adverse effects due to the Project related to habitat loss for Barn Swallow, an indicator for the Wildlife Species at Risk VC. The adverse effects for wildlife and wildlife habitat that remain after the mitigation are set out in Table 6.12.6-1 of the revised EIS.
160	WL(1)-17	CEA Agency	EIS Section 6.4.1.11	Section 9.1.2	**Summary of Comment / Rationale:** To minimize the potential for effects on roosting bats and nesting birds, Treasury will conduct all habitat clearing activity outside of bat and bird migration and breeding periods. There appears to be no explicit timing restriction for the clearing of vegetation. Current guidance includes a compilation of information on core nesting periods for all regions in Canada. Proponents can access the latest "General Avoidance Information" at: http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=1B16EAFB-1. This information is provided to proponents in order for them to make timing decisions with respect to construction activities.
					Information Request / Comment: A. Develop and incorporate in the environmental management plan explicit timing restrictions for the clearing of vegetation to avoid impacts to migratory birds in accordance with current guidance, including http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=1B16EAFB-1

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Response: The following information will be included in the EMP with regard to clearing of vegetation and migratory birds: Wherever possible, timber harvesting and vegetation clearing will take place during the winter season in order to avoid the possibility of negatively affecting any migratory bird nest or bat roosts. When timber harvesting or vegetation clearing needs to take place outside the winter season, activities will be scheduled according to Environment Canada's (EC) Nesting Calendar for Zone C5 (Figure 1.). Under normal circumstances, harvesting and vegetation removal will not be permitted after April 15th for Wetlands and Forested sites, and April 20th for Open sites. Harvesting will not be allowed to resume until August 18th for Wetlands and August 30th for Forested and Open sites. There is currently no publicly available direction provided by the Ontario Ministry of Natural Resources and Forestry (MNRF) regarding timing restrictions for harvesting potential roost sites, however, by following EC's Nesting Calendar, bat roosts will also be protected, as the onset and duration of the roosting season for bats is similar to the nesting season for migratory birds (Late April to August). Figure 1. (From EC's website: http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1) 
161	WL(1)-18	CEA Agency	EIS Section 6	Sections 5, 10, 11	**Summary of Comment / Rationale:** Potential effects of wildlife interacting with project tailings is not described in effects assessment tables although it is briefly mentioned in section 6.4.1.11 (EIS), where the proponent proposes building a fence around tailings ponds and possibly covering ponds with a net to restrict entry from above. It is unclear whether the fence will be left in place after abandonment, if it is constructed. If a fence will be constructed, long-term fence maintenance requirements should also be outlined. No information is presented to describe whether a net covering the tailings pond is economically feasible or effective. Section 11.1.1 of the EIS Guidelines states: "The EIS will indicate what other technically and economically feasible mitigation measures were considered, including the various components of mitigation, and explain why they were rejected. Trade-offs between cost savings and effectiveness of the various forms of mitigation will be justified."

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					This information will inform the Agency of adverse environmental effects on Aboriginal peoples' health due to the potential for hunted wildlife to drink water from the tailings management area and bioaccumulate contaminants.
					Information Request / Comment: A. Clarify plans to keep wildlife from interacting with tailings pond. B. Describe the anticipated effectiveness of the proposed mitigation measures to limit wildlife interaction with the tailings storage facility.
					Response: A., B. Although Treasury Metals does not want to encourage wildlife interaction with the tailings storage facility (TSF), the EIS did not identify an environmental reason for erecting a fence or other mitigation to keep wildlife away from the TSF. The screening level risk assessment presented in Appendix W to the revised EIS demonstrated that there would not be any unacceptable risks to wildlife, or health consequences to Aboriginal peoples' health if they were to harvest wildlife that accessed the TSF. While no specific mitigation measures to discourage wildlife from accessing the EIS were set out in original EIS, Treasury Metals continue to refine the design of the Project. An expanded evaluation of the predicted effects of the Project on wildlife and wildlife habitat has been provided in Section 6.12.4 of the revised EIS.. The revised EIS also sets of the mitigation measures (Section 6.12.5), follow-up monitoring (Section 13.12) and management plans (Section 12.9) to address the predicted effects. Finally, the revised EIS also describes the effectiveness of the mitigation measures and the resulting residual effects, if any.
162	WL(1)-19	CEA Agency	Appendix G Section 8.3.2.1, Figure 8 .2 Appendix R Sections 2.2.1, 2.2.4, 3.3.2, Tables 3.2 – 3.8, 3.9, Figure 3.6	Section 9.1.2	**Summary of Comment / Rationale:** Fifty-nine stations located at least 250 m apart were selected to sample the full range of habitats present in the local study area (LSA). The distribution of bird and bat survey points (Breeding Bird Survey, Marsh Monitoring Program, Whip-poor-will, and Bats) within the LSA is an important aspect to determine whether potential project effects are accurately predicted. It appears as though the area for the tailings storage facility and the habitat type contained within it are not adequately sampled. Maps presenting any point count or song recorder locations with Ecosite information and a table with a summary of all point counts by Ecosite (ELC) for the project footprint, LSA, and RSA would be of assistance in understanding the sampling that was conducted. This information is needed to determine if the project footprint has been adequately characterized and the effects on migratory birds and SAR can be accurately determined.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					All of the bird and bat survey information from 2011 to 2013 (DST and KCB baseline reports combined) should be summarized to facilitate the review. A summary of Ecosite information by major habitat types (Coniferous, Deciduous, Succession, Wetland, and Upland) is required in order to determine specific habitat associations and effects on migratory birds and species at risk. The proponent should also provide a summary table with the number of each species and amount of habitat to be removed within the project footprint. To allow for a review of effects on wildlife, the footprint information should be provided as a total and by project component (i.e. Waste Rock Stockpile Area, Ultimate Pit, Overburden Stockpile Area, Low-grade Ore Stockpile, Processing Plant and Tailings storage facility).
					Information Request / Comment: A. Provide maps presenting all point count or song recorder locations that include Ecosite information, and a table with a summary of all point count locations by Ecosite (ELC) for the project footprint, LSA and RSA. B. Provide a summary of all of the bird and bat survey information from 2011 to 2013, following the format in Appendix R, Tables 3.2 – 3.8. C. Provide a summary of Ecosite information by major habitat types (Coniferous, Deciduous, Succession, Wetland, and Upland) in order to determine specific habitat associations and effects on migratory birds and species at risk. D. Provide a summary table with the number of each species and amount of habitat to be removed within the project footprint. Present the footprint information as a total and by project component.
					Response: A. See attached figure and tables (TMI_162-WL(1)-19_Figure_1, TMI_162-WL(1)-19_Table_1, and TMI_162-WL(1)-19_Table_2). B. The tables requested are included, or appended to the Annex A1 responses. Table 3 corresponds to Appendix R.

Table 3: Most common bird species from point counts (representing 80% of total birds counted)

Common Name	Scientific Name	Abundance	Rank
White-throated Sparrow	*Zonotrichia albicollis*	177	1
Red-eyed Vireo	*Vireo olivaceus*	104	2
Nashville Warbler	*Vermivora ruficapilla*	97	3
American Robin	*Turdus migratorius*	85	4
Swainson's Thrush	*Catharus ustulatus*	75	5
Ruby-crowned Kinglet	*Regulus calendula*	72	6
Ovenbird	*Seiurus aurocapilla*	67	7
Hermit Thrush	*Catharus guttatus*	57	8

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

Red-breasted Nuthatch	*Sitta canadensis*	50	9
Magnolia Warbler	*Dendroica magnolia*	49	10
Common Raven	*Corvus corax*	38	11
Least Flycatcher	*Empidonax minimus*	38	12
Yellow-rumped Warbler	*Dendroica petechia*	37	13
Chipping Sparrow	*Spizella passerina*	36	14
Chestnut Sided Warbler	*Setophaga pensylvanica*	34	15
Mourning Warbler	*Geothlypis philadelphia*	33	16
American crow	*Corvus brachyrhynchos*	32	17
Winter Wren	*Troglodytes troglodytes*	32	18
Blue Jay	*Cyanocitta cristata*	31	19
Alder Flycatcher	*Empidonax alnorum*	30	20
Black-capped Chickadee	*Poecile atricapilla*	28	21
Song sparrow	*Melospiza melodia*	27	22
Tennessee Warbler	*Oreothlypis peregrina*	26	23
Northern Flicker	*Colaptes auratus*	25	24
Golden-crowned Kinglet	*Regulus satrapa*	23	25
Gray Jay	*Perisoreus canadensis*	23	26
Swamp Sparrow	*Melospiza georgiana*	23	27
Lincoln's Sparrow	*Melospiza lincolnii*	21	28
Common Yellowthroat	*Geothlypis trichas*	20	29
Dark-eyed Junco	*Junco hyemalis*	19	30

Table 4 corresponds to Table 3.3 in Appendix R.

Table 4: Bird species ranked according to distribution across point counts

Common Name	Scientific Name	Abund.	# of Points	% of Points	Density
White-throated Sparrow	*Zonotrichia albicollis*	177	118	0.81	0.39
Red-eyed Vireo	*Vireo olivaceus*	104	90	0.62	0.23
Nashville Warbler	*Vermivora ruficapilla*	97	77	0.53	0.21
American Robin	*Turdus migratorius*	85	74	0.51	0.19
Swainson's Thrush	*Catharus ustulatus*	75	66	0.45	0.16
Ruby-crowned Kinglet	*Regulus calendula*	72	67	0.46	0.16
Ovenbird	*Seiurus aurocapilla*	67	54	0.37	0.15
Hermit Thrush	*Catharus guttatus*	57	48	0.33	0.12
Red-breasted Nuthatch	*Sitta canadensis*	50	46	0.32	0.11
Magnolia Warbler	*Dendroica magnolia*	49	42	0.29	0.11
Common Raven	*Corvus corax*	38	37	0.25	0.08
Least Flycatcher	*Empidonax minimus*	38	34	0.23	0.08
Yellow-rumped Warbler	*Dendroica petechia*	37	32	0.22	0.08
Chipping Sparrow	*Spizella passerina*	36	28	0.19	0.08

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					(continued below)

Chestnut Sided Warbler	*Setophaga pensylvanica*	34	32	0.22	0.07
Mourning Warbler	*Geothlypis philadelphia*	33	33	0.23	0.07
American crow	*Corvus brachyrhynchos*	32	30	0.21	0.07
Winter Wren	*Troglodytes troglodytes*	32	30	0.21	0.07
Blue Jay	*Cyanocitta cristata*	31	27	0.18	0.07
Alder Flycatcher	*Empidonax alnorum*	30	28	0.19	0.07
Black-capped Chickadee	*Poecile atricapilla*	28	19	0.13	0.06
Song sparrow	*Melospiza melodia*	27	25	0.17	0.06
Tennessee Warbler	*Oreothlypis peregrina*	26	20	0.14	0.06
Northern Flicker	*Colaptes auratus*	25	25	0.17	0.05
Golden-crowned Kinglet	*Regulus satrapa*	23	20	0.14	0.05
Gray Jay	*Perisoreus canadensis*	23	20	0.14	0.05
Swamp Sparrow	*Melospiza georgiana*	23	25	0.17	0.05
Lincoln's Sparrow	*Melospiza lincolnii*	21	16	0.11	0.05
Common Yellowthroat	*Geothlypis trichas*	20	20	0.14	0.04
Dark-eyed Junco	*Junco hyemalis*	19	12	0.08	0.04

Table 5 corresponds to Appendix R.

Table 5: Breeding bird species by richness by habitat.

Habitat Category	# of Points	# of Species
Conifer	37	63
Deciduous	34	65
Successional	9	35
Upland	5	28
Wetland	12	37
Developed	44	76

For the listing of species ranked according to abundance in each habitat category, see TMI_162-WL(1)-19_Table_6, which corresponds to Appendix R.

For a listing of species observed or heard during waterfowl and marshbird surveys see TMI_162-WL(1)-19_Table_7, which corresponds to Appendix R.

Table 8 corresponds to Table 3.7 of the Wildlife Baseline Report (2011–2016), which is appended to the revised EIS as Appendix R.

Table 8: Boreal Conservation Region 8 species by habitat.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

Priority Species BCR8	Total Abundance	% of Points	Coniferous	Deciduous	Successional	Wetland	Upland	Developed
Alder Flycatcher	30	20.0	2	9	4	3	2	10
Bald Eagle	1	0.7	0	0	0	0	0	1
Bay-breasted Warbler	6	4.3	3	0	0	0	0	3
Belted Kingfisher	0	0.0	0	0	0	0	0	0
Black-and-White Warbler	12	8.6	2	6	1	0	0	3
Blackburnian Warbler	10	7.1	3	5	0	0	0	2
Black-throated Green Warbler	1	0.7	0	1	0	0	0	0
Blue-headed Vireo	8	4.3	3	2	3	0	0	0
Canada Warbler	1	0.7	0	1	0	0	0	0
Chestnut-sided Warbler	34	22.9	5	13	1	1	0	14
Evening Grosbeak	1	0.7	0	0	1	0	0	0
Magnolia Warbler	49	30.0	13	17	3	0	1	15
Mourning Warbler	33	23.6	4	9	0	1	1	18
Nashville Warbler	97	55.0	29	19	8	7	8	26
Northern Flicker	25	17.9	5	6	2	0	2	10
Olive-Sided Flycatcher	0	0.0	0	0	0	0	0	0
Ovenbird	67	38.6	20	24	0	0	1	22
Philadelphia Warbler	0	0.0	0	0	0	0	0	0
Ruby-crowned Kinglet	72	47.1	24	16	4	10	4	14
Ruffed Grouse	18	12.1	7	3	2	0	0	6
Swamp Sparrow	23	12.1	5	3	0	7	0	8
Tennessee Warbler	26	13.6	15	7	0	1	0	3
White-throated Sparrow	177	84.3	56	38	19	9	5	50
Winter Wren	32	21.4	13	3	0	4	3	9
Yellow-bellied Flycatcher	7	5.0	0	1	0	5	0	1
Yellow-bellied Sapsucker	7	5.0	2	3	0	0	0	2

Table 9 corresponds to Appendix R.

Table 9: Boreal Conservation Region 8 density by habitat.

Priority Species BCR8	Coniferous	Deciduous	Successional	Wetland	Upland	Developed
Alder Flycatcher	0.004	0.020	0.009	0.007	0.004	0.022

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

Bald Eagle	0.000	0.000	0.000	0.000	0.000	0.002
Bay-breasted Warbler	0.007	0.000	0.000	0.000	0.000	0.007
Belted Kingfisher	0.000	0.000	0.000	0.000	0.000	0.000
Black-and-White Warbler	0.004	0.013	0.002	0.000	0.000	0.007
Blackburnian Warbler	0.007	0.011	0.000	0.000	0.000	0.004
Black-throated Green Warbler	0.000	0.002	0.000	0.000	0.000	0.000
Blue-headed Vireo	0.007	0.004	0.007	0.000	0.000	0.000
Canada Warbler	0.000	0.002	0.000	0.000	0.000	0.000
Chestnut-sided Warbler	0.011	0.028	0.002	0.002	0.000	0.031
Evening Grosbeak	0.000	0.000	0.002	0.000	0.000	0.000
Magnolia Warbler	0.028	0.037	0.007	0.000	0.002	0.033
Mourning Warbler	0.009	0.020	0.000	0.002	0.002	0.039
Nashville Warbler	0.063	0.041	0.017	0.015	0.017	0.057
Northern Flicker	0.011	0.013	0.004	0.000	0.004	0.022
Olive-Sided Flycatcher	0.000	0.000	0.000	0.000	0.000	0.000
Ovenbird	0.044	0.052	0.000	0.000	0.002	0.048
Philadelphia Warbler	0.000	0.000	0.000	0.000	0.000	0.000
Ruby-crowned Kinglet	0.052	0.035	0.009	0.022	0.009	0.031
Ruffed Grouse	0.015	0.007	0.004	0.000	0.000	0.013
Swamp Sparrow	0.011	0.007	0.000	0.015	0.000	0.017
Tennessee Warbler	0.033	0.015	0.000	0.002	0.000	0.007
White-throated Sparrow	0.122	0.083	0.041	0.020	0.011	0.109
Winter Wren	0.028	0.007	0.000	0.009	0.007	0.020
Yellow-bellied Flycatcher	0.000	0.002	0.000	0.011	0.000	0.002

C. Table 10 provides a summary of Ecosite information by major habitat types (Coniferous, Deciduous, Succession, Wetland, and Upland).

Table 10: Summary of Ecosite information by major habitat.

Habitat Category	Area (km²)		
	RSA	LSA	Project Footprint
Conifer	779.08	16.09	1.18
Deciduous	697.04	7.30	0.79
Successional	226.93	3.20	1.03
Upland	95.53	.091	0.00
Wetland	401.64	14.07	0.33
Developed	251.57	3.57	0.95
Totals	2,451.79	45.13	4.27

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					D. Table 11 summarizes the amount of habitat to be removed within the Project footprint, presented by Project component and the totals.

Table 11: Habitat lost within the Project footprint.

Project Component	Area (km^2)						
	Coniferous	Deciduous	Successional	Wetland	Upland	Developed	Total
Collection	0.077	0.050	0.015	0.002	0.049	0.023	0.216
Pit	0.000	0.132	0.012	0.015	0.114	0.060	0.334
Plant	0.004	0.000	0.000	0.000	0.005	0.000	0.008
TSF	0.525	0.000	0.030	0.000	0.000	0.064	0.619
Lowgrade	0.000	0.000	0.002	0.000	0.054	0.000	0.057
Overburden	0.022	0.095	0.004	0.000	0.073	0.020	0.215
WRSA	0.062	0.147	0.000	0.000	0.159	0.004	0.372
Aggregate	0.261	0.000	0.788	0.001	0.252	0.010	1.312
Total	0.951	0.425	0.851	0.019	0.706	0.180	3.133

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
163	AE(1)-01	CEA Agency	Appendix J Sections 3.2, 5.2, Table 5	Section 9	see below

Summary of Comment / Rationale:

On-site baseline air quality data has not been collected for the project (Appendix J, Section 5.2). Only modeled project emissions are provided some of the predicted concentrations of metals are approaching the applicable guideline values. Therefore, baseline monitoring should be considered for some metals which are to be emitted by the Project (e.g. lead, manganese and chromium). Incorporating baseline information will provide a more accurate estimation of baseline + project emissions and ensure potential risks to human health are not underestimated. This information is important for inclusion in the human health risk assessment (see HE(1)-01). Collecting on-site background data is also important for assessing the efficacy of proposed mitigation measures and, if necessary, designing follow-up monitoring.

Real-time air quality monitoring is not addressed in Appendix J. Real-time air quality monitoring is instrumental in verifying predictions and implementing mitigation measures.

Information Request / Comment:

A. Conduct baseline air quality measurements for metals that are approaching or exceeding guideline values. Describe and justify the decision not to collect on-site air quality baseline data for some metals.

B. Develop a real-time air quality monitoring plan to be implemented during all project phases

Revised Response:

A. As shown in Section 6.6 of the revised EIS, and Table 5 of the Environmental Air Quality Assessment (RWDI, 2014e), none of the predictions for airborne metals exceed the relevant criteria. In fact, none of the predicted levels exceed 76% of the relevant criteria. The relative levels

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					of maximum 24-hour predicted airborne metal concentrations relative to the criteria would suggest that even with an operating mine in the area, average airborne metal metals concentrations would be much lower less than the relevant criteria. Because there are no local sources for airborne metals near the Project site, it was decided not to include a background value for airborne metals in the original EIS. To explore the possible background concentrations for airborne metals that could be expected in the area as a result of the metals present in soils, a conservative calculation was done using the metal assay results on waste rock material to represent the average crustal composition in the area for arsenic (As), chromium (Cr), manganese (Mn), and lead (Pb). The calculations are considered conservative as the actual surface soils in the area would contain a large portion of organic material, which would have virtually no metals present. Additionally, the background concentrations for airborne particulate matter was taken from the Thunder Bay Stations, which is expected to have higher background concentrations than we would collect in the relatively undeveloped area of the mine site. Table 1 provides the predicted background concentrations of airborne metals based on the background particulate levels from Thunder Bay, and the metals assay results for the waste rock. The table shows that the inclusion of a conservative background concentration for airborne metals would not materially change the predicted concentrations presented in the EIS.

Table 1: Estimated Background Concentrations of Airborne Metals, Relative to Predicted values

Compound	Average Composition in Waste Rock (ppm)	Background Concentration[(a)] ($\mu g/m^3$)	Maximum Modelled Concentration[(b)] ($\mu g/m^3$)	Maximum Cumulative Concentration[(c)] ($\mu g/m^3$)	Evaluation Criteria ($\mu g/m^3$)[b]	% of Criteria
TSP	—	33	—	—	—	—
As	32	0.001056	0.022	0.023056	0.3	8%
Cr	143	0.004719	0.077	0.081719	1	8%
Mn	562	0.018546	0.286	0.304546	0.4	76%
Pb	143	0.004719	0.166	0.170719	0.5	34%

Notes:

(a) Background concentrations are calculated as the product of the background TSP value for Thunder Bay, and the relative metal assay composition for the waste rock.

(b) Maximum modelled concentrations were presented in Table 6.4.4 of the EIS and Table 5 of the Environmental Air Quality Assessment (RWDI, 2014e)

(c) Maximum cumulative concentrations are the sum of the background and maximum modelled concentrations.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					B. Air quality monitoring has been identified and described as part of the EIS follow-up program, presented in Section 13.6 of the revised EIS. The objective of the follow-up program is to confirm the predictions presented within the EIS. The monitoring to support the EIS follow-up would be conducted during the site preparation and construction, the operations, and the closure phases of the Project. There would be no sources of air emissions during the post-closure phase of the Project, and therefore monitoring to support the EIS follow-up program would not be continued beyond the closure phase. An ambient air quality monitoring program will also be developed as part of the regulatory Environmental Compliance Approval (ECA) process with the Ontario Ministry of the Environment and Climate Change's Ontario. It is expected that this regulatory monitoring program will incorporate measurements for particulate matter and airborne metals.
164	AE(1)-02	CEA Agency	EIS Sections 6.4.1.5, 12.4, 13.2, Tables 6.4.1, 6.4.2, 6.4.3 Appendix J Table 5	Sections 9, 10.1.3, 11.4	**Summary of Comment / Rationale:** There appears to be inconsistencies for air quality monitoring in different sections of the EIS and there is no mention of monitoring in Appendix J. In section 6.4.1.5 (EIS) and in Tables 6.4.1, 6.4.2 and 6.4.3 (EIS, pages 6-51 to 6-59, 6-60 to 6-68, and 6-69 to 6-77), no follow-up monitoring is planned for air quality. Since TSP and PM10 are expected to be above provincial thresholds at the property line (Appendix J, Table 5, page 25) and PM2.5 and NOx (NO2) will be close to the provincial thresholds, monitoring of these four compounds should be undertaken during site preparation, construction, operation, decommissioning (closure) and abandonment (post-closure) phases. PM10 and PM2.5 should be included in the list of substances to monitor (exceedances were predicted during operation) as these substances are not included in Table 12.4.1 (EIS, page 12-3). The proponent should develop an ambient air quality follow-up monitoring program in consultation with relevant regulatory agencies that clearly outlines thresholds that trigger the need to consider additional mitigation. The plan should include the details about the monitoring parameters, methods, sampling locations, applicable standards, duration, and frequencies for information to be submitted for review prior to commencing work for the construction phase. The plan should also commit to real time ambient air monitoring during site preparation, construction, operation, decommissioning (closure) and abandonment (post-closure) phases for TSP, PM10, PM2.5, Metals and NOx at a minimum. Section 11.4 of the EIS Guidelines requires the follow-up monitoring program to monitor the effectiveness of mitigation measures in relation to environmental effects with respect to Aboriginal peoples' [health]. Also, the program should encompass measures to address public concerns, where appropriate.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Information Request / Comment: A. Provide a comprehensive follow-up monitoring plan for air quality.
					Revised Response: Since the time of the original EIS submission, substantial changes and revisions have been completed in response to the Round 1 information requests. As such, the resulting revised EIS has been re-structured in such a way that referencing the original subsections is no longer valid. Information regarding a follow-up and monitoring program to support confirming the predictions made in the EIS is provided in Section 13- Follow-Up and Monitoring Program of the revised EIS. In addition, RWDI has provided additional support documents to support the EIS as well as the information response documents. These technical memorandums are provided in Appendix J of the revised EIS. Treasury Metals plans to implement an ambient air quality monitoring program that will fulfill the needs of the required follow-up and monitoring program. That program will incorporate measurements for particulate and airborne metals and possibly oxides of nitrogen and sulfur dioxide. An ambient air quality monitoring program will also be developed as part of the regulatory process with the Ontario Ministry of the Environment and Climate Change's Ontario Environmental Compliance Approval (ECA) process. Ultimately the terms of the monitoring plan will need to be developed in consultation with the MOECC. Any detailed plans they developed at this point would be subject to change. At a minimum, to confirm the predictions made in the EIS, Treasury Metals has provided a monitoring plan that proposes a number of elements. Dust sources on-site (roads, stockpiles, and open pit operations) will be assessed in aggregate to determine the suitability and effectiveness of dust control practices on-site. Monitoring will be done using dust fall jars, high volume samplers for PM2.5 and high volume samplers for total particulates. Select sample filters will be assessed for metals as designated within O.Reg 419/05 (to also comply with regulatory monitoring). Monitoring stations will be placed based on predicted values for contaminants of concern, with consultation with government regulators, and subject to location specific constraints. Equipment siting, auditing, and reporting will meet all MOECC requirements or potentially specific requests made by the Agency. Although the shape of the monitoring plan is draft, the elements will provide an effective feedback loop to ensure that mitigation practices are providing adequate control. The monitoring results will be presented in an annual report and compared to the appropriate regulatory criteria for the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					protection of human health. The results can be compared to the modelled results on an on-going basis to determine if the modelled results are still a conservative representation of actual conditions.
165	AE(1)-03	CEA Agency	Appendix J Section 2.1.1, Table 1	Section 9	**Summary of Comment / Rationale:** Section 2.1.1 (Appendix J) states that ozone is not addressed as an air quality issue in the report. In the absence of quantitative analysis, the environmental assessment should include a discussion of the NOx/VOC balance in the area and what the expected direction of ozone formation would be as a result of changes in NOx levels and other precursors, in order to justify its exclusion from assessment. This issue is important given the high NO_2 concentrations found in certain areas.
					Information Request / Comment: A. Provide a discussion of NOx/VOC balance in the area and what the expected direction of O_3 formation would be as a result of changes of NOx and other precursors in the Air Quality Study section.
					Response: A. The expected direction of ozone formation in an area can also be referred to as the ozone sensitivity of an area. An area that is VOC-sensitive will experience increased ozone with increased VOC emissions, but little change with increasing NO_X emissions. In contrast, NO_X-sensitive areas will experience increased ozone with increased NO_X emissions but will show little change with increasing VOC emissions. Numerous publications (Silman, 1995; Sillman and He, 2002; and Sillman et al, 2003) are available that describe the possible linkage between ozone sensitivity and key indicators such as NO_y, $O_3/(NO_y-NO_x)$, $HCNO/NO_y$ and H_2O_2/HNO_3. While the relationships are described, the papers also point out that the indicators relied on to identify whether an area is NO_X-sensitive or VOC-sensitive are rarely available through monitoring. Most of the papers reviewed rely solely on modelled information. These limitations mean it is not feasible to provide a definitive indication of the expected direction of ozone formation. However, the following can be stated: • While an increase in VOC concentrations could serve as a precursor to ozone formation, none of the mine activities are significant sources of VOCs emissions, and thus the VOC concentrations will not materially change as a result of the Project. • The NO_X emissions associated with the Project will be a combination of nitrogen dioxide (NO_2) and nitric acid (NO), with the majority (95%, Dieselnet, 2016c: website) of the emissions from diesel combustion being in the form of NO. While the percentage of NO_2 in diesel exhaust is increasing (Carslow et al, 2011), the vast majority of emissions remain NO,

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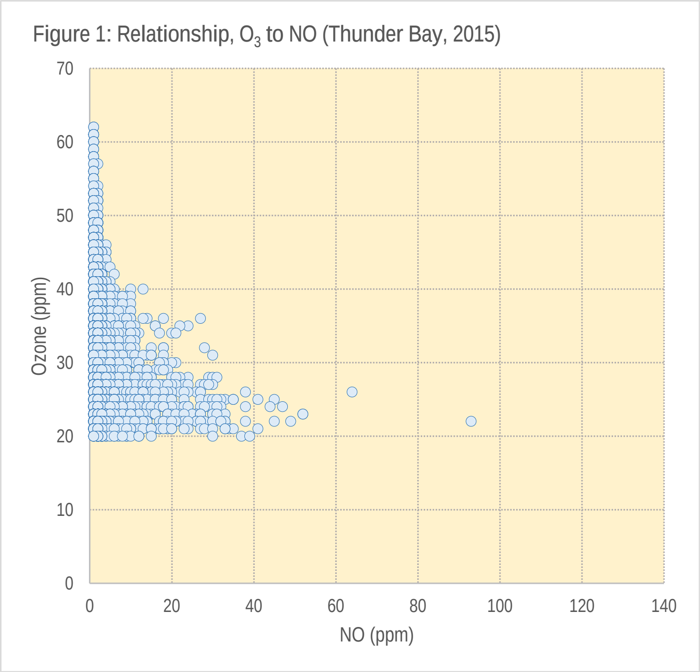
					which in the atmosphere will result in a local scavenging reaction of the ground level ozone (O_3), converting the NO is converted to NO_2. This relationship can be seen in the ambient monitoring data in Thunder Bay (see Figure 1), where the higher NO concentrations correspond to lower values of ozone.  At first glance, the area where the Project is located could be considered potentially NO_X-sensitive as there appear to be sources of biogenic VOC emissions present. Section 5.9.2 of the revised EIS characterizes the area near the Project as being largely (61%) forested, with a range of forest types (mixed forest 25%, sparse forest 24%, and coniferous forest 14%). However, there are also numerous other sources of NO_X emissions in the area. These include the TransCanada Highway (Highway 17) and the Canadian Pacific railway, both of which run immediately to the south of the Project. There is also the community of Dryden and its associated airport. Ultimately, the most telling factor is the climate in the region, which is not conducive to ground-level ozone formation. Since 1970, the climate station at Dryden airport has recorded an average of five days per year with very hot temperatures (i.e., those with temperatures >30°C).

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					Ultimately the discussion of whether the area is NO_X-sensitive or VOC-sensitive is largely an academic exercise. The Project will result in no measurable change in the VOC concentrations, and the NO_X emissions from the Project are likely to result in a local decrease in ozone due to scavenging. Finally, the climate is the area is not conducive to ozone formation. Overall, the Project is expected to have little or no lasting effect on ground-level ozone concentrations in the region. References Carslaw, D., S. Beevers, E. Westmoreland, M. Williams et al., 2011. “Trends in NO_x and NO_2 emissions and ambient measurements in the UK”, UK Department for Environment, Food and Rural Affairs, July 2011, http://uk-air.defra.gov.uk/reports/cat05/1108251149_110718 RWDI Air Inc. (RWDI). 2014g. Goliath Gold Project: Best Practices Plan for Dust. Final Report. Prepared for Treasury Metals Incorporated. Prepared by RWDI Air Inc., Guelph, Ontario. Included as part of Appendix J to the EIS. Sillman, S., and D. He. 2002. Some theoretical results concerning O3-NOx-VOC chemistry and NOx-VOC indicators, J. Geophys. Res., 107(D22), 4659, doi:10.1029/2001JD001123, 2002. Sillman, S., R. Vautard, L. Menut, and D. Kley. 2003. O_3-NO_x-VOC sensitivity and NO_x-VOC indicators in Paris: Results from models and Atmospheric Pollution Over the Paris Area (ESQUIF) measurements, J. Geophys. Res., 108(D17), 8563, doi:10.1029/2002JD001561, 2003. Sillman, S. 1995. The use of NO_y, H_2O_2, and HNO_3 as indicators for ozone-NOx-hydrocarbon sensitivity in urban areas. J. Geophys. Res., 100(D7), 14.175. July 1995. Websites Cited Dieselnet. 2016c. Technology Guide. What Are Diesel Emissions? Accessed on December 29, 2016. https://www.dieselnet.com/tech/emi_gas.php.
166	AE(1)-04	CEA Agency	Appendix J Section 3.2	Section 9.1.2	**Summary of Comment / Rationale:** Section 3.2 (Appendix J) states: “Although it would be ideal to estimate future background air quality conditions in the area by examining historical monitoring data from similar areas, there were no suitable monitoring stations located in such an area. Therefore, the most recent available monitoring data from the closest MOE operated monitoring station was used to estimate background air quality conditions.” The monitoring station in Thunder Bay is quite distant and is more urban than the study area. Pickle Lake is approximately the same distance away to the north, but this station would be more representative of the study area due to its rural setting.

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					To avoid confusion in public review the proponent should justify their decision to use data from the Thunder Bay monitoring station. The proponent should include example calculations and methodology used to determine air quality thresholds and provide a clear explanation of why using Thunder Bay data is more/less conservative than using Pickle Lake data.
					Information Request / Comment: A. Provide rational for using air quality data from the Thunder Bay monitoring stations and provide sample calculations and methodology for determining air quality thresholds.
					Revised Response: Ambient monitoring data from Thunder Bay was used as it provides a more conservative approach to assess cumulative impacts of background (i.e., ambient) concentrations plus the project. Thunder Bay ambient data will have higher concentrations of pollutants than at a remote site such as Pickle Lake. As the Treasury site is near the TransCanada Highway, using a remote site such as Pickle Lake to represent background could be viewed as non-conservative. In response to this IR, a comparison of the data used for Treasury Metals was compared to values used for other EAs in remote areas. The background values used in the OSISKO Hammond Reef EIS/EA[1] back ground conditions report (2013). The OSISKO report compiled data from numerous less populated sites in Canada, as well as Thunder Bay. The 2014/2015 study completed by Stantec in Geraldton was also reviewed. Table 1 provides a comparison of the above noted reports to the background values used for Treasury Metals. The values selected for Treasury were generally higher than those in the other background studies, and therefore more conservative. The calculation used to determine the offsite impacts added the maximum of the Background concentration value noted in Table 6.6.4.2-2 of the Revised EIS and added the predicted Impact from the numerical dispersion modelling from the appropriate table for the scenario in question. An example calculation from Table 6.6.4.2-2 for the predicted impact of 24-hour TSP for the Site Preparation and Construction phase is provided below: • Cumulative Prediction (µg/m³) = Modelled Prediction (µg/m³) + Background Concentration (µg/m³) • 123.1 (µg/m³) = 90.1 (µg/m³) + 33.0 (µg/m³) The cumulative predictions by contaminant were then compared to relevant regulatory criteria (threshold) as defined in Appendix J-2.
167	AE(1)-05	CEA Agency		Section 10.1.3	**Summary of Comment / Rationale:**

[1] http://www.canadianmalartic.com/Apropos-croissance-en.html

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			Appendix J Section 4.2		Section 4.2 (Appendix J) states that "Although the NAAQOs will eventually be replaced by CAAQS, they are used as criteria for compounds for which CAAQSs have not yet been developed." Please note that CCME is in the process of establishing CAAQS for NO_2 and SO_2 which will replace the NAAQOs and it is expected that the new CAAQs will be lower (more conservative) than the NAAQOs. Therefore, it is suggested to use the province of Ontario ambient air quality criteria.
					Information Request / Comment: A. Use the province of Ontario ambient air quality criteria for NO_2 and SO_2 for thresholds in the analysis.
					Response: Section 4 of the Environmental Air Quality Assessment (RWDI, 2014e: included as part of Appendix J to the revised EIS) describes the assessment criteria considered for air quality. Specifically, Section 4.1 discusses the Canadian Ambient Air Quality Standards (CAAQS), Section 4.2 discusses the National Ambient Air Quality Objectives (NAAQO) and Section 4.3 discusses the Ontario Ambient Air Quality Criteria (AAQC). A summary of these criteria and the rationale for the criteria used in the assessment were provided in Table 2 (RWDI, 2014e) and Section 4.3, respectively. As stated in Section 4.2, "…the most stringent criteria were selected for each contaminant indicator." A review of Table 2 (RWDI, 2014e) shows that the following sources were used as the basis of the assessment criteria: • AAQC: 24-hr TSP, annual TSP, 24-hr PM_{10}, 30-day dustfall, annual dustfall, 1-hr NO_2, 24-hr NO_2, airborne metals; • CAAQS: 24-hour $PM_{2.5}$, annual $PM_{2.5}$; and • NAAQS: 1-hr SO_2, 24-hr SO_2, annual SO_2, annual NO_2, 1-hr CO, 8-hr CO.
168	AE(1)-06	CEA Agency	Appendix J Table 5, Section 7.4	Section 10.1.3	**Summary of Comment / Rationale:** Table 5 (Appendix J, page 25) shows exceedances are predicted for TSP and PM_{10} during the operational phase. $PM_{2.5}$ and NO_2 are also predicted to increase significantly over background concentrations and approaching thresholds. This is a concern as health risks exist below guidelines for these non-threshold substances. It should be noted that the guiding principles of Keeping Clean Areas Clean and Continuous Improvement are operative, thus proposed mitigation measures should not be confined to meet the standards, but should also be targeted towards reducing population exposure to PM and NO_2 associated with the Project (CCME 2007).

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					Therefore, additional mitigation measures should be used to adequately protect human health. For example, the estimation of emission control efficiency for each source of emission could be undertaken in order to optimize the overall emission control efficiency of the project. Reference: http://www.ccme.ca/files/Resources/air/pm_ozone/1389_ci_kcac_e.pdf In addition, section 7.4 (Appendix J) states: "Treasury metals will ensure that best practices are followed during the Operational phase to ensure that air emissions are minimized." All best practices applicable to the activities taking place should be followed during all phases of the Project, not only the operational phase.
					Information Request / Comment: A. Identify and describe additional mitigation measures, including best practices, to reduce PM_{10}, $PM_{2.5}$, and NO_2 concentrations associated with all project activities for all phases of the Project.
					Revised Response: Since the time of the original EIS submission, substantial changes and revisions have been completed in response to the Round 1 information requests. A revised assessment of the project on air quality is presented in Section 6.6 of the revised EIS. The results in the revised EIS indicate there are no cumulative impacts during the operations phase in excess of applicable standards for TSP, PM10, PM2.5 and NOx. In addition, RWDI has provided additional support documents to support the EIS as well as the information response documents. These technical memorandums are provided in Appendix J of the revised EIS. To clarify, yes the predicted impacts of the mine at the property line already include the mitigation measures proposed. • As provided in Section 6.6.5 of the revised EIS, The Project will employ best practices that will help reduce and mitigate air quality effects, including the following:Implement a modern blasting program that minimizes the blast area, the overall amount of explosives required, and through detonating procedures, minimize the amount of explosives per delay. [Mit_029] • Blasting will likely be restricted to once per day, and only a few days per week.[Mit_043]

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					• Material will be loaded into haul trucks in a manner that minimizes the drop height from the loader or excavator bucket to the bed of the truck [Mit_031] • All internal combustion engines will be properly maintained and all emission control systems (e.g., diesel particulate filters) will be kept in good working order.[Mit_044]. • Best management practices plan for dust control will be implemented on the site during site preparation and construction, operations and closure. [Mit_046]. Mitigation was included in the emission rate development and followed through to the modelling. For example, a dust control factor of 75% based on watering of on-site roads was applied to the emission rates representing vehicle movements. Further, set speed limits were considered in the emission rate development. In line with Health Canada's 2017 Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air Quality, the study focuses more on a receptor based approach for evaluating impacts. With this in mind, cumulative impacts at the closest receptors are below the guideline value for TSP, PM10, PM2.5 and NOx. Greater controls are possible but we would suggest that applying additional controls is not necessary for compliance since the CCME guidelines apply at the residences and the MOECC guidelines do not include roadway emissions. Additional controls will be contingent on monitoring results The rules for the best practices plans will be in place for the entirety of the project from construction through to closure as well as during operations.
169	AE(1)-07	CEA Agency	Appendix J Section 3.4, Tables 3, 4, 8	Section 10.1.3	**<u>Summary of Comment / Rationale:</u>** Section 3.4 (Appendix J) states that the Operational phase will pose the longest term potential air quality impact and, as a result the Operations phase alone was selected for the dispersion modelling portion of the assessment. Tables 3, 4 and 8 (Appendix J, pages 23, 25, and 43) show that the emission rates of $PM_{2.5}$ during construction/site preparation and decommissioning/restoration phases are approximately 50% of the operational phase emissions rate. However, annual TSP emissions rates during construction/site preparation and decommissioning/restoration phases are approximately doubled compared to the operational phase. It is stated that the increased emissions are further away from the receptors of interest than during the operations phase; however, since there was no discussion about restricting site access during operations, this assumption may be in question. As such, the most conservative assessment of exposure to air contaminants would be to evaluate exposure at the location of the highest

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					predicted air contaminant concentrations. Modelling and assessment of the air quality effects of Construction and Site Preparation Phase and the Closure, Decommissioning and Restoration Phase is required.
					Information Request / Comment: A. Model and assess potential air quality impacts during construction/site preparation and decommissioning/restoration phases of the project. B. Include dispersion modelling of short term air quality impacts from site preparation and construction activities with a focus on NOx, TSP, PM10 and PM2.5. C. Describe how site access will be limited to workers only. If site access is not expected to be restricted, evaluate health risks to non-workers, particularly Aboriginal peoples that use proximate lands and resources for traditional purposes, using the highest predicted air contaminant concentrations (which may be on-site concentrations). D. Include other emission sources such as emissions from on-road, aggregate pits and diesel generators in the assessment. Revise Table 4 (Appendix J) accordingly.
					Revised Response: A: At the request of the Agency, Treasury Metals have revised their prediction of the effects of the Project on air quality to specifically include modelling of the site preparation and construction phases, and closure phase effects. The revised modelling was completed using the most current version of the AERMOD dispersion model (version 16216r). For completeness, and to provide a direct comparison between the predicted effects during each phase of the Project, the dispersion modelling for the operations phase was remodeled using the current version of the AERMOD dispersion model (version 16216r). The new dispersion modelling results were used for describing the predicted effects of the Project on air quality, which are provided in Section 6.6 of the revised EIS. The additional modelling and the predicted results are also summarized in a technical memorandum, dated April 12, 2018, prepared to support this assessment and provided as Appendix J-5 of the revised EIS. B: As described in part A of this response, new modelling has been completed using the current version of the AERMOD dispersion model (version 16216r) for the site preparation and construction, operations, and closure phases of the Project, with the results presented in Tables 6.6.4.1-2, 6.6.4.2-2, and 6.6.4.3-2, respectively. Table 1, below, highlights the predicted

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					concentrations for each phase of the Project for both a 24 hour and annual averaging period, for TSP, PM_{10}, $PM_{2.5}$ and NO_2.

Table 1: Maximum Predicted Concentrations at Sensitive Receptor Locations

Compound	Averaging Period	Site Preparation & Construction	Operations	Closure
TSP	24-hour	123.1	110.8	114.7
	Annual	30.9	28.5	29.1
PM_{10}	24-hour	39.9	36.6	37.2
$PM_{2.5}$	24-hour	13.6	15.1	13.0
	Annual	5.0	5.4	4.9
NO_2	1-hour	136.4	148.5	60.6
	24-hour	58.4	89.1	43.9

The predicted effects for TSP and PM_{10} are predicted to be slightly higher during the site preparations and construction, and closure phases than during operations. In contrast, the predicted effects on NO_2 and $PM_{2.5}$ would be slightly higher during operations than during either the site preparation and construction, or the closure phases.

C: Treasury Metals recognizes that Aboriginal people live, work, hunt, fish, trap, drink water, and gather/harvest throughout their lands and rely on them for their individual as well as their community's overall cultural, social, spiritual, physical, and economic well-being. However, for safety and security reasons, access to the operations area would be restricted throughout the active life of the Project. The results of the Air Quality Assessment were used in the evaluation of effects of the project on human health (Section 6.19 of the revised EIS) as per 2016 Health Canada guidance entitled, *"'Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air Quality"*. Only workers, or approved site visitors would be allowed access to the operations. Risk management measures for worker health and safety are described in Appendix W, the Screening Level Risk Assessment and specifically discussed as part of Human Health in Section 6.19. This includes specific risk management measures for workers, such as training, and personal protective equipment (PPE). No traditional uses of the lands within the operations area would be allowed until after the closure and reclamation activities are complete. The areas where access and traditional uses of the lands would not be permitted throughout the active life of the Project are illustrated with gold shading on TMI_169-AE(1)-07_Figure_1. This figure is a copy of Figure 2.13-1 from the "Impact Footprints and Effects Areas" report prepared to support ongoing engagement with members of Indigenous communities (included as Appendix LL to the revised EIS).

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					As part of the site restrictions, a planned security gate on Tree Nursery Road would restrict access to the former MNRF tree nursery, which is now owned by Treasury Metals. However, Treasury Metals is open to allowing Indigenous community members access to the portions of the former MNRF tree nursery for traditional purposes with prior consent and notification. For safety reasons, Treasury Metals would need to escort interested members of Indigenous communities to those areas, allowing them controlled access during daylight hours. Additionally, only those practices that do not require the use of firearms would be allowed in these areas in order to ensure the safety of workers. The areas where controlled access to Indigenous community members for traditional uses of the lands would be permitted throughout the active life of the Project are illustrated with green shading on TMI_169-AE(1)-07_Figure_1. Although compliance with ambient air quality standards and criteria should be based on “community-oriented locations” (CCME 2000), with an emphasis on areas “where people live, work and play” (CCME 2000), there may be areas outside of those locations where access and traditional uses of the lands would not be permitted (see TMI_169-AE(1)-07_Figure_1) where predicted concentrations could be higher than the values presented in Section 6.6, or summarized in Table 1, above. As these areas have no permanent residences, and are located within the mining leases held by Treasury Metals, it is likely that people would only be in these areas for a relatively short period of time. In order to evaluate the potential human health effects on people practicing traditional uses of the land within the Treasury Metals property, but outside of those areas where access and traditional uses of the lands would not be permitted (see TMI_169-AE(1)-07_Figure_1), a revised human health and ecological risk assessment (HHERA) has been commissioned by Treasury Metals to re-evaluate the possible health and ecological risks associated with the Project. As part of the revised HHERA, receptor groups will be considered that include periods of exposure to the potentially higher air concentrations in those areas of the treasury Metals property where access and traditional uses of the lands would be permitted. D: Table 6.6.2.1-1 of the revised EIS lists the emission categories considered during each phase of the Project. The resulting emissions during the operations phase were presented in Table 6.6.4.2-1 of the revised EIS, and summarized in Table 4 of Appendix J-2 to the revised EIS. The emissions during the site preparation and construction phase are detailed in Table 6.6.4.4-1 of the revised EIS, where Table 6.6.4.3-1 of the revised EIS details the closure phase emissions. The above listed tables include all of the emission from the relevant sources. For example, Table 6.6.4.2-1 of the revised EIS, does include the emissions from diesel fired back-up generators, which will be required during operations in the event of power outage to safely manage the site until power is restored. During operations the primary source of power for the Project will be supplied by the 115 kV power transmission line that runs through the site, adjacent to the processing plant. It should also be noted that the source categories in the above listed tables included the tailpipe emissions for the particular piece of extraction equipment, as well as the

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					fugitive dust generated by the operation of the equipment, movement and extraction of material and road dust generated by vehicle traffic. As discussed in Section 2.4.13 of the revised EIS, Treasury Metals considered three alternatives with respect to aggregate materials, namely: using mine rock identified as non-potentially acid generating (PAG); developing an on-site aggregate pit(s); and obtain aggregate from an existing commercial aggregate supplier in the region. Treasury Metals do not plan to develop a stand-alone aggregate pit on the site. The preferred alternative is to use non-PAG waste rock as the primary source of aggregate as this reduces the volume of waste rock to be managed, would likely reduce the height of the waste rock storage area (WRSA), and would be more economical solution for Treasury Metals. If sufficient volumes of non-PAG waste rock cannot be identified onsite, Treasury Metals will source aggregate from existing commercial suppliers in the region. There are currently a number of aggregate vendors that Treasury Metals is looking into as possible sources of material should onsite aggregates not be suitable. If sufficient volumes of non-PAG waste rock can be identified onsite, and can be appropriately segregated as described in TMI_046- MW(1)-08, there would be no additional emission sources that need to be considered in the use of this material as aggregate. The current dispersion modelling includes the tailpipe and fugitive dust emissions associated with the blasting, excavation, transport, and placement of waste rock. The emissions (tailpipe and fugitive dust) from the equipment included in the dispersion modelling would be used to place the waste rock in the appropriate location within the operations area. If the waste rock is classified as PAG, the equipment would be used to place the waste rock in the waste rock storage area (WRSA) or mined out areas of the open pit. Alternatively, if sufficient volumes of material are classified as non-PAG, the same equipment would be used to load the waste rock, transport it to the tailings storage facility (TSF) and place it as an aggregate for the construction of the impoundment dam. If aggregate is to be sourced offsite, Treasury Metals will obtain the aggregate from an existing commercial aggregate supplier in the region. Therefore, there would be no new environmental effects associated with sourcing aggregate from an existing commercial supplier in the region. Such Provincially approved facilities would have to meet environmental compliance requirements, which ensures these existing facilities will not have an adverse effect on the environment. As part of the work to respond to the Round 1 information requests, specifically Part A to this information request, Treasury Metals revised their assessment of air quality to explicitly consider the predicted air quality effects during the site preparation and construction, and the closure phases of the Project. A technical memorandum, dated April 12, 2018, summarizing the inputs and results of this modelling has been provided as Appendix J-5 of the revised EIS. The results of the modelling, which are summarized in Section 6.6 of the revised EIS, includes the following emissions sources during the site preparation and construction phase, and the closure phase:

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					SITE PREPARATION AND CONSTRUCTION PHASE Table 1: Construction/Site Preparation Phase Point Source Stack Parameters • GEN 1 (500 kW diesel emergency generator), and GEN 2 (150 kW diesel emergency generator) Table 2: Construction/Site Preparation Phase Volume Source Parameters • Bulldozer × 2 (including fugitive dust) • Loading trucks with waste rock (including fugitive dust) • Unloading waste rock from trucks (including fugitive dust) • Front-end loader (including fugitive dust) • Blasting (including fugitive dust) • Primary crushing (including fugitive dust) • Excavator (including fugitive dust) SITE CLOSURE PHASE Table 3: Decommissioning/Restoration Phase Point Source Stack Parameters • 500 kW diesel emergency generator Table 4: Decommissioning/Restoration Phase Volume Source Parameters • Bulldozer × 2 (including fugitive dust) • Loading trucks with waste rock (including fugitive dust) • Unloading waste rock from trucks (including fugitive dust) • Front-end loader (including fugitive dust) • Excavator (including fugitive dust)

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170	AE(1)-08	CEA Agency	Appendix J, Tables 4, 5, 7 Section 7	Section 9.1.2, 10.1	**<u>Summary of Comment / Rationale:</u>** The following clarifications and justifications are needed in order to understand the validity of the operational phase air quality assessment: - Clarify if emission sources such as aggregate pits and on site traffic (worker/passenger vehicles) have been considered in Table 4. - Table 5 shows exceedance of TSP and particulate matter. Clarify if the mitigation measures and control efficiency were incorporated into the model and whether these exceedances are before or after mitigation measures. - The mitigation measures described in Section 7.4 (Appendix J) do not provide detail with respect to the frequency of their application or their control efficiencies. Information on these aspects of the proposed mitigation measures is needed to better understand how they factor into the air quality assessment.
					<u>Information Request / Comment:</u> A. Revise Tables 4 and 5 to include other emission sources, such as aggregate pits and onsite traffic, if applicable and incorporate into the impact assessment or provide justification if they are considered insignificant sources. B. Provide a rationale as to why short term exceedances of TSP and PM10 and long term (annual) exceedance of TSP is predicted. C. Provide a summary table of mitigation measures including the control efficiency of each measure that was used for modelling (if used). If the measures and their control efficiencies were not included, modelling should be revised to include these considerations. D. Provide detail with respect to mitigation measures, the frequency of their application and their control efficiencies.
					<u>Response:</u> A. On-site traffic in terms of large truck and other equipment has been included. Personal vehicles are deemed insignificant since they usually are limited to 1 or two trips a day. Weight, tire size and duty factors make their impact minimal when compared to heavy mine trucks that are assumed to be in constant operation. B. Exceedances of particulate criteria are typically predicted at property boundaries under worst-case conditions for mining and aggregate operations. Environmental assessments typically make use of ambient air criteria for determining whether concentrations will be exceeded at the nearby residences. Although ambient criteria are developed to apply at locations where a member of the public could be exposed (i.e., the criteria would apply at, or beyond, the property line), the authors

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					of the Canada-Wide Standards acknowledge that achievement of the standards were to be based on "community-oriented locations" (CCME 2000), with an emphasis on areas "where people live, work and play" (CCME 2000). None of the predicted concentrations are above the selected criteria at sensitive receptor locations (Table 7 of RWDI, 2014e). The requirement for compliance with property line criteria is a fundamental component of the Environmental Compliance Approval (ECA) process in Ontario. It should be noted that there are a number of potential emissions sources at the Project that are exempted from the ECA assessment process. An evaluation of compliance with the property line criteria stipulated as part of the ECA process is also provided in Appendix J to the EIS (RWDI, 2014f). None of the predicted concentrations from those sources considered in the ECA process exceed the relevant limits at the property line (RWDI, 2014f: Emission Summary Table). C. A listing of the measures to mitigate air quality effects is provided Section 6.3 of the Environmental Air Quality Assessment (RWDI, 2014e). The measures listed are typical best practices for mining operations. These are further set out in the Best Practices Plan for Dust (RWDI, 2014g) included as part of Appendix J to the EIS. The control measure explicitly used in the modelling was road watering to control dust. A factor of 75% control of dust was assumed, which can be achieved readily with periodic watering, was assumed in the modelling. D. As noted in part C, measures assumed to avoid effects are considered best practices for mining operations. With respect to controlling dust on the haul roads, the modelling assumed periodic watering, with an assumed control efficiency of 75%. The application of water would be done on an on-going basis, with the frequency of application adjusted on the basis of the on-site moisture conditions. Watering would also be triggered when dust plumes are visible. Additional details on best practices are provided in the Best Practices Plan for Dust (RWDI, 2014g) included as part of Appendix J to the EIS. References Canadian Council of Ministers of the Environment (CCME). 2000. Canada-Wide Standards for Particulate Matter (PM) and Ozone. Ottawa, Canada. RWDI, 2014e. Goliath Gold Project: Environmental Air Quality Assessment, Final Report. Prepared for Treasury Metals Incorporated. Prepared by RWDI Air Inc., Guelph, Ontario. Included as part of Appendix J to the EIS. RWDI, 2014f. Goliath Gold Project: Emission Summary and Dispersion Modelling Report. Final Report. Prepared for Treasury Metals Incorporated. Prepared by RWDI Air Inc., Guelph, Ontario. Included as part of Appendix J to the EIS.

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					RWDI, 2014g. Goliath Gold Project: Best Practices Plan for Dust. Final Report. Prepared for Treasury Metals Incorporated. Prepared by RWDI Air Inc., Guelph, Ontario. Included as part of Appendix J to the EIS.
171	AE(1)-09	CEA Agency	Appendix J Section 7.3, Table 7	Section 10.1.3	**Summary of Comment / Rationale:** Section 7.3 (Appendix J) states "Federal EA requirements prescribe that impacts be assessed at the nearest receptors, and not specifically at the property boundary. As such, the particulate levels in Table 7 (Appendix J, page 27) below reflect the predicted impacts at the nearest receptors. These are the concentration values that are applicable to the criteria as per Federal EA requirements." It is unclear which federal guidelines or reference was used for the above mentioned statement on "Federal EA requirements".
					Information Request / Comment: A. Provide a reference for the federal EA requirements mentioned on page 27 of Appendix J.
					Response: Section 4 of the Environmental Air Quality Assessment (RWDI, 2014e: included as part of Appendix J to the revised EIS) describes the assessment criteria considered for air quality. Specifically, Section 4.1 discusses the Canadian Ambient Air Quality Standards (CAAQS), Section 4.2 discusses the National Ambient Air Quality Objectives (NAAQO) and Section 4.3 discusses the Ontario Ambient Air Quality Criteria (AAQC). A summary of these criteria and the rationale for the criteria used in the assessment were Although Section 7.3 of the Environmental Air Quality Assessment (RWDI, 2014e: included as part of Appendix J to the EIS) indicated predicted maximum 24-hour TSP, annual TSP and 24-hour PM_{10} concentrations at the property line could exceed the relevant criteria during the operations phase, the predictions were restricted to areas immediately adjacent to the property line. However, none of the predicted concentrations are above the selected criteria at sensitive receptor locations (Table 7 of RWDI, 2014e). Ambient air criteria are developed to apply at locations where a member of the public could be exposed (i.e., the criteria would apply at, or beyond, the property line). The authors of the Canada-Wide Standards acknowledge that achievement of the standards were to be based on "community-oriented locations" (CCME 2000), with an emphasis on areas "where people live, work and play" (CCME 2000). References Canadian Council of Ministers of the Environment (CCME). 2000. Canada-Wide Standards for Particulate Matter (PM) and Ozone. Ottawa, Canada.

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					RWDI, 2014e. Goliath Gold Project: Environmental Air Quality Assessment, Final Report. Prepared for Treasury Metals Incorporated. Prepared by RWDI Air Inc., Guelph, Ontario. Included as part of Appendix J to the EIS.
172	AE(1)-10	CEA Agency	Appendix J Section 3.5.5, Table 7, List of Figures	Section 10.1.3	**<u>Summary of Comment / Rationale:</u>** Locations and descriptions of sensitive receptors are not clearly presented in Appendix J. Sensitive receptors are shown in proximity to only one section of the Project boundary (as outlined in white square below). Section 3.5.5 (Appendix J) states: “Forty-four receptors of interest were identified within the local study area. Where the surface mining rights have been secured by Treasury Metals, land use was assumed to be non-sensitive and no receptors were identified. All other vacant lands in the vicinity of the Project that were found to be inaccessible (except by a rough cut-in through the forest) were not considered as receptors. Forty-two of the receptors were identified as houses. One was identified as the campground at Aaron Provincial Park. One receptor is a trailer located on otherwise vacant land. There are no receptors identified within the local study area to the north east, because Treasury Metals has surface rights to all land in that  direction.” While lands may be inaccessible by vehicle they are not inaccessible overall. Sensitive receptors should be identified with Aboriginal traditional use of land in mind. Owning the surface rights to a section of land does not preclude the company from identifying potential sensitive receptors on that land. The proponent’s selection of sensitive receptors should be revised with these facts in mind. Maps indicating locations of all sensitive receptors and their precise locations and distinguish between Aboriginal and non-Aboriginal receptors with respect to the Project and the COPC concentrations in these locations are required. In addition, Table 7 (Appendix J, page 27) indicates that impacts are assessed at the "most-impacted receptor location". The receptors as a group are described in Section 3.5.5 (Appendix J) but the nearest receptor is not identified in the document. It is crucial to conduct impact assessment for all the sensitive receptors within 20 km of the mine property line (local study area) due to exceedances of TSP and PM10. PM2.5. NOx should also be included.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					In the List of Figures (Appendix J) Figure 5 is mislabeled as "Modelled Receptors"; Figure 5 is actually a wind rose diagram. A "Modelled Receptors" figure is missing from Appendix J.
					Information Request / Comment: A. Revise the selection process for sensitive receptors. Describe all sensitive receptors and distinguish between Aboriginal (i.e. Aboriginal dwellings, camps, cabins, recreational sites, hunting, fishing, and country foods collecting areas, etc.) and non-Aboriginal receptors Indicate the proximity of these receptors in relation to the Project site. Provide a map that clearly shows all sensitive receptors and distinguish between Aboriginal and non-Aboriginal receptors. Also indicate the most impacted receptor's location B. Provide a map showing the locations of sensitive receptors versus the estimated COPC concentrations. C. Conduct an AQ impact assessment for sensitive receptors such as the Village of Wabigoon, City of Dryden, Townships of Hartman and Zealand and Aaron Park given their proximity to the site. D. Provide a revised version of Table 7 which identifies each receptor and that also incorporates PM2.5 and NOx as indicators. E. Provide an isopleth/contour map should to show the maximum predicted concentrations at each receptor.
					Response: A. Sensitive receptor locations from an air quality perspective were defined based on any inhabited location that would be used for residential or other purposes. This is consistent with the authors of the Canada-Wide Standards acknowledge that achievement of the standards were to be based on "community-oriented locations" (CCME 2000), with an emphasis on areas "where people live, work and play" (CCME 2000). Information is not available for distinguishing whether the identified sensitive receptors are owned by Aboriginal or non-Aboriginal people. For the purpose of the air quality assessment, the definition of sensitive receptors is appropriate when comparing predictions to criteria, as described by the CCME (2000). The location of these sensitive receptors is provided in Figures 6 through 19 of Environmental Air Quality Assessment included in Appendix J to the EIS. Both the maximum predicted concentrations at the property line, and the sensitive receptor locations were used as inputs to the health risk assessment presented in Appendix W to the EIS. The maximum predicted property line concentrations were predicted to occur at the edge of the property, in the immediate vicinity of the overburden storage pile and low-grade ore (LGO) stockpile (see Figures 6 through 19 of Environmental Air Quality Assessment included in Appendix J to the revised EIS). This would represent the location with the highest predicted air

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					concentrations as a result of the Project. Although access to the active areas of the Project will be restricted during mine operations for safety and security reasons, as described in the revised EIS. Treasury Metals recognizes Aboriginal rights to conduct traditional land uses, such as gathering and hunting, on Crown lands not occupied by the Project. Such locations would be further from the sources of air emissions, and thus would experience lower air concentrations than the maximum predicted air concentrations at the property line. The health risk assessment presented in Appendix W to the revised EIS included both the maximum predicted concentrations at the property line, and the maximum predicted concentrations at the sensitive air quality receptor locations as inputs. No unacceptable risks were determined as a result of the Project. B. Figures 6 through 19 of the Environmental Air Quality Assessment included in Appendix J to the EIS show the sensitive receptor locations and the modelled concentrations of the COPC. C. The air quality assessment was completed at receptors across the local study area (LSA), 20 km by 20 km in size (see TMI_172-AE(1)-10_Figure 1). The air quality receptors cover most of the Township of Hartman, portions of the Township of Zealand, Aaron Provincial Park and the Village of Wabigoon. However, the maximum predicted concentrations at the property line of the Project represent the highest concentrations beyond the active mining area. Predicted concentrations and resulting effects at more distant receptor locations mentioned in the questions would be lower than the maximum values predicted at the property line, and used as inputs to the health risk assessment. As described in TMI_174-AE(1)-12, the Project air quality effects at the City of Dryden would not be distinguishable from background given the distance between the City of Dryden and the Project. D. For the purposes of the air quality assessment, the maximum off-site concentrations at the property line were used, with the exception of TSP and PM10. For TSP and PM_{10}, the maximum at the closest sensitive air quality receptor, consistent with the CCMME (2000) interpretation, predicted concentrations would be less than these values at all more distant receptor locations, including areas of the surface lease beyond the active project area where Aboriginal peoples would be able to continue to practice traditional uses of the land. E. Figures 6 to 19 of Environmental Air Quality Assessment included in Appendix J to the EIS show isopleths for the concentrations of air quality parameters at all sensitive air quality receptors, consistent with the CCME (2000) interpretation. References Canadian Council of Ministers of the Environment (CCME). 2000. Canada-Wide Standards for Particulate Matter (PM) and Ozone. Ottawa, Canada.
173	AE(1)-11	CEA Agency	EIS Section 6, Figure 6.1.3,	Sections 10.1.3, 12.1.1	**Summary of Comment / Rationale:** Section 6.4.1.5 (EIS) does not align with Table 6.4.2 (EIS, page 6-61). The table shows magnitude and geographic extent at Level II, and frequency at Level III (residual effect occurs frequently or

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Tables 6.4.1, 6.4.2, 6.4.3		continuously), while the text in Section 6.4.1.5 deems these all to be Level I in determining an overall magnitude Level I. These inconsistencies need to be corrected. No methodology has been provided for determining the reversibility of effects. The determination that the "effect is readily reversible over a relatively short period", especially for $PM_{2.5}/PM_{10}$, is debatable given that exposures below the CAAQS may be associated with respiratory and cardiovascular effects. The determination that duration is Level I (residual effect is temporary or not measurable beyond given project phase) is incorrect as the operational phase is 11 years long, which provides ample time for potential adverse health effects to manifest as a result reduced air quality. Health effects that develop over 11 years may very well persist beyond this period. In summary, It is questionable to summarize across all air pollutants in the residual effects characterization when each pollutant has its own properties and potential health effects and should be considered individually. No data has been provided that quantify the frequency of exceedances and exposures leading to potential health effects.
					Information Request / Comment: A. Clarify the discrepancies between EIS Section 6.4.1.5 and Table 6.4.2. B. Describe how reversibility of effects was determined and why all air contaminants were evaluated together given their different health effects. C. Justify using Level I with respect to duration, taking into account the length of the operational phase and given that exposure to some air contaminants may result in adverse effects even after exposure has ceased.
					Revised Response: A. The discrepancies, specifically Section 6.4.1.5 (original EIS) does not align with Table 6.4.2 (original EIS, page 6-61) have been addressed as a part of the revised EIS. Please note the substantial changes made to the Table of Contents, and list of Tables and Figures as part of the revised EIS. Sections 6, 7 and 8 of the revised EIS endeavors to set out the assessment of effects and impacts associated with the Project in a clear and traceable manner. In the original EIS the Section that the Agency is referring to was 6.4.1.5 (Air Quality) and Table 6.4.2: Environmental Effects Assessment for the Operational Phase. In the revised EIS the misalignment between

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					these two sections has been resolved and information regarding the associated “effects and mitigation” with respect to Air Quality can be specifically found in Sections 6.19 “Human Health” and in Section 6.6 “Air Quality”. Each of these sections contains a series of sub-sections including a summary of the potential effects of the project on the environment, effects prediction method details, avoidance measures, predicted effects, mitigation measures, and residual adverse effects (if any). B. A human health risk assessment (Appendix W, summarized in 6.19, Human Health) was conducted for each contaminant of concern i.e. chemicals that exceeded their respective human health criteria in waste rock, tailings, baseline soils, groundwater, and surface water or modelled dust concentration. Reversibility of effects was not considered as part of the risk assessment process as per the conservative approach to the risk assessment maximum measured concentrations were used for exposure calculations and contaminants were evaluated based on the individual toxicity (i.e. not together). Site-specific exposure durations were considered as part of the human health risk assessment to ensure that potential risks were not underestimated to receptors who may be exposed to chemicals during operations only, or long term post-closure. The recommended Toxicity Reference Values accepted for use in a risk by Health Canada are based (in most cases) on chronic exposures rather than short term exposures. As stated by Health Canada in their Preliminary Quantitative Risk Assessment guidance document, it is anticipated that contaminant intake due to the inhalation of fugitive dust will be insignificant relative to the direct ingestion of soil and water, and to dermal contact. C. In Section 8.6 of the Revised EIS, Levels of Magnitude for Residual Adverse Effects on Air Quality were presented and ranged from Level II to Level III dependent on chemical type and project phase. Because the maximum predictions are used, without regard for the time of day or season, the predicted effects were assumed to occur at the worst time of day and at the worst period of the year (i.e., Level III). This would apply for the site preparation and construction phase, the operations phase, and the closure phase. Because there are no air emissions sources at the Project during the post-closure phase, there are no residual adverse effects during the post-closure phase, and any adverse effect would be appropriately assessed as part of the risk assessment (Appendix W) which indicated no potential risk based on site-specific exposure scenarios.
174	AE(1)-12	CEA Agency	Appendix J	Section 10.1.3	**Summary of Comment / Rationale:** Section 1.4 (Appendix J) states “In practice, air quality impacts from a project of this magnitude are anticipated to be indistinguishable from background levels at distances 10 km and greater from the nearest active project area. The study therefore focuses on areas within a 20 km by 20 km area.” This claim needs to be quantitatively justified or a quality reference produced. The wind rose presented in Figure 5 (Appendix J, page 17) roughly indicates peak wind speeds

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					directed toward the village of Wabigoon, Wabigoon Lake, Thunder Lake, and Dryden. The EIS should discuss the role that the wind rose data played in selecting sensitive receptors and present quantitative data justifying the choices.
					Information Request / Comment: A. Quantitatively prove that the statement presented in section 1.4 (Appendix J) is true and provide sample calculations or a reference. B. Provide quantitative data backing up the decision to exclude the city of Dryden and the village of Wabigoon as sensitive receptors. If the data does not support this decision include these areas as sensitive receptors and revise air quality discussions/studies accordingly.
					Response: A. The dispersion modelling was run for receptors across the 20 km by 20 km local study area (LSA), as described in Section 1.4 of the Environmental Air Quality Assessment (included as part of Appendix J to the EIS). The maximum predicted concentrations at the limit of the LSA closest to Dryden were less than 15 $\mu g/m^3$ for the 24-hour TSP, and less than 12 $\mu g/m^3$ for the 1-hour NO_2. At the limit of the LSA closest to Wabigoon, the maximum predicted concentration of 24-hour TSP was less than 13 $\mu g/m^3$, while the maximum 1-hour NO_2 was less than 11 $\mu g/m^3$. The background air concentrations used in the assessment were presented in Table 1 of Environmental Air Quality Assessment (included as part of Appendix J to the EIS). The background value for 24-hour TSP was 33 $\mu g/m^3$. Coincidentally, the background concentration for 1-hour NO_2 was also 33 $\mu g/m^3$. B. In addition to the gridded set of air modelling receptors for receptors described in Section 1.4 and shown on Figure 1 of the Environmental Air Quality Assessment (included as part of Appendix J to the EIS), a set of 42 sensitive receptor locations were also considered. These sensitive receptor locations represented the closest residential dwellings to the Project, and corresponded with the sensitive receptors considered in the noise assessment. Because the village of Wabigoon is further from the Project than the sensitive receptors included in the air quality assessment, the predicted concentrations at the village of Wabigoon would be lower than the predicted maximum concentrations at the closest residences (i.e., sensitive receptors) that were used as inputs to the health risk assessment (see Table 3 of Appendix W to the EIS). Additionally, the City of Dryden is even further from the Project, beyond the limits of the LSA. As a result, the predicted maximum concentrations at the City of Dryden would be indistinguishable from background, as described in part A to this response.
175	AE(1)-13	CEA Agency	EIS Section 6	Section 10.1.3	**Summary of Comment / Rationale:**

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					In Section 6 (EIS) the proponent appears to take a generalized approach to dispersion modelling of dust vs. gaseous emissions. Dust and gaseous emissions display different dispersion characteristics and should be discussed separately. Furthermore dust from general mining operations and dust from blasting activities should be discussed separately considering trace contaminants present in the dust, the volume of dust produced over a given time period and the height that the dust will reach in the local atmosphere. Mitigation measures are not specifically addressed for dust from blasting.
					Information Request / Comment: A. Justify why dust and gaseous emissions are grouped under the same dispersion model and LSA/RSA. If the conclusion is that they cannot be grouped, discuss and model the dispersion characteristics separately. B. Revise corresponding figures in the EIS to show the LSA/RSA for dust and gaseous emissions. C. Describe dust resulting from blasting activities and contrast with dust from general operations (e.g. road dust, crusher dust etc.). D. Provide mitigation measures related to dust from blasting
					Response: A. The approach used for assessing the air quality effects associated with the Project is consistent with the air modelling guidance from the Ministry of the Environment and Climate Change (MOECC). Modelling was done using the AERMOD dispersion model developed by the U.S. EPA (see Section 3.5.1 of Appendix J). This model is recommended for use in predicting concentrations of both gases and particulates. Both gases and particulates adhere to the same fundamental dispersion physics in the atmosphere. There are some minor differences with respect to deposition. While deposition can affect both gases and particulates, particulate deposition is considerably greater as gravity has a strong influence on particle deposition. As described in Section 3.5.2 of Appendix J to the revised EIS, the AERMOD dispersion model is capable of, and was used for, predicting particle deposition in the EIS. The AERMOD dispersion model is also capable of predicting plume particle depletion, which means the model removes the particles deposited from the plume as it travels downwind. As described in Section 3.5.2 of Appendix J to the EIS, particle depletion was conservatively ignored in the modelling for the EIS, and all emitted

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					particles were assumed to remain available to affect downwind concentrations. No deposition was modelled for gaseous compounds. B. The local study area (LSA) for air quality corresponds to the modelling domain used in the AERMOD dispersion model (see Figure 2 of Appendix J to the revised EIS). As described in the response to part A, the same dispersion model is suitable and appropriate for modelling both particulate and gaseous concentrations. Therefore, the LSA would be the same for both gaseous and particulate matter. The regional study area (RSA) for air quality corresponds to the areas used for characterizing the existing air quality and meteorological conditions. It is neither practical, nor is it appropriate to present the dispersion modelling results over the RSA, as it would not be possible to distinguish the effects over such a large area. Similarly, the figures used to present the spatial dispersion modelling results (Figures 6 through 19 of Appendix J to the EIS) were focused on the areas in the immediate vicinity of the Project to better display the spatial patterns of predicted concentrations. Displaying the results on figures sized to include the entire LSA would have made it harder to distinguish the spatial patterns of the predicted concentrations. A more comprehensive discussion regarding the LSA and RSA for air quality has been provided in Section 2.3.5 of the revised EIS. The revised EIS is a stand-alone document prepared by Treasury Metals to accompany the Round 1 responses. The revised EIS was prepared to address issues regarding the organization of information presented in the EIS, and to address issues raised through the responses to Round 1 questions. C. Modern blasting methods used in mining are designed to direct the energy from the blasts into the rock. This reduces the amount of blasting agents required to achieve the desired objectives, and ultimately reduces the amount of dust generated. The dust generated from modern blasting result primarily from the physical impact of the displaced rock. There are no significant differences in the dust characteristics from blasting than from other material handing activities that will be happening in the open pit or underground mine at the Project. The proposed blasting at the Project will likely be restricted to once per day, and only a few days during each week. For the purposes of the air modelling, conservative assumptions with regard to large blast sizes and other parameters were used throughout the assessment. D. The best way to control blast emissions is to use the most efficient blasting techniques which will employ phased, shaped blasts. Production staff will be employing these methods to use explosives efficiently for economic and safety reasons, in addition to controlling emissions. This was identified as a mitigation measure, both in Section 6.3 of Appendix J to the EIS, and Section 6.6.5 of the revised EIS.
176	AE(1)-14	CEA Agency	Appendix J Section 3.3.2	Section 9.1.2	**<u>Summary of Comment / Rationale:</u>** Emission estimate calculations for road dust from unpaved roads assumed a silt content of 5.8% based on taconite mining and processing haul road as per Table 13.2.2-1 in AP-42 (U.S. EPA

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Compilation of Air Pollutant Emission Factors) and a mitigation control efficiency of 75%. The basis of the 75% control efficiency and the reason why a low silt content was assumed is unclear. The rationale and basis for these two values is needed to understand the extent to which they effect the predictions that have been made for air quality and their relevance to conditions at the site.
					<u>Information Request / Comment:</u> A. Provide a rationale as to why a low silt content of 5.8%, was assumed (dust emission are directly proportional to the silt content) as there are other values provided in the AP-42 table ranging from 3-16% with a mean value of 10% (9.14% is typical for mining sector in Ontario). B. Provide an explanation for the use of 75% control efficiency.
					<u>Response:</u> A. The values in the assessment used reflect taconite mining and processing, as shown on Table 13.2.2-1 of AP-42. This was used a suitable surrogate for mining operations in the region, as the measurements were taken at the Erie Mining Company near Hoyt Lakes, MN, which is roughly 250 km south of the Project, and reflects metal ore mining operations. The other value provided on Table 13.2.2-1 of AP-42 are from the following types of facilities, none of which are comparable to the proposed Project: • Copper smelting • Iron and steel production • Sand and gravel processing • Stone quarrying and processing • Western Surface Coal Mining • Construction sites • Lumber sawmills • Municipal solid waste landfills There was no reference provided for the 9.14% silt collected for the Ontario mining sector, however, it likely includes limestone quarries and gravel pits, which are typically softer material than at the Project, and would be used likely to abrade into silt. B) 75% control efficiency is generally a readily achievable control efficiency with moderate watering during dry periods. It should be noted that the implementation of a dust Best Management Practices Plan will include a provision to water when visible plumes of dust begin to appear.
177	AE(1)-15	CEA Agency		Section 11.1	**<u>Summary of Comment / Rationale:</u>**

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Appendix J, Sections 6.3, 7.4, 8.3 Appendix D		Due to the predicted exceedances and the details missing about the Dust Best Management Plan (DBMP) and the mitigation measures, there is some uncertainty about the potential for significant adverse impacts on air quality that could result from the project. For example, it is important to understand the objectives to be achieved through air quality mitigation measures, the methods to be applied and the conditions that trigger the need for mitigation. The Proponent should be advised that compliance with the following regulations and code of practice will help to ensure that emissions are reduced throughout all phases of the project: Vehicle and fuel regulations addressing air pollutants and GHGs: - On-road vehicle and engine regulations that establish maximum levels for a number of pollutants including particulate matter and ozone precursors such as NOx and VOCs: - On-Road Vehicle and Engine Emission Regulations: http://laws-lois.justice.gc.ca/eng/regulations/SOR-2003-2/index.html - Off-road diesel engine emission regulations that also control these air pollutants. These have been recently updated to align with US EPA's Tier 4 regulations: - Off-Road Compression Ignition Engine Emission Regulations:http://laws-lois.gc.ca/eng/regulations/SOR-2005-32/index.html - Sulphur in gasoline and in diesel regulations are in place that ensure that the fuel will not impede the effective operation of advanced emissions control technologies installed on vehicles and engines (technologies such as particulate filters): - Sulphur in Gasoline Regulations: http://laws-lois.gc.ca/eng/regulations/SOR-99-236/index.html - Sulphur in Diesel Fuels Regulations: http://laws-lois.gc.ca/eng/regulations/SOR-2002-254/index.html - Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations, SOR/2010–201; 74, aligned with the US, setting progressively stricter GHG emissions standards for 2011-2016 model years: http://laws-lois.gc.ca/eng/regulations/SOR-2010-201/index.html - Heavy-duty Vehicle and Engine Greenhouse Gas Emission Regulations, SOR/2013-24, apply to 2014 and later model years: http://laws-lois.gc.ca/eng/regulations/SOR-2013-24/index.html - Renewable Fuels Regulations, SOR/2010–189: http://laws-lois.gc.ca/eng/regulations/SOR-2010-189/index.html Management practices for reducing emissions from mine fleet equipment including compliance with EC's off-road diesel engines regulations and use of tier 4 technologies and engine operation and maintenance guidelines as per EC's Environmental Code of Practice for Metal Mines (2009): http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=CBE3CD59-1

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					The following guidance document is a valuable source of information on air quality mitigation (for example on the use of water and dust suppressants to mitigate fugitive dust from site preparation, storage piles, unpaved roads, etc.): - "Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities" (ChemInfo, 2005). A copy of this document can be provided by Environment Canada at the proponent's request.
					Information Request / Comment: A. Incorporate the regulations and code of practice into Best Management Plan for dust (DBMP), greenhouse gas (GHG) emission plan, Engine Maintenance Program and other mitigation actions for all phases of the project.
					Response: A. The current versions of these regulations and codes have been referenced in the updated Dust Best Management Practices Plan and applicable provisions will be incorporated into the plan prior to the commencement of construction. This has been added to the Commitment Registry.
178	AE(1)-16	CEA Agency	EIS Sections 3, 6, 13 Appendix I	Section 9.1.2	**Summary of Comment / Rationale:** A description of the proposed artificial lighting setup to be used for nighttime operations is not included in the EIS.
					Information Request / Comment: A. Provide a description and schematic of the artificial lighting setup to be used for nighttime operations. B. Provide technical specifications for the proposed artificial lighting setup and model light trespass and its effect on sensitive receptors based on this information. C. Use the information attained from the artificial lighting study to clearly define the associated LSA/RSA. Use this information to justify the current selection of sensitive receptors and the reasons for not including the city of Dryden and the village of Wabigoon as part of the LSA for light.
					Response: A. Night-time lighting will be provided to sustain the safe operation of the Project 24-hours a day. On-site night-shift staff numbers will be significantly lower than during the day and the majority of operations and maintenance tasks will be within the process plant buildings. In addition, all site deliveries and process plant bulk chemical and warehouse deliveries will be scheduled for daylight

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					hours. Night-time lighting will therefore be designed to provide the minimum illumination levels necessary to support the night-time operation, knowing that no significant work at the plant site will be performed outside during 'normal operation'. A preliminary night-time lighting layout has been designed to provide the minimum night-time illumination levels for the process plant and mine infrastructure. The lighting layout only outlines the external operations lighting and all internal lighting within enclosed buildings and structures has been excluded. It should be stressed that this lighting layout is preliminary and will evolve as detailed design and modelling progresses. A schematic of the plant night-time lighting layout is provided in TMI_178-AE(1)-16_Figure_1. A brief description of the lighting plan is below: • A single 6 m high mounted floodlight (132.2 Watts) will be installed on the Run Of Mine (ROM) pad above the ROM Bin to provide an area illumination level of 40 Lux over the ROM Bin to provide the Haul Truck drivers and Front End Loader (FEL) operators sufficient lighting for ore tipping. A 6 m high area light (56.9 Watts) also provides an illumination level of 5 Lux to the ground surface in front of the ROM Bin. • There will be no external lighting for the enclosed raw ore conveyor galleries as these will be fully enclosed structures, with internal lighting provided. • An area light (56.9 Watts) will be mounted at a height of 15m on each of the three external sides of the Primary Crusher Building to provide a surrounding ground illumination level of 5 Lux. • A single floodlight (132.2 Watts) will be mounted at a height of 22 m off the Ore Feed Bin to provide a minimum stockpile illumination level of 5 Lux for the Bin overflow stockpile area. Two (2) additional floodlights will be mounted at a height of 22 m off the Ore Feed Bin structure which will illuminate the stockpile reclaim hopper below to a level of 40 Lux. • Fourteen (14) area lights (56.9 Watts) will be mounted at a height of 15 m around the perimeter of the Process Plant Building, with an approximate distance of 18.5 m between each light. This lighting set-up will provide a ground perimeter illumination of 5 Lux. • An area light (56.9 Watts) will be mounted at a height of 5 m on each side of the main HV switch room located beside the plant. A light will be installed above each main access door either side of the switch room. One light will then be located on each remaining side. This lighting arrangement will provide a ground perimeter illumination level of 5 Lux. • Two 10 m high mounted floodlights (132.2 Watts) will be installed adjacent to the truck line-up area to provide a sufficient ground illumination of 5 Lux for the waiting mine haul trucks and operations equipment. • Four (4) area lights (56.9 Watts) will be mounted at a height of 10 m on the front of the truck workshop and maintenance building. There will be an approximate distance of 11 m between each light. These mounted workshop lights, together with one (1) 10 m high floodlight (132.2

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					Watts) located beside the fuel tank area will provide a ground illumination of 5 Lux for the area in front of the workshop. • Four (4) 10 m high mounted floodlights (132.2 Watts) will be located at the fuel tank area to provide an fuel tank ground illumination level of 40 Lux • Five (5) 10 m high floodlights (132.2 Watts) will be mounted from the mine administration building to provide a perimeter ground illumination level of 5 Lux. • Two (2) 10 m high mounted floodlights (132.2 Watts) will be installed directly in front of the guard house to provide a sufficient illumination level of 40 Lux to the area adjacent the guardhouse and to the right of the site access road located off Nursery Tree Road. Two (2) additional 10 m high mounted floodlights (132.2 Watts) will be located at either end of the plant parking lot outside of the perimeter fencing to provide a carpark ground illumination level of 5 Lux. All plant area night-time lighting will be controlled by the process plant control system and will be automatically turned on/off from adjustable timers. B. External process plant and mine infrastructure area lighting will be designed in accordance with the illumination plant design criteria specified in Table 1 below. Higher Lux illumination levels (>80) will be observed within the process plant and mine infrastructure buildings which contains the process and electrical equipment. The technical specifications for the external plant and infrastructure light fixtures are detailed in TMI_178-AE(1)-16_Table_2. All externally mounted luminaires and their associated lamps will be designed to meet the requirements and recommendations of the Canadian Electrical Code (CEC), and the Building Code of Ontario. In particular, tilt and cut-off angles shall be such as to minimise the effect of the lighting system on the nearby residents and sensitive receivers. Light fixtures will be installed at a tilt angle of 45°. In addition, Luminaires will be suitably designed and selected for the intended environment, which includes factors such as high levels of vibration, water, snow and dust. Plant area luminaires will be protected to not less than NEMA 4 and have CSA certification. The plant and mine infrastructure light trespass has been modelled with the resultant preliminary Lux plot and rendered plan view shown in TMI_178-AE(1)-16_Figure_1 and TMI_178-AE(1)-16_Figure_2, respectively. As highlighted in the response to part A, internal building lighting has been excluded from the lighting model as these buildings are fully enclosed.

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					As demonstrated in the Lux plot and plant rendered views, the effects of plant and mine infrastructure lighting on the neighbouring properties are insignificant as trespass emissions do not extend more than 100 to 200 m from the process plant infrastructure. Additional site infrastructure and features such as the waste rock storage area (WRSA) green wall will further limit light emission impacts on the neighbours based near Thunder Lake. C. The results of the lighting assessment presented in TMI_178-AE(1)-16_Figure_1 and TMI_178-AE(1)-16_Figure_2 show the effects of the plant and mine infrastructure lighting are restricted to an area that does not extend more than 100 to 200 m from the process plant infrastructure. There would be no measurable effect on the light trespass at the 42 nearest residential dwellings selected as sensitive receptor locations for the light assessment. As the City of Dryden and the village of Wabigoon are considerably further away from the Project than any of the sensitive light receptor locations, there would be no effects from Project lighting in either community. Additionally, the communities would also represent a local source of light that would dominate any light effects associated with sources outside of the communities. Details regarding the local study area (LSA) and sensitive receptors used in the light assessment are provided in Section 6.1 of the revised EIS.
179	AE(1)-17	CEA Agency	EIS Section 5 Appendix I	Section 9.1.2	**<u>Summary of Comment / Rationale:</u>** The EIS Guidelines state: "The EIS will describe night-time illumination levels during different weather conditions and seasons." The baseline study was conducted July 2-3, 2013; no seasonal or weather based variations were discussed.
					<u>Information Request / Comment:</u> A. Provide baseline illumination levels that account for different weather conditions and seasons.
					<u>Response:</u> The baseline assessment was focused on existing conditions at the site. The baseline assessment focused on clear weather conditions since light is not transmitted through the atmosphere as well during inclement weather and light intrusion would not be as perceptible. We are not aware of any seasonal variation in light transmission per se. There are, however, some factors that will cause some alteration of light conditions. Increased aerosols in the atmosphere will cause there to be an increase in "Sky Glow". However, the same aerosols will reduce the distance that the "Sky Glow" can be perceived. High levels of aerosols may be somewhat more frequent in the summer but the same effect is also seen in the winter. Obviously there are more nighttime hours in the winter. There is a somewhat elevated background of "starshine" in the summer because the Milky Way is in the nighttime sky during the summer months. All of these effects are completely overshadowed

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					by the effects from moonlight, which varies night to night throughout the year. The baseline measurements were short in duration and were representative of light conditions in the vicinity of the site. Any variability in the background is more related to night to night variability than in season to season variability.
180	AE(1)-18	CEA Agency	EIS Sections 6, 13 Appendix I	Section 9.1.2	**Summary of Comment / Rationale:** No light monitoring program is described in section 13 (EIS) although it is referred to in the section 6 tables. Under the magnitude column in Tables 6.4.1 – 6.4.3 (EIS, pages 6-51 to 6-77) the proponent refers to light trespass being within federal/provincial guidelines. It is not clear to which guidelines the proponent is referring.
					Information Request / Comment: A. Provide a reference to the federal/provincial guidelines that will be used do define light thresholds for the Project. In the event that federal/provincial guidelines are unclear, define and justify acceptable values for magnitude of light at sensitive receptors.
					Response: There are no Provincial or Federal guidelines for light intrusion. The guidelines used for light intrusion were those published by Leadership in Energy and Environmental Design (LEED, 2005). References Leadership in Energy and Environmental Design (LEED). 2005. Green Building Rating System for New Construction and Major Renovations. Version 2.2: Sustainable Sites, Credit 8. October.
181	AE(1)-19	CEA Agency	EIS Section 6 Appendix I	Section 9.1.2	**Summary of Comment / Rationale:** Proponent has identified two light related VCs: 1. light trespass to nearby properties, 2. wildlife attraction to light sources. The proponent should elaborate on "wildlife attraction" to include specific effects on nocturnal migratory birds, species at risk, and the use of lands and resources for traditional purposes by Aboriginal peoples. Attaining this information will require engagement with local Aboriginal peoples/communities.
					Information Request / Comment: A. Assess and describe the potential effects of light on migratory birds, species at risk, and the use of lands and resources for traditional purposes by Aboriginal peoples.
					Response:

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					As detailed in the response to TMI_178-AE(1)-16, the night-time lighting requirements at the Project will only be sufficient to support the safe operations at the Project. As night-time operations will be limited compared to the operations during the day-time, the night-time lighting requirements will be restricted to the areas in, and near, the processing plant. The lighting configuration minimizes the amount of light that will visible beyond the site so as to reduce the amount of disruptions to wildlife, including migratory birds. The light emanating from the Project operations was not predicted to extend beyond immediate vicinity of the Project, where access will be restricted for safety and security reasons during the life of the Project. Direct light effects were not predicted to extend into areas where land and resources may be used for traditional purposes by Aboriginal peoples. However, there is an acknowledgement that light from the Project could potentially affect wildlife using the areas near the Project. An expanded evaluation of the effects of the Project on light has been provided in Section 6.5 of the revised EIS. The revised EIS also addresses the potential effects of the Project on wildlife, including the potential effects light on wildlife and wildlife habitat. Finally, the revised EIS considers the potential effects of the Project on Aboriginal peoples, including direct effects through the loss of access to Crown lands taken up by the Project, as well as the effects of the Project on wildlife and resources that may be used for traditional purposes by Aboriginal peoples in areas surrounding the Project. Treasury Metals has made efforts to engage and elicit input from Aboriginal peoples regarding the Project. Although no Project-specific traditional knowledge and traditional land use studies were prepared for, or shared with, Treasury Metals; limited information was obtained about traditional land use areas though the engagement process. The information that was available regarding traditional uses of the land and resources on the Crown lands surrounding the Project was incorporated into the revised EIS. Treasury Metals will continue to discuss potential Project effects on traditional land use activities with potentially affected Aboriginal peoples throughout the life the Project. As additional information regarding an Aboriginal community's traditional land use and practices become available, Treasury Metals will review and consider it in the design of mitigation measures, follow-up monitoring and management plans for the Project, as appropriate.
182	AE(1)-20	CEA Agency	EIS Section 3.15.3	Section 9	**Summary of Comment / Rationale:** Section 3.15.3 (EIS) is focused mainly on air quality. Currently limiting drop height is the only noise relevant mitigation measure listed. It is unclear why this sole noise mitigation measure is considered sufficient.
					Information Request / Comment: A. Revise Section 3.15.3 and provide justification why the only noise relevant mitigation measure is limiting drop height.

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					B. Describe the proposed mitigation strategies in the context of the Project.
					Response: Each of the following mitigation measures as listed in Section 3.15.3 is designed to limit noise: - Blasting conducted in phased manner that optimizes the amount of explosives needed for a given area to be blasted, and that minimizes the area being blasted. - Material will be loaded into haul trucks in a manner that minimizes the drop height from the loader or excavator to the bed of the truck. - Possible rubber bedding material currently being investigated. - Proper maintenance of equipment (working exhaust silencers). - Current design will incorporate waste rock storage area (WRSA) and overburden piles as noise berms to Project. In addition to this reclamation efforts will be progressive on waste rock pile though operation leading to additional noise barriers to potential receptors of noise. In addition to these measures, Treasury Metals is exploring the feasibility of using white noise backup alarms for surface equipment to reduce the tonal noise compared to traditional backup alarms. It should be noted that backup alarms are not included in the noise that is regulated in Ontario due to their importance for health and safety.
183	AE(1)-21	CEA Agency	EIS Sections 3, 5, 6 Appendix H	Section 9	**Summary of Comment / Rationale:** The LSA and RSA are not clearly defined within the EIS for noise.
					Information Request / Comment: A. Define and justify the LSA and RSA in relation to noise. Base the definition on quantitative analysis and discuss this analysis. B. Where appropriate provide a reference to a figure illustrating the LSA and RSA for noise in the EIS.
					Revised Response: Sound and vibration from a source decay with distance. Additional factors can attenuate levels as a sound or vibration wave travels from the source to receiver, such as ground and air absorption, but distance is a primary factor that is linked to the geometrical spreading and attenuation of the wave. Ground-borne vibration attenuates at a much faster rate than sound in air, and thus any study area defined for sound would also include vibration.

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					On the above basis, most industrial sources decay to a low sound level at distances great than 3000m from a source. For example, a source sound power level of 100 dBA (i.e., typical of the sound emission from a project of this type) conservatively results in a sound pressure level of 22 dBA at a distance of 3000m based on distance attenuation alone. Ten such sources would result in a combined sound level of 32 dBA which is still well-below typical regulatory limits of 40 dBA; in other words, ten similar projects/sources would result in a combined influence well below standard regulatory limits. Part A- Define and Justify the LSA and RSA The definition and discussion of rationale for the RSA and LSA for noise are located in Section 6.1.4 of the revised EIS. A discussion is provided below A regional study area (RSA) for sound can thus be defined as a 3000m setback from the nearest active project area, with sources beyond this range not contributing significantly to total sound levels as noted above. This buffer was reviewed for major sources of stationary sound unrelated to the project that could contribute to total sound. No sources were identified; hence, no combined effects from other sources were considered. The local study area (LSA) was defined within the RSA for detailed acoustic assessment based on a setback of 1500 m (i.e., see blue line in attached figure, Figure TMI_183-AE(1)-21_Figure _1). This Figure is 6.1.4.4-1 in the revised EIS. At this setback distance, sound sources such as those given in the above example would result in sound levels on the order of 28 dBA. These levels could reasonably begin to influence the local background conditions in a rural area which are commonly in the 30-35 dBA range. This distance also aligns to the valid range of most sound propagation algorithms used in detailed assessment, including the ISO 9613-2 “Attenuation of Sound During Propagation Outdoors” algorithm used in this assessment, which also reflects industry-standard practice. Key sensitive receptors were identified within the LSA in each cardinal compass direction from the nearest active project area for the detailed acoustic assessment. These receptors would represent the limiting case for sound as receptors located further away would experience lower sound levels (i.e., based on the principle of geometric spreading). A total of 42 noise-sensitive receptors were identified. As no receptors were identified to the north of the project, the region of acoustical focus that includes all of these receptors (i.e., an “acoustic study area”, see red line in attached figure) extends in a rectangular area approximately 500m away from the mine site at its nearest point to the north (i.e., sound levels of 39 dBA near inaccessible vacant lands) and approximately 2500m to the southwest at its furthest point (i.e., sound levels of 24 dBA). Part B-Provide a Figure: Refer to attached Figure TMI_183-AE(1)-21_Figure _1 for a figure illustrating the LSA and RSA for noise in the EIS. This information is incorporated into Section 6.1.4 of the revised EIS.

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184	AE(1)-22	CEA Agency	EIS Sections 6.4.1.12, 13 Appendix H	Section 9	**Summary of Comment / Rationale:** The proponent does not discuss vibration from blasting and its effect on the surrounding area (e.g. Effect of blasting related vibration on fish/fish habitat). Furthermore the proponent has no plans to include vibration monitoring during monitoring activities. The proponent states in Section 6.4.1.12 (EIS): "Habitat avoidance and disruption of fish spawning potential from noise and vibration disturbances resulting from heavy equipment operation. Specific mitigation measures will be detailed in the EMP, which will include measures to reduce potential impacts of noise and vibration, such as utilizing well-maintained equipment operated at optimum loads." Timing is a main mitigation component to protect fish spawning sites from equipment that causes noise and vibration. Consider listing timing restrictions as a mitigation measure to protect spawning shoals for fish species from noise and vibration impacts.
					Information Request / Comment: A. Assess vibration related to blasting at the project site and describe potential effects and related mitigation strategies. Provide quantitative analysis to support the vibration assessment and mitigation strategies. B. Justify the decision to not implement vibration monitoring during blasting activities. C. Provide a plan to implement timing restrictions as a mitigation measure to protect spawning shoals for fish species from noise and vibration impacts. If this plan is viewed as unnecessary provide justification.
					Response: A. Although not explicitly discussed in Section 6 of the original EIS, vibration related to blasting was fully assessed in the Acoustic Assessment Report (Section 6.2, Table 3D and Appendix B) included as part of Appendix H to the original EIS. Subsequently, blasting has been fully assessed in Section 6.4 of the revised EIS. The mitigation strategies such as controlled blasting using penetrating cone fracture techniques, limiting blasts to a single time per day, and only three to five days per week will help reduce blasting noise, and will also benefit blasting vibration. B. Monitoring of blasting sound/vibration levels is typically required only where levels are predicted to be above the NPC-119 precautionary limits. Since impacts are not anticipated to exceed the precautionary limits, no blast monitoring is required.

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					C. The effects of potential noise and vibration impacts on fisheries, specifically spawning shoals has been evaluated as part of Section 6.4 of the revised EIS.
185	AE(1)-23	CEA Agency	EIS Section 13.3 Appendix H Section 10	Section 11	**Summary of Comment / Rationale:** Section 13.3 (EIS) states, "Treasury plans to measure sound levels at (or near) residences positioned around the Project…", and "Monitoring results will be provided to the appropriate bodies through all phases of the Project". However, section 10 (Appendix H) states monitoring is not recommended under the Health Canada (HC) guidelines since the predicted levels are well below the point where adverse human health effects can potentially occur. These statements appear to contradict each other and it is unclear whether a noise monitoring program will be implemented or not. No monitoring plans are outlined or discussed in the EIS. In the case of a noise complaint the proponent states that the details of a monitoring program will be determined on a case-by-case basis. Additional details surrounding monitoring and mitigation in these cases must be presented to ensure complainants are treated consistently and fairly, and that proposed monitoring and mitigation are appropriate. In addition to monitoring, it would be beneficial to develop a formalized complaint resolution mechanism and an engagement plan given that the Project includes extended work during the day that produces high levels of noise (i.e. blasting, rock crushing, drilling), and is expected to produce noise outside of normal working hours (i.e. activities would occur 24-hours per day during the operations phase). Monitoring of sound levels during all phases of the Project to verify modeled sound levels and ensure compliance with applicable regulatory guidelines is recommended. In addition, the statement "monitoring is not recommended under the Health Canada (HC) guidelines" is false given that it is based on the DRAFT HC 2011 document that is not supported by HC. HC does not issue sound monitoring guidelines and, as such, it would be appropriate to revise this statement.
					Information Request / Comment: A. Clarify whether a noise monitoring program will be implemented and during which phases of the Project noise monitoring is planned. B. Identify and describe potential mitigation measures that would be considered in order to reduce noise levels in the event that they are unacceptable to nearby sensitive receptors. C. Outline a formalized complaint resolution mechanism and an engagement plan for project noise.

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					D. Revise the statement “monitoring is not recommended under the Health Canada (HC) guidelines”.
					Response: A. The Health Canada Useful information for Environmental Assessments does not provide clear guidance on whether monitoring is recommended or required. Although not a supported document, Health Canada’s 2016 Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise (And formerly HC 2011 Draft Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise) suggests that post-project monitoring would be important when adverse human health effects are considered likely (See section 6.6 in the 2016 HC Document). The results of the noise modelling do not indicate the need for monitoring, since the predicted levels are not near the Health Canada noise assessment criteria. Further, the Ministry of the Environment and Climate Change (MOECC) does not publish monitoring requirements that are applicable to this facility. As such, continuous monitoring at points of reception is neither required nor recommended. B. Specific mitigation measures will not be developed unless complaints are received. Mitigation measures will be developed as necessary based on field data collected as part of the complaint response process. Mitigation measures may include source-specific abatement in the case where specific sources are of concern, or may include more broad side-wide mitigation efforts such as noise walls or berms, or operational restrictions. C. As part of the environmental compliance approval process, a noise management plan will be developed. The noise management plan (Section 13.4of the revised EIS) will outline the process established by Treasury Metals for recording and investigating noise. This process will likely include requirements to log complaints, monitor sound levels where warranted, and investigate what activities were taking place on site at the time of the complaint. D. As discussed in Part A, the Health Canada 2016 Guidance, which they no longer support, only suggests monitoring is important when adverse effects are considered likely. The results of the noise modelling show the predicted levels are not near the Health Canada noise assessment criteria. Additionally, noise monitoring is not required by Useful Information for Environmental Assessments, or by MOECC documentation. With the small predicted increases in percent highly annoyed, it is clear that levels of noise expected from the Project are not approaching those where human health effects are considered likely. Therefore, monitoring is considered not to be required.
186	AE(1)-24	CEA Agency		Section 10	**Summary of Comment / Rationale:**

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			Appendix H Sections 6, 7, and 8		It does not appear that vehicle traffic to and from the project site (e.g. vehicles transporting supplies off-site) was included in the noise modelling. Given that there will be increased traffic on surrounding roads these changes should be quantitatively evaluated and discussed in the noise modelling section(s).
					Information Request / Comment: A. Include traffic to and from the project site in the noise modelling.
					Revised Response: A technical memorandum, dated March 12, 2018 was prepared and included in Appendix H of the revised EIS where a quantitative assessment of offsite vehicle traffic in the environmental noise assessment was performed. Briefly, noise due to the Project traffic on Highway 17, Anderson Road, and Nursery Road was evaluated at the most-affected receptors along the access road using the MOECC's traffic noise model, ORNAMENT. Inputs were derived from the Traffic Impact Study included in Appendix E of the revised EIS and MTO guidance. The results of the assessment indicated that traffic noise does increase the change in %HA when combined with steady state sources and blasting noise, but the values remain below the guideline limit. More information can be found in the technical memorandum dated March 12, 2018 included in Appendix H of the revised EIS.
187	AE(1)-25	CEA Agency	Appendix H Section 3	Section 9	**Summary of Comment / Rationale:** The report states that all measurements were consistent with ISO 3744:1994 and ISO 3746:1995 measurement standards. However, both standards have been revised and replaced with ISO:3744:2010. (https://www.iso.org/obp/ui/#iso:std:iso:3744:ed-3:v1:en) and ISO 3746:2010 (https://www.iso.org/obp/ui/#iso:std:iso:3746:ed-3:v1:en). Use of current standards and guidance is recommended to ensure the noise assessment is based on the best possible characterization of baseline and project-related noise and its impact on potential noise-sensitive receptors.
					Information Request / Comment: A. Provide an explanation of how the study deviates from the current standards and discuss any uncertainties/ limitations resulting from the use of non-current standards. If necessary revise the noise study using the most recent standards and guidance.
					Response:

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					The portions of ISO 3744 and 3746 that are applicable to the baseline measurements have not changed materially between the 1994/1995 editions and the 2010 editions. No revisions to the measurements are required.
188	AE(1)-26	CEA Agency	Appendix H Section 4.2.1	Section 10.1.3	**Summary of Comment / Rationale:** Current guidance on noise (http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/environ_assess-eval/index-eng.php) refers to potential noise sensitive receptor locations as any areas in which receptors could be considered to have a reasonable expectation of "peace and quiet" (i.e. "quiet rural areas"). Section 4.2.1 (Appendix H) states the noise sensitive receptor locations are identified using the Ministry of Environment and Climate Change (MOECC) definition of noise sensitive receptor. However, it is unclear whether current use of lands and resources by Aboriginal peoples for traditional purposes was considered in identifying the noise sensitive receptor locations.
					Information Request / Comment: A. Engage local Aboriginal groups to identify current use of lands and resources for traditional purposes in areas around the project footprint and incorporate this information in the identification of sensitive receptor locations and the noise assessment.
					Revised Response: A. Treasury Metals has made overtures to all designated communities all biophysical and traditional values and land use information within the EIS to date including those aspects relating to heritage, spiritual and ceremonial aspects. This information has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. All information received via engagement has been formally captured within the Indigenous Engagement Report which is included in the revised EIS as Appendix DD and summarized in Section 9 of the revised EIS. • Traditional knowledge obtained from various Indigenous has been incorporated into each subsection of Section 5 (Existing Environment(i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 CSurface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community including identified heritage, spiritual and ceremonial resources is presented within Section 5.13; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Indigenous peoples in Section 6.21 and specifically for each

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					community in Section 6.22 of the revised EIS. It was also essential as part of the Valued Component selection process outlined in Section 6.1.3 of the revised EIS. Treasury Metals has revised the EIS to reflect the valued TKLU information shared by communities to date, this information has informed the selection of VCs and in turn is reflected within the effects assessment for noise (identification of receptors). Treasury Metals will to work with all communities to ensure that any potential impacts of the Project due to noise on their traditional land and resource use is properly mitigated.
189	AE(1)-27	CEA Agency	Appendix H Section 4.2.1.2	Section 10	**Summary of Comment / Rationale:** Section 4.2.1.2 states: “There is a non-linear relationship between Percent Highly Annoyed and L_{EQ}. In practice this means that in a quiet area, an increase in sound level will result in a lower change in percent highly annoyed than the same change in sound level in a louder area.” This statement is incorrect. In a quiet area, an increase in sound level would most likely result in a greater change in percent highly annoyed than the same change in sound level in a louder area.
					Information Request / Comment: A. Provide the rationale and reference for the statement in section 4.2.1.2 (Appendix H). If the statement is erroneous, correct the error and revise the EIS and appendices where appropriate to ensure discussion(s) of Percent Highly Annoyed are accurate.
					Response: The statement within the EIS regarding the percent highly annoying is valid. Although not a supported document, Health Canada’s 2016 Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise (And formerly HC 2011 Draft Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise) outlines in Appendix F Table F.1 sample calculations for percent highly annoyed. Table F.1 clearly demonstrates the relationship outlined in the EIS. Areas with quiet baselines such as lines one and two require a larger project contribution in order achieve a change in percent highly annoyed of 6.5% or greater. Alternatively, louder areas with higher baselines levels require a smaller project contribution in order achieve the same change in percent highly annoyed as shown in the later lines of Table F.1.
190	AE(1)-28	CEA Agency	Appendix H Sections 6.3.2, 7.3.2	Section 10	**Summary of Comment / Rationale:** Sections 6.3.2 and 7.3.2 (Appendix H) both state that: “Blasting at the site is to take place no more than once per day, during daytime hours only. Since the Health Canada (HC) guidelines average sound levels over a 24-hour period, with additional penalty for the nighttime period, a single blast per day was considered to be infrequent and was not further assessed against these guidelines.”

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					Given that blasting is expected to occur during the construction/site preparation and operations phases for duration of more than one year, ISO 1996-1:2003 guidelines should be followed. According to ISO 1996-1: 2003, "because of the differences in noise annoyance to differing sources of sound, sound character, times of day, etc. adjustments should be added to measured or predicted levels." ISO 1996-1:2003 (Table A.1) presents typical adjustments based on sound source category and time of day. For highly impulsive noises (such as blasting) an adjustment level of 12 dB is recommended. For current guidance on noise, refer to "Useful Information for Environmental Assessments" publication: http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/environ_assess-eval/index-eng.php
					Information Request / Comment: A. Revise Sections 6.3.2 and 7.3.2 to reflect proper guidance on noise. Make the appropriate adjustments to measured and/or predicted levels.
					Revised Response: Additional technical information is enclosed herein, and is included in the Revised EIS Section 6.4, as well as in Appendix H-5 - Acoustic Environment Technical Memorandum (dated March 12, 2018). Blasting produces a sound and vibration wave that rapidly decays as the blast energy disperses, and thus has only a short-term influence (i.e., less than 5-10 seconds) on local sound levels. Repeated blasting events within a single day could contribute to sound levels to create a notable change in longer-term sound exposures (e.g., 15-hour day, 9-hour night, or 24-hour levels). This project only anticipates one blast per day, hence the most critical effects are expected to be during short-term sound exposures such as one-hour levels (i.e., consistent with MOECC guidelines). Over longer-term averaging periods, blasting is expected to be insignificant, but has been evaluated further. According to ISO 1996-1:2003, blasting is identified as a "high-energy impulsive sound source" in accordance with Section 3.5.1 (i.e., "any explosive source where the equivalent mass of TNT exceeds 50 g", with examples that include quarry and mining explosions, sonic booms, demolition or industrial sources that use high explosives).

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					This source category is different from the "highly impulsive sound source" defined in ISO 1996-1:2003 (i.e., the one that would apply the 12 dB adjustment identified in Table A.1). High-energy impulse sounds can be assessed per the methods outlined in Annex B of ISO 1996-1:2003. Annex B outlines how to determine the adjusted sound exposure level for high-energy impulse sounds based on its C-weighted sound exposure level. For blast-related sound exposures less than 61 dBC, the adjusted sound exposure level in dB is unchanged or less than the blast-related sound exposure. As a result, blast-related sound exposures less than 61 dBC could conservatively be included in an acoustic assessment without adjustment. Peak sound pressure levels of 78 dB have been predicted at the most affected receptor for this project. A typical blast lasts less than 0.1 seconds based on the attached graph in Figure 14-7 from *Construction Vibrations* (2000) by Charles H. Dowding (Attached as TMI_190-AE(1)-28_Figure 1. If the blast event was conservatively assumed to release energy for 5 seconds at a sustained sound pressure of 78 dB, the resulting 15-hour sound exposure level would be 38 dB. It would be further conservative to assume this broadband sound to be A or C-weighted, i.e., giving 38 dBA or dBC. This sound exposure level would see no increase per the methods of ISO 1996-1, Annex B. Assuming it would be A-weighted and additive to the other construction noise would add further conservatism.
191	AE(1)-29	CEA Agency	Appendix H	Section 10	**Summary of Comment / Rationale:** Section 3.3 (Appendix H) states "Sources that have characteristics considered to be particularly annoying receive additional consideration in accordance with NPC-104 guidelines (MOE, 1978). The adjustment is based on assessment at the point of reception, as described in Publication NPC-103. No sources were identified to exhibit annoying sound emissions." Publication NPC-104 Sound Level Adjustments describes when sound level adjustments to NPC-300/NPC-232 are required. The adjustments are required for any tonal, cyclical or quasi-steady impulsive sounds. The operations of fans, electrical motors, generators, drills, etc. at the site may generate these types of sounds and therefore warrant a sound level adjustment as described in NPC-104. This has not been considered in the noise assessment. The EIS (Appendix H) claims the noise sources were assessed based on the worst case scenario as required by Section A.4 of NPC-233 (Annex to Publication NPC-232). Section 1 (Appendix H) states: "This assessment focuses on sound levels due to the Project at surrounding worst-case sensitive receptors. Sources at the facility include: ventilation equipment, building exhausts, on site vehicle traffic, and rock crushing equipment."

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					The worst case scenario presented did not include any sound level adjustments that would have lowered the allowable limits at sensitive receptors. (Note that this may also be considered during the provincial permitting process.)
					Information Request / Comment: A. Adjust sound characteristics described in Table 1 (Appendix H) accordingly to account for sound level adjustments. B. Revise the noise assessment to include sound level adjustments in the limits at sensitive receptor locations.
					Revised Response: Part A: Additional information on how the sound level adjustments are considered and applied to sources is included in the technical memorandum, dated March 12, 2018 located in Appendix H-5 of the EIS. Section 4 of this technical memorandum reads: Information request TMI_193-AE(1)-29 expressed concern that sound level adjustments for tonal, cyclic or quasi-steady impulsive sounds were not applied to the source data or receiver limits. It specifically refers to Ontario Ministry of the Environment and Climate Change (MOECC) document, NPC-104 Sound Level Adjustments, which outlines when source sound levels should be modified to account for particularly annoying qualities in the sound character. The sound level adjustments outlined in NPC-104 include: • An increase of 5 dB to source levels that exhibit an audible tonal quality, such as a whine, screech or buzz. According to MOECC guidance, a tone is a sound that exhibits a single dominant frequency. Examples of these sources include circular and chain saws (whine or screech), transformers (buzz), or sirens. • An increase of 5 dB to source levels that exhibit an audible cyclical variation such as beating or other amplitude modulation. According to MOECC guidance, beating is the cyclical pulsation of sound that occurs with two tones at almost the same frequency. An example of beating noise sources would be two machines operating at almost the same speed. • An increase of 10 dB to source levels where the source is considered to be quasi-steady impulsive. According to MOECC guidance, examples of these sources would include pavement breakers, riveting guns, and ineffectively muffled air compressors.

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					The above sound level adjustments are applied to the source level to account for the more annoying characteristics of the sound and are not used to adjust receiver limits, or otherwise. The adjustments are not cumulative and only one is applied per source. The information request appears to suggest that adjustments be made to the source levels or to lower the allowable receiver limits. Even if a source warranted an adjustment, it would only be made to that specific source in the analysis; it would be incorrect to adjust the receiver limit. Part B: Sound level adjustments for sound character (e.g., tonality) are applied at the source, not the receptor. As a result, adjustments to the receptor sound level limits do not apply.
192	AE(1)-30	CEA Agency	EIS Section 6.4.1.3	Section 9.1.2	**Summary of Comment / Rationale:** Tables 6.4.1 to 6.4.3 (EIS) state: "To mitigate potential noise-related effects, Treasury will utilize new, low-noise-engineered machinery, will time major activities (e.g., blasting) to minimize adverse effects, and will minimize night-time activities where practical. With the application of these appropriate mitigation and monitoring strategies, the potential Noise-related residual effects of the Project should not be significant." The EIS does not recognize or describe any effects of noise on wildlife including ungulates, furbearers, amphibians, reptiles, migratory birds and SAR. As noted on Environment Canada's 'Incidental Take of Migratory Birds in Canada' website (http://www.ec.gc.ca/paom-itmb/Default.asp?lang=En&n=C51C415F-1), migratory birds are typically disturbed by sound levels exceeding 50 dBA. Such disturbance could contribute to adverse effects on migratory birds and SAR. The response to this IR will also assist the Agency in determining the potential impacts of the Project on Aboriginal peoples' current uses of lands and resources for traditional purposes.
					Information Request / Comment: A. Provide a map at a relatively large scale which shows the area surrounding operations affected by 50 dBA or greater, overlaid on habitat types, and a table summarizing areas within this threshold by habitat type (Ecosite). The footprint information should be provided as a total and by project component (i.e. Waste Rock Storage Area, Ultimate Pit, Overburden Storage Area, Low-grade Stock Pile, Processing Plant and Tailings storage facility). B. Describe the impacts of noise on wildlife including ungulates, furbearers, amphibians, reptiles, migratory birds and SAR within the effects assessment.
					Response: A and B. The predicted 50 dBA noise contour line for the site preparation and construction phase, operations phase, and closure phase have been provided in TMI_192-AE(1)-30_Figure_1, TMI_192-AE(1)-30_Figure_2, and TMI_192-AE(1)-30_Figure_3, respectively. These figures

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					provide an illustration of the modelled sources of noise overlaid with the 50 dBA noise contour. This 50 dBA contour has been incorporated into the revised assessment of potential Project effects on wildlife and wildlife habitat presented in Section 6.12 of the revised EIS. Footprint information related to the habitat type (Ecosite) information for the individual Project components has been provided as part of the response to TMI_145-WL(1)-02.
193	AE(1)-31	CEA Agency	Appendix H, Sections 4, 7.2.1	Section 16	**Summary of Comment / Rationale:** Limited details regarding the types of equipment to be used during all three phases were available at the time of the Environmental Noise Assessment. If the selected equipment varies from those modeled, modeling would need to be revisited and revised. It would also be beneficial to conduct actual noise monitoring at representative receptors to verify modeled sound levels during all project phases. Monitoring during all phases of the Project will also be beneficial given that the baseline study involved long-term measurements of background ambient sound levels conducted from December 5 to 7, 2011, and July 3 to 9, 2013, both relatively brief time periods.
					Information Request / Comment: A. Revise noise modeling for all phases if equipment selection differs from those modeled. B. Design and describe a noise monitoring program to verify modeled sound levels during all phases of the Project.
					Revised Response: Part A: Treasury Metals will ensure that equipment selected on site will either match or be quieter than the requirements outlined within the Environmental Noise Assessment (included as part of Appendix H to the revised EIS). Part B: Details on the Follow-Up and Monitoring Program are provided in Section 13 (13.4 Noise and Vibration) of the revised EIS. Treasury understands that a noise monitoring program is required and will verify the modeled sound levels during representative worst-case periods of all phases (Construction, Operations, and Closure) of the project. The monitoring will be completed such that it will conform to the requirements of the provincial permit (often referred to as a Noise Audit). Although the specifics for the TMI Noise Audit are not yet know, an Audit typically involves long-term measurements for

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					each scenario and verification that the proposed mitigation is installed / operational. This will include monitoring at the following representative measurement locations: • closest receptors to the west; • closest receptor to the south; • closest receptor to the east; and • closest receptor to the north. During the program, noise will be recorded in the following manner: • Hourly, A-weighted equivalent noise levels (Leq, in dBA); and • A minimum of 72-hours of monitoring will be completed at each location. Compliance will be assessed against all relevant criteria (so provincial and federal). The results of each phase of monitoring will be summarized in a noise audit report that would include sufficient detail to confirm the modelled data, and be suitable to meet provincial reporting requirements.
194	HE(1)-01	CEA Agency	Section 5, 6.4.2.5, Tables 6.4.6 – 6.4.8	Section 9.1.2, 10.1.3	**Summary of Comment / Rationale:** Section 9.1.3 of the EIS Guidelines states: "The Proponent will include all baseline information relevant to human health in one section of the EIS. The Proponent should refer to Health Canada's Useful Information for Environmental Assessments document in order to include the appropriate baseline information relevant to human health. In describing the socio-economic environment, the proponent should provide information on the functioning and health of the socio-economic environment, encompassing a broad range of matters that affect communities and Aboriginal peoples in the study area in a way that recognizes interrelationships, system functions and vulnerabilities." Section 5 of the EIS, does not include a baseline description of Aboriginal consumption rates that are used to identify potential effects. Further, Aboriginal groups have identified that traditional land use has not been adequately described. In section 6 (EIS), human health is considered as a potential effect to the Aboriginal peoples valued component, rather than its own valued component. The characterization of residual effects is limited to a discussion of potential water quality impacts to human health.
					Information Request / Comment: A. Confirm Aboriginal receptors, including but not limited to: a. residences, cottages, cabins, camps, campsites; b. recreational and traditional land users; and c. areas used for harvesting, hunting, trapping and fishing.

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					B. Identify exposure pathways, including inhalation, dermal and oral exposure to air, water, soil and country foods, based on Aboriginal land use and traditional land and resource use practices. Investigate all exposure pathways as part of the human health risk assessment. C. Engage Aboriginal groups to obtain site-specific consumption data, including water resources, species, rates, and specific parts that are consumed for fish, wildlife, and plants. D. Define valued components and indicators to assess potential impacts to Aboriginal health, linking in the results from relevant sections of the biophysical, land use, traditional land use, and human health risk assessments, including, but not limited to: a. Air quality; b. Noise and vibration; c. Drinking water quality from ground and surface water sources; d. Recreational water quality (wading, swimming, boating, fishing, etc.) e. Access and availability to traditional foods and country foods that provide food security, nutrition and have cultural value; and f. Contamination of country foods including wildlife, fish and plants, through air, water, and soil. E. Using the valued components identified in part D of this IR, identify potential effects to Aboriginal human health where exposure pathways exist (including exposure rates for specific contaminants), and clearly define mitigation measures for potential Aboriginal human health effects. F. Apply an impact matrix methodology to determine the significance of residual effects of the Project on Aboriginal human health for each of the project components and physical activities, in all phases, incorporating the results from relevant sections of the biophysical, land use, traditional land use, and human health risk assessments. G. Describe a follow-up program that includes measures related to Aboriginal human health, including monitoring measures to verify environmental assessment predictions and to verify the efficacy of mitigation measures. Identify how and which Aboriginal groups will be engaged during implementation of the follow-up program.

					Revised Response: A. Treasury Metals recognizes the importance of understanding the potential effects of the Project on Aboriginal health, as well as human health on the whole. As part of the original EIS, a screening-level risk assessment (SLRA) was completed (Appendix W) that identified potential health effects to Aboriginal residents, non-aboriginal residents, recreational users, and mine workers. As noted in the questions, the results of the SLRA were used in the EIS to describe the potential effects of the Project on Aboriginal health. In addition to the SLRA presented in Appendix W, the EIS included a review of country foods availability and use (Appendix EE). B. In evaluating the potential effects of the Project on human health (including Aboriginal health), the following exposure pathways were considered as detailed in Section 4.2.4 of Appendix W to the EIS: • Direct soil contact and dust; • Food chain exposure; • Groundwater ingestion; • Surface water ingestion; • Surface water dermal contact; and • Vapour inhalation. As noted in Section 2.8 of Appendix W to the EIS, the SLRA referred to Health Canada's Useful Information for Environmental Assessments (Health Canada 2010), and made use of the conservative Health Canada recommendations when site-specific data was limited. Treasury Metals employed a conservative approach for the SLRA (Appendix W), which used the ingestion rates and exposure frequencies for all country foods of First Nation residents, as presented in the Health Canada model (Health Canada 2011), which provide upper-bound estimates of intake for country foods for all residents. Treasury Metals has made extensive efforts to engage and elicit input from Aboriginal peoples. These efforts were documented in Appendix DD to the EIS. Treasury Metals will continue to try to engage the Aboriginal peoples meaningfully with respect to the Project and the potential effects on Aboriginal people. As part of the Round 1 IRs, the Agency has requested that Treasury Metals expand and update the Aboriginal Engagement Report (provided originally as Appendix DD to the EIS). The revised Aboriginal Engagement Report describes the efforts made by Treasury Metals, and identifies the specific issues and concerns raised by the Aboriginal peoples engaged as part of the EIS process. Treasury Metals also acknowledges that the Round 1 IRs identify a number of issues related to organizing and approach used in the EIS for presenting the information regarding the potential effects of the Project. In order to effectively address these issues, Treasury Metals has prepared a revised EIS. Section 6 of the revised EIS sets out the assessment of effects and impacts to Aboriginal health, and human health as a whole, associated with the Project, in a clear and traceable manner.

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					References: Health Canada. 2010. Useful Information for Environmental Assessments. Health Canada. 2011. Spreadsheet Tool for Human Health Detailed Quantitative Risk Assessment. C. Treasury Metals has made overtures to all designated communities all biophysical and traditional values and land use information within the EIS to date including those aspects relating to heritage, spiritual and ceremonial aspects. This information has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. All information received via engagement has been formally captured within the Stakeholder Engagement Report which is included in the revised EIS as Appendix DD and summarized in Section 9 of the revised EIS. • Traditional knowledge obtained from various Indigenous has been incorporated into each subsection of Section 5 (Existing Environment(i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 CSurface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community including identified heritage, spiritual and ceremonial resources is presented within Section 5.13; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Indigenous peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential as part of the Valued Component selection process outlined in Section 6.1.3 of the revised EIS. • Section 6.19 has also been revised to better align the traditional knowledge and traditional land and resource use shared with Treasury Metals by the Indigenous communities in the Project area. The screening level human health risk assessment was completed assuming the most conservative assumptions and therefore is considered appropriate for the submission of the EIS report. Should a detailed quantitative risk assessment be requested or required at a later date, Treasury Metals would set up specific opportunities for engagement to obtain site-specific consumption data, including water resources, species, rates, and specific parts that are consumed for fish, wildlife, and plants. As this time, the Screening Level Risk Assessment should be considered conservative and the associated risk management measures laid out within the risk assessment considered sufficiently protective of the Indigenous communities considering that default Health Canada guidance was applied. D. Valued components and indicators are provided in Section 6.1.3 of the revised EIS. The VCs were selected using the Traditional Knowledge summarized by discipline in Section 5 (i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology,

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					5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment) as well as Traditional Land and Resource Use as presented din Section 5.15.3 of the Revised EIS. Valued components and indicators were chosen for each of the following, the number references the subsection the information can be located in the revised EIS. An example is provided for Aboriginal Peoples (Part E of the Information Request) . 6.1.3 Selection of Valued Components (VCs) and Indicators 6.1.3.1 Terrain and Soils 6.1.3.2 Geology and Geochemistry 6.1.3.3 Noise 6.1.3.4 Light 6.1.3.5 Air Quality 6.1.3.6 Climate 6.1.3.7 Surface Water Quality 6.1.3.8 Surface Water Quantity 6.1.3.9 Groundwater Quality 6.1.3.10 Groundwater Quantity 6.1.3.11 Wildlife and Wildlife Habitat 6.1.3.12 Migratory Birds 6.1.3.13 Fish and Fish Habitat 6.1.3.14 Wetlands and Vegetation 6.1.3.15 Land Use 6.1.3.16 Social 6.1.3.17 Economic 6.1.3.18 Human Health 6.1.3.19 Heritage Resources 6.1.3.20 Aboriginal Peoples The effects of the project on each of the disciplines prior to Aboriginal peoples were used to determine the effects of the Project on Aboriginal peoples. The specific valued components and indicators used for indigenous communities were those described in TMI_194-HE(1)-01_Attachment_1. Part E

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					Human health was a valued component assessed for indigenous communities. It was assessed via multiple lines of indicators including the results of the Human Health risk assessment as described in Section 6.19 and as exceedances of contaminant concentrations in soils, or water above regulatory guidelines. No potential human health risks to Indigenous peoples were identified as a result of the project. Potential effects of the project on aboriginal peoples are assessed in Section 6.21.1 of the revised EIS using the VCs and indicators described in the Table above (Table 6.1.3.20-1: Aboriginal People VCs, Indicators, and Measures) . Predicted effects, identified mitigation, and residual effects on aboriginal peoples are assessed in section 6.21.4, 6.21.5, and 6.21.6, respectively of the revised EIS. Part F As discussed with the Agency, in the last subsection of Section 6, a mitigation summary table has been produced that is essentially a matrix table aligning each discipline (i.e including Aboriginal peoples) to the phase of the project, the activities associated with that project phase, the VC it aligns to (for example: human health), the potential effect (for example: changes to aboriginal peoples human health), the mitigation / commitment by Treasury, and the residual adverse effect. This included incorporating the results from relevant sections of the biophysical, land use, traditional land use, and human health risk assessments. Part G To ensure that Indigenous communities most affected by the Project have input into the effectiveness of the Environmental Management Plans and Follow-up Programs, Treasury Metals proposes to form an Environmental Management Committee (Section 12.22 of the revised EIS). This committee would be made up of members from Indigenous communities and would meet with representatives from Treasury Metals on a to-be-determined basis, possibly quarterly or at least semi-annually.
195	HE(1)-02	CEA Agency	Appendix W Section 4.2.2	Section 10.1.3	**Summary of Comment / Rationale:** A number of contaminants of concern (COCs) were identified in waste rock and tailings for the operations phase of the project (i.e., aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, mercury, nickel and zinc). Despite this, only mercury and lead were retained as human health COCs in the HHRA. No justification was provided in the report for excluding the other COCs identified. For those identified COCs with screening criteria available, no Tier 2 screening against applicable human health component values was conducted. In addition, for those identified COCs without screening criteria available (i.e., aluminum and iron), no justification for exclusion was provided, such as whether they would be expected to be present at non-toxic levels. Such discussions

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					should be included in the human health risk assessment (HHRA) to ensure transparency in any of the decisions made in the HHRA. Other metals may pose other health effects not considered in the HHRA. Focusing solely on mercury and lead does not account for the fact that some of the COCs may act via the same target organ and/or via a similar mode of action, and as such the potential for additive risks was not considered in this HHRA. Summing up the effects of substances that affect the same target organ(s) (non-carcinogens) and also for those substances that can result in the same types of cancers(s) (carcinogens) to ensure health risks are not underestimated is preferred.
					Information Request / Comment: A. Describe the evaluation process for screening in COCs in the HHRA and provide a justification for excluding any COCs identified in waste rock and tailings for the Operational phase of the project. B. For the screened in COCs sum up the effects of non-carcinogenic substances that affect the same target organ(s) and also sum up the effects of carcinogenic substances that can result in the same types of cancer(s). C. In cases where COCs are screened out, explain the uncertainties and relevance of the exclusions to the conclusions of the HHRA.
					Revised Response: The following subsections provide all required information as requested for the completeness check to allow for technical review including: • an updated COC selection (Request A); • a discussion of lead and mercury neurotoxity (Request B), and • an evaluation of uncertainty associated with COCs excluded from the HHRA (Request C). PART A: UPDATED HUMAN HEALTH COC SELECTION The COC selection process was originally described in Section 4.2.2 of the SLRA (Appendix W). In response to feedback from the Agency, Treasury Metals has re-evaluated the COC screening process for human health. As part of the justification for the COC selection process, the selection of pathways and the risk management measures have been described.

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					Pathway Selection The following pathways were assumed to be inoperable and not assessed as part of the HHRA, a rationale is provided for each: 1. No groundwater wells within 1 km of the site – therefore even though the Table 2 potable standards were used for a conservative approach for screening, the drinking water pathway was not considered operable and therefore no potential risks via the drinking water pathway were identified. Treasury Metals highlights that none of the COCs in waste rock, tailings, or baseline soil exceeded their respective S-GW1 component criteria protective of leaching to groundwater (Table 1), no potential human health risks are identified. No risk management measures are required. 2. No residential dwellings within 30 m of the site -therefore inhalation of indoor air is not an operational pathway, no potential risks are identified via inhalation of indoor air, no risk management measures are required. 3. No toddlers would be on the site during operations therefore direct dermal contact with tailings and waste rock is an inoperable pathway, no potential human health risks are identified. Risk management should not allow for children to be in direct contact with tailings or waste rock during the operations phase of the project. This would be reflected in a Health and Safety Plan. Health Canada PQRA Guidance indicates in Section 2.5.5 that “It is anticipated that contaminant intake due to the inhalation of fugitive dust will be insignificant relative to the direct ingestion of soil and water, and to dermal contact”. Tetratech quantitatively assessed the dust inhalation pathway, however upon Treasury’s detailed review of the HHRA this was likely an overly conservative approach to take. *Supplemental Screening for Human Health COC Selection* TMI_195-HE(1)-02_Table_1 provides a summary of the supplemental screening and COC selection for human health in accordance with Health Canada risk assessment guidance. The waste rock and tailings/baseline soil concentrations are the maximum concentrations provided during operations in Table 2 and Table 3 of Appendix W, respectively. The MOECC Soil Components for Table 2- Potable Water Scenario (MOCC Table 2 Components) for coarse textured soils were selected for COC screening and selection as part of the HHRA. Briefly, an MOECC component value is derived to provide a receptor or group of receptors protection from a contaminant via a specific pathway and were generally derived following CCME, US EPA, and or Health Canada risk assessment guidance. In the MOECC “Rational for the Development of Soil and Groundwater Standards for Use at Contaminated Sites ion Ontario” (MOECC 2011), it is explained that the components are derived based on a default source allocation factor of 0.2 for non-cancer. This means that 1/5th of the tolerable daily intake was

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					allocated for the component values which is consistent with the most recent Health Canada PQRA approach. For chemicals considered to be carcinogenic (e.g., arsenic), a target cancer level of 1×10^{-6} was allocated to each component value, which is more conservative than Health Canada requires. The MOCC Table 2 Component criteria represent the current state of risk assessment science in Ontario, and are therefore appropriate for use as part of a qualitative assessment of risk with respect to the Project. The maximum concentrations of ALL COPCs in baseline soils, waste rock, and tailings that exceeded their CCME or "OMOE" criteria in Tables 1 or 2 of Appendix W, were further assessed herein against the most conservative MOCC Table 2 Components were applied: • S1-Direct soil contact- dermal contact and incidental ingestion- Toddler (Resident) • S2-Direct soil contact- dermal contact and incidental ingestion- Long Term Worker • S3-Direct soil contact- dermal contact and incidental ingestion- short Term Construction// Subsurface Worker • S-GW1- Soil leaching to groundwater and migrating to a drinking water system Resident) • S-IA- Soil migrating to Indoor Air via Soil Vapour Pathway (Resident) TMI_195-HE(1)-02_Table_1 identifies that Antimony, Arsenic, Cobalt, Lead, Mercury and Zinc in tailings and/or waste rock exceeded their MOECC Table 2 human health component values. Specifically TMI_195-HE(1)-02_Table_1 identified the following human health COPCs: • Antimony- TMI_195-HE(1)-02_Table_1 shows that antimony concentrations in tailings may pose potential risk to a toddler via direct dermal contact with the tailings. Risk management measures are required. • Arsenic- TMI_195-HE(1)-02_Table_1 shows that arsenic concentrations in waste rock and tailings may pose a potential risk to toddlers, workers and/or subsurface workers via direct dermal contact. Furthermore, the baseline concentration of arsenic in soils in the regional area is naturally higher than the Table 2 components protective of toddlers and outdoor workers (long term exposure). Risk management measures are required. • Cobalt- TMI_195-HE(1)-02_Table_1 shows that cobalt concentrations in waste rock may pose potential risk to toddlers and outdoor workers via direct dermal contact. Risk management measures are required. • Lead- TMI_195-HE(1)-02_Table_1 shows that lead may pose potential risk to toddlers, outdoor workers and subsurface workers as a result of direct dermal contact however since the time of the SLRA new MOECC guidance on lead indicates that any and all concentrations of lead >120 µg/g should be considered to present potential risk and therefore risk management measures are required.

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					• Mercury- the concentrations of mercury only exceeded the human health component protective of soil to indoor air for a resident. However, Treasury notes that there are no residential buildings on the tailings, or waste rock. Mercury did not require additional assessment as concentrations did not exceed any of the operable human health pathways. • Zinc- the concentration of zinc in waste rock exceeded the MOECC Table 2 component value protective of toddlers via direct dermal contact. Risk management measures are required. Furthermore, for pathways/chemicals without component criteria (including aluminum and iron) Treasury acknowledges that the SLRA should have provided a more detailed qualitative discussion stating that there is insufficient toxicity information available to assess these chemicals for these pathways, or contaminant transport and fate mechanisms indicate that these COPCs are not sufficiently soluble or volatile to be a concern to leaching to groundwater and inhalation of indoor air, respectively. Treasury Metals has reviewed the appropriate toxicity and transport and fate mechanisms for all chemicals and pathways in TMI_195-HE(1)-02_Table_1 with "NV" indicated and has determined that no potential risk to human health is likely as well the same risk management measures protective of other COPCs on site are expected to provide sufficient protection for these chemicals as well. The uncertainty associated with this screening approach is discussed below in the "uncertainty" section of this IR revised response. No potential human health risks are identified via the pathways identified as having NV, should new toxicity data or technical guidance emerge from the MOECC or Health Canada, the SLRA would be updated to reflect that. *Risk Management Measures* The following risk management measures were assumed as part of the project design and assumption included in the assessment of potential risk. With these risk management measures in place, potential human health risks will be sufficiently mitigated to below acceptable levels as per MOECC and Health Canada guidance for all waste rock and /or COPCs identified as part of the updated COPC selection screening in TMI_195-HE(1)-02_Table_1 (i.e., Antimony, Arsenic, Cobalt, Lead, Mercury and Zinc). The selected risk management measures are as follows: • Occupational Health and Safety Plan: Workers would be using the appropriate personal protective equipment during operations to prevent direct dermal contact exposure with tailings and or waste rock. Toddlers would not be allowed on-Site during operations. With risk management measures such as a Health and Safety Plan in place no potential risks are identified. • Waste Rock and Tailings Encapsulation or Cover: During the closure phase of the Project, waste rock in the WRSA will be covered with a low permeability cover. Dewatering of the open pit will cease at the end of operations and the open pit will be allowed to fill with water, covering the waste rock disposed of in the open pit. At closure,

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					the supernatant water present in the TSF will be withdrawn, treated and used to help fill the open pit. The tailings will be covered with a granular layer to physically isolate them, then covered with either a low permeability dry cover, or a wet cover with non-process water. Therefore during the post-closure phase, waste rock and tailings will be encapsulated or maintained under water, serving as a risk management measure for direct dermal contact, and fugitive dust inhalation. Therefore, no potential risk to any human receptor (e.g., toddler, resident, worker) would be identified during post-closure with these risk management measures in place. Furthermore, the encapsulation and/or water cover would limit the uptake of all waste rock and/or tailings COPCs into plants and soil organisms and minimize their bioavailability and bioaccumulation in the food chain. Given that these COPCs are not identified in TMI_195-HE(1)-02_Table_1 to be likely to leach to surface water or groundwater, they are unlikely to contribute to COPC loadings in fish. *QUALITATIVE DISCUSSION OF POTENTIAL HUMAN HELATH RISKS* The updated screening of COCs provided in TMI_195-HE(1)-02_Table_1 identifies that Antimony, Arsenic, Cobalt, Lead, Mercury and Zinc in tailings and/or waste rock may be considered human health COPCs capable of posing potential risk to human health. However, with the risk management measures defined above in place, including waste rock and tailings cover and encapsulations, and a health a safety plan that includes additional PPE and limiting site access to toddlers during operations, no potential risks are identified as a result of the Project. Treasury Metals highlights that soils in the regional have naturally high concentrations of arsenic and that a fish consumption advisory is already in effect for the area due to concerns of mercury concentrations in fish. PART B: TOXICOLOGICAL INTERPRETATION OF LEAD AND MERCURY The MOECC has recently reviewed how lead should be assessed in a risk assessment based on the toxicity data provided in Wilson and Richardson, 2016. The scientific consensus on lead is that it should now be assessed as a non-threshold substance and until new risk-based soil standards are derived, any and all concentrations greater than 120 µg/g require risk management measures. The toxicity of lead in humans is known to be increased blood pressure and renal dysfunction in adults, as well as adverse neurodevelopental and behavioral effects in children. Mercury (and methyl mercury) on the other hand are to be assessed as threshold substances, with its primary mode of toxicity as developmental neuropsychological impairment. Thus, while the two substances both have neurotoxic effects, the most up-to-date risk assessment guidance and consensus in the risk assessment community is that lead and mercury are to be treated as two distinctly difference substances (i.e., lead as a non-threshold substance and mercury as a threshold substance). Therefore, Tables V to W do not need be updated to include

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					the total HQs for mercury and lead as doing so would be inappropriate given the new consensus on lead in the risk assessment community. Although Treasury Metals are respectfully declining to modify Tables V to W, the reasoning is based on a sound scientific rationale which has been provided by a qualified risk assessor. Treasury Metals feel that the response provided herein is sufficiently complete to warrant further technical review. PART C: EXAPLANATION OF THE UNCERTAINTIES AND RELEVANCE OF THE EXLCUDING COCs TO THE CONCLUSIONS OF THE HHRA A degree of uncertainty is an accepted part of the risk assessment process. Several sources of uncertainty contribute to the overall uncertainty of the conclusions, including the assumptions made for the development of exposure scenarios, estimates of the frequency of duration of exposure and hazard assessment. It is necessary to assess uncertainty to ensure that the assumptions made in the risk assessment process will overestimate the risk to humans and produce a conclusion that has a high degree of confidence. The site-specific approach included but was not limited to exposure pathways and risk management measures, as well as project specific maximum predicted contaminant concentrations in waste rock, tailings, and food items, as well as measured concentrations in baseline soils and fish. In many cases the models that predicted the exposure concentrations were themselves intrinsically conservative based on input parameters and appropriately chosen modelling approach (a full assessment of conservatism by the approaches utilized by other consultants is outside the realm of an SLRA). Furthermore, the assessment of risk included the fugitive dust pathway which according to both MOECC and Health Canada guidance is to be considered negligible relative to the direct contact pathways for which no potential risk was identified in this SLRA. Select chemicals were screened out of the human health assessment based on lack of literature to support human health toxicity and thus no MOECC Table 2 or CCME SQG for human health would be utilized for supplemental screening. Should new toxicity information become available for these chemicals, potential risks for these chemicals could be re-evaluated. Treasury Metals does not anticipate that this source of uncertainty, and possible underestimate of potential risk, would influence the overall conclusions of the HHRA as the extensive risk management measures in place for the other COPCs at the site would be expected to provide a sufficient level of protection for these chemicals as well. With risk management measures in place, no COPCs in waste rock and/or tailings required quantitative assessment; however, for conservatisms mercury and lead were assessed via the fugitive dust and consumption of country foods pathways. Inclusion or exclusion of these particular COPCs excluded from the risk assessment presented Appendix W would have no meaningful effect on the conclusion of the HHRA. The results indicate

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					that the Project has sufficient risk management measures in place to mitigate against any potential human health adverse effect.
196	HE(1)-03	CEA Agency	Appendix W Section 4.2.4.1	Section 10.1.3	**Summary of Comment / Rationale:** Direct soil contact via incidental ingestion and dermal contact pathways has been excluded for the operations phase (due to restricted access to the mine site) and the post-closure phase (due to the waste rock and tailings areas being covered). However, the potential for on-site surface soils (not directly on the above-ground waste rock and tailings storage areas) to become contaminated as a result of wet/dry deposition of dust generated during the 12-year operations phase has not been considered. In addition, since access to the mine site during the post-closure phase will be unrestricted, it is important to consider on-site surface soils beyond the covered waste rock and tailings areas. A monitoring program should be in placed to prevent levels in soils from increasing to the point where they may pose unacceptable risks to human health.
					Information Request / Comment: A. Explain whether or not direct soil contact (i.e., incidental ingestion and dermal contact) could be considered a viable exposure pathway. B. If direct soil contact is a viable exposure pathway, then include this exposure route in the HHRA; if it is non-viable, then provide a justification for its exclusion and discuss the uncertainties. C. Provide a monitoring program with established trigger levels (i.e., for taking corrective actions) to minimize dispersion and deposition of the particulate-bound contaminants to on-site and off-site soils.
					Response: A. Typically direct deposition has a minimal contribution to the concentration of COCs in soil and therefore, direct or indirect exposure pathways. As an example, using predicted deposition rates from Table 6 of Appendix J of the revised EIS and assuming mixing is restricted to the top 2 cm of soil, the contribution of lead to background concentrations in soil after 12 years of operation would amount to less than 0.2 ppm (assuming a dry density of 1.6). As such, direct contact pathways with soil are not considered significant exposure in terms of understanding potential risk to human health. B. As above. Considering the limited contribution of deposition to soil concentrations and exposure via direct soil contact, any uncertainty in understanding this pathway is limited to the dispersion

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					modelling. The risk assessment relies on the maximum predicted point of impingement concentrations from the dispersion modelling. C. Per above, a monitoring program is not considered warranted. Post-closure, any portions of the site that do not meet applicable soil quality criteria will be remediated and/or capped to mitigate the potential for exposure.
197	HE(1)-04	CEA Agency	Appendix W Sections 2.3, 4.2.4.3	Section 10.1.3	**Summary of Comment / Rationale:** Section 4.2.4.3 (Appendix W) notes that "…groundwater impacts in the Post-Closure Phase are expected to be negligible as the bedrock in which the Pit Lake will be located has a very low hydraulic conductivity (AMEC 2014a)." However the subsection "Mine Pit Lake" of section 2.3 (Appendix W) indicates that although the hydraulic conductivity is very low, AMEC (2014a) has identified the potential for water from the Pit Lake to infiltrate the groundwater aquifer and travel to potable water wells located to the east (and eventually to reach Thunder Lake). This appears to contradict the statement from section 4.2.4.3 (Appendix W). Section 2.3 further states: "AMEC has reported it is difficult to reliably model groundwater data downgradient during the Closure Phase. Regular monitoring to assess groundwater quality will be scheduled (AMEC, 2014b)." There appears to be discrepancy between statements regarding water infiltration to groundwater from the Pit Lake and potential effects on potable water wells. Clarification is needed to clearly and transparently document all assumptions made in this regard, and additional mitigation may be warranted to protect local drinking water supplies.
					Information Request / Comment: A. Clearly explain whether the term "negligible" pertains to infiltration of contaminants to groundwater or risk to human health via potable water wells, and provide a justification for how it is defined and quantified. B. Describe the monitoring plan to verify predictions regarding potable water wells and the mitigation measures. C. Provide a map that shows all potable water wells in the LSA for groundwater and distinguish between Aboriginal and non-Aboriginal potable water wells.

					<u>Revised Response:</u> A. The appropriate source of information regarding the hydrogeology associated with the Project is Appendix M to the revised EIS. The term “negligible” is not relied on in Appendix M. The use of the term “negligible” in Section 4.2.4.3 of Appendix W refers to the potential for infiltration to groundwater. The term “negligible” was not tied to a specific range of volumes, but was used generally to reflect the “very low hydraulic conductivity” of the rock (10^{-6} m/s for shallow bedrock [0 to 10 metres below surface grade; mbsg], 10^{-7} m/s for intermediate bedrock [10 to 400 mbsg], and 10^{-8} m/s for deep bedrock [>400 mbsg]), in which the open pit/pit lake is situated. The on-site facilities such as the waste rock storage area (WRSA), low-grade ore (LGO) stockpile and the tailings storage facility (TSF) will be designed to limit and minimize potential seepage during operations. Each of these facilities, as well as the site as a whole, will be designed with perimeter ditching to help capture and intercept seepage. During the operations phase, the active dewatering program and the presence of the open pit will effectively intercept seepage that is not captured by the perimeter ditching as groundwater will flow towards the open pit. During the closure phase, the LGO stockpile will be decommissioned and any material that remains placed in the open pit will be covered by water. The WRSA will be closed using a low-permeability cover to limit the influx of water and isolate the waste rock from oxygen. Little or no seepage (~10 m^3/day) is expected from these areas following closure. The TSF will also be decommissioned during the closure phase. The water cover used to prevent acid rock drainage (ARD) during operations will be drained, the water treated and used to help fill the open pit. The tailings will be covered with a granular pioneer layer to make the surface trafficable. The tailings will then be isolated from oxygen using a multi-layered low permeable dry cover, or a water cover using non-process water. Little seepage is expected from the TSF following closure with a dry cover. If a water cover is used, limited seepage will continue through the post-closure phase. During the period while the open pit is filling, it will continue to act as a sink for groundwater and will continue to capture seepage that does occur. Once the pit is flooded, it will still influence groundwater patterns, as it will likely continue to be a groundwater influent environment, with the groundwater entering the pit being discharged into Blackwater Creek. Despite the potential for groundwater to migrate offsite during the post-closure phase, the low-permeability bedrock and Project design / mitigation measures described above will reduce the quantity of seepage to groundwater such that measurable adverse effects are not expected on the downgradient water well users (Section 6 of the revised EIS) supporting the assumption that there is no viable pathway for groundwater ingestion effects on water well users (Appendix W). B. Groundwater monitoring wells have been installed by Treasury Metals and are presently being monitored. New groundwater monitoring wells will be installed as part of the groundwater monitoring program, which is presented in Section 13.10 of the revised EIS to verify EIS predictions. Treasury Metals has had discussions with nearby residents who have expressed concerns about their wells. Private wells may also be incorporated in the groundwater monitoring program, given the consent of owners.

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					Treasury Metals have also identified a comprehensive set of groundwater mitigation measures in various responses to the Round 1 IRs. These mitigation measures can be found in Section 6.10.5 of the revised EIS. A comprehensive set of mitigation measures for private wells will also be incorporated into the Contingency Plan that is expected to be required by the Ministry of the Environment and Climate Change, through a potential environmental compliance approval. C. Figure 13.10.2-1 was erroneously excluded from the revised EIS and the EIS has since been updated to ensure its inclusion in the Groundwater Monitoring Wells section of the revised EIS. This figure is now labelled 3.10.3.2-1 in Section 6 a figure showing private water wells is also included as Figure 6.1.4.10-1. While this figure shows the known groundwater wells in the LSA, Treasury is not able to distinguish between Aboriginal and non-Aboriginal potable water wells as this information is not public. The Ministry of the Environment and Climate Change (MOECC), which maintains a database of private wells, does not release data regarding the private ownership of wells, including whether the wells are owned by Aboriginal or non-Aboriginal people.
198	HE(1)-05	CEA Agency	Appendix W Executive Summary, Section 4.2.5, Table 9	Section 10.1.3	**Summary of Comment / Rationale:** Section 4.2.5 (Appendix W) indicates that the drinking water source for the residents of the City of Dryden (located 20 km east of the property) is Wabigoon Lake. However, the water source for the residents of the Village of Wabigoon, which is located 4 km southeast of the property, is not specified in the report. In addition, subsection “Overall SLRA Recommendations” in the Executive Summary (Appendix W) indicates that humans may drink water from Blackwater Creek and Wabigoon Lake. If humans drink water from Blackwater Creek (e.g. recreational users), there may be less dilution of site-related discharges at the point of drinking water intake compared to Lake Wabigoon (i.e. volume of Blackwater Creek is less than that of Wabigoon Lake). As such, potential human exposures (and risks) to site-related contaminants may be higher in comparison with those from Wabigoon Lake. Further, consider whether recreational fishing may also occur on Blackwater Creek, in which case fish tissue concentration could be higher than in Wabigoon Lake due to less dilution.
					Information Request / Comment: A. Clearly indicate the drinking water source(s) for the residents of Wabigoon and explain if the water source(s) can be potentially affected by aquifers containing site-related contaminated aquifers. If the concentrations of site-related contaminants (and thus potential exposures/risks)

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					could be higher in Blackwater Creek relative to Wabigoon Lake as a result of less dilution of site-related discharges, then reflect this in the human health risk assessment (HHRA). B. Provide information on the use of Blackwater Creek as a source of drinking water and fishing by Aboriginal and recreational users and incorporate it in the HHRA accordingly.
					<u>Response:</u> A. The drinking water for residents of Wabigoon is sourced from private wells (see Figure 5.6.4-1 of the revised EIS). No site-related contaminants are anticipated to affect the aquifers supplying the private wells for residents in Wabigoon. During operations, seepage will be managed with a perimeter runoff and seepage collection system around the site to comply with the requirements of the Metal Mining Effluent Regulations. Any seepage not collected by these systems will be captured by the drawdown created by the dewatering of the open pit and underground mine workings. Following the closure and flooding of the mine, limited amounts of seepage are predicted from the tailings storage facility (TSF), waste rock storage area (WRSA) and open pit. As shown on Figures 22 through 25 in Appendix M to the revised EIS, this seepage does not affect the well for the residents of Wabigoon. The only discharge from the Project during operations will be effluent discharges to Blackwater Creek. Treasury Metals has committed (Table 10.0.1 of the EIS) that effluent discharged to Blackwater Creek during operations will meet Provincial Water Quality Objectives (PWQO) at the end-of-pipe. Dilution is not required to meet PWQO in Blackwater Creek, and thus the HHRA presented in the EIS does not need to be changed to reflect this. Once the pit is flooded in the post-closure phase, there will be a natural discharge re-established to Blackwater Creek Tributary 1. Preliminary modelling of post-closure pit water quality presented in the EIS suggests the water in the pit will be comparable to the source water. Since the submission of the EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 IRs, Treasury Metals has prepared a Water Report, which has been appended to the revised EIS as Appendix JJ. An updated water quality model for the pit during the post-closure and abandonment phase is provided in Section 6 of the Water Report. B. Treasury Metals is not aware of any humans that rely on Blackwater Creek as a source of drinking water. Through information provided as part of their engagement efforts, Treasury Metals believe that fishing on Blackwater Creek is limited to baitfish harvest in select areas downstream.

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					The closest location for sport fishing identified during the engagement process was within Keplyn's Bay, on Wabigoon Lake. As stated above (Part A), the only discharge from the Project during operations will be the treated effluent. Effluent is anticipated to meet PWQO and is therefore not anticipated to impact surface water quality or contaminant concentrations in fish tissue in the creek.
199	HE(1)-06	CEA Agency	Appendix W Section 4.3.2, Table J	Section 10.1.3	**Summary of Comment / Rationale:** Exposure frequency and duration terms in Table J (Appendix W, page 30) for the urban recreational receptor were derived from defaults in the detailed quantitative risk assessment (DQRA) spreadsheet (Meridian 2011). Note that use of the DQRA spreadsheet defaults is no longer supported; where possible, site-specific information should be used instead.
					Information Request / Comment: A. Use site-specific exposure frequency and duration terms for the urban recreational user, taking into account use by Aboriginal peoples. Where site-specific data is not available, provide a clear rationale to articulate why other values were used in the human health risk assessment.
					Response: A. The Detailed Quantitative Risk Assessment (DQRA) spreadsheet was supported at the time the report was authored and was recommended for use on the Project by Health Canada. Regardless, no unacceptable health risks were identified for the residential receptor (Scenario 1), which assumes constant daily exposure for a lifetime. Consequently, the use of site-specific data for the urban recreational receptor will not alter the conclusions of the assessment.
200	HE(1)-07	CEA Agency	Appendix W Section 4.3.2, Table J	Section 10.1.3	**Summary of Comment / Rationale:** Urban recreational exposure frequency and duration terms in Table J (Appendix W, page 30) are 2 hours/day, 2 days/week and 35 weeks/year spent at the site. If used directly in calculating dust inhalation exposure estimates in the detailed quantitative risk assessment (DQRA) spreadsheet, they would result in significant dilution (i.e. "dose averaging") of the estimates (i.e., 2/24 x 2/7 x 35/52 = 0.016 dilution). In addition, for the resident receptor, the use of 1.5 hours per day spent outside as an exposure frequency term (in the DQRA model – see inputs used in Appendix C of Appendix W) results in a significant dilution of dust inhalation exposure estimates for that receptor (1.5/24 = 0.0625 dilution). As indicated in a footnote for Table 4 in Health Canada (2012) preliminary quantitative risk assessment guidance, dose averaging (also called "amortization" or "dilution") should be supported by chemical-specific rationale. These rationale should include factors such as: the whole-body

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					elimination half-life of the substance, the potential for sensitive life stages (e.g., developmental effects), the persistence/reversibility of effects and whether effects are expected to be most related to the peak concentration or to the total dose (area under the curve or "AUC") of the chemical. In terms of developmental toxicants in particular (such as lead), an exposure term (ET) of 1 (i.e., no dose averaging) is most appropriate for calculating exposure (and risk) estimates as a health protective approach. For lead specifically, dilution of exposure estimates using the above exposure frequency and duration terms may not be appropriate. It is widely known that people tend to be significantly more sensitive to adverse environmental influences during various developmental stages (Hood 2006). Thus, the timing and pattern of exposure to lead may be more important than the average concentration in determining the magnitude of such effects. Secondly, as highlighted in the Health Canada (2013) lead State of the Science (SOS) report, lead's neurological effects may persist after exposures have ceased (i.e., effects may accumulate as the result of multiple exposure events). Lastly, lead has a long elimination half-life in the body. As such, a body burden of lead may build between exposure events and act as a continual source of internal exposure.
					<u>Information Request / Comment:</u> A. Provide chemical specific rationales for dose averaging of all exposures, taking into consideration any adjustments needed for Aboriginal peoples. In the case of using an exposure term (ET) other than 1 for developmental toxicants, provide justification why the use of the non-unity ET is considered health protective.
					<u>Response:</u> A. As discussed under the response to TMI_199-HE(1)-06, as no unacceptable health risks were identified for the residential receptor (Scenario 1), which assumes constant daily exposure for a lifetime, the use of "dose averaging" for the urban recreational receptor has little consequence for the conclusions of the SLRA. With respect to the residential receptor and the assumption that 1.5 hours out of a day is spent exposed outdoors, Health Canada's guidance on chronic and less than chronic exposure (*Draft Memorandum: A Primer for Evaluating Huma*n Health Risk at Contaminated Sites for Chronic and Less-Than-Chronic Exposures to Chemicals - July 2016) does not speak to exposure durations of less than 24-hours. "*In situations when dose averaging cannot be supported, the exposure scenario can be effectively treated as continuous, with daily exposure rate equal to the highest daily exposure rate among all exposure episodes*" which suggests that exposure durations of less than 24-hours, on the scale of hours as an example, have not been considered in a chronic

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					exposure scenario. For the developmental toxin trichloroethene, the U.S. EPA averages exposures of less than 24-hours over the duration of a working week on the rationale that the toxicity studies that support the developmental end-point (drinking water studies by Johnson et al., 2003) had animal doses assessed in terms of mg/kg/day. A 24-hour exposure period was the smallest dose interval evaluated the studies could not distinguish effects that may have manifest over shorter exposure durations. In terms of lead, the TRV is based on epidemiological studies that rely on blood lead as a biomarker of exposure where blood lead is representative of exposure over the previous 30-day period based on its biological half-life in soft tissue (reviewed in Health Canada 2013, *Final Human Health State of the Science Report on Lead*). Similarly for mercury, the toxicity studies that form the basis of the TRV recommended by Health Canada relies on exposure durations of greater than 24-hours. Finally, it is worth noting that were exposure to outdoor air for the residential receptor be assumed to be continuous for 24-hours, the resultant hazard quotient would still be well less than 0.2. References Health Canada. 2013. Final Human Health State of the Science Report on Lead Health Canada, 2016. Draft Memorandum: A Primer for Evaluating Human Health Risk at Contaminated Sites for Chronic and Less-Than-Chronic Exposures to Chemicals - July 2016 Johnson et al., 2003
201	HE(1)-08	CEA Agency	Appendix W Section 4.3.2, Table J	Section 10.1.3	**Summary of Comment / Rationale:** Only one set of ingestion rates for root vegetables, other vegetables, wild game and fish are provided in Table J (Appendix W, page 30) but no age group is provided. The values appear to reflect ingestion rates for toddlers.
					Information Request / Comment: A. Specify the age group considered for the food ingestion rates provided in Table J. If other contaminants of concern are retained that have carcinogenicity as a critical effect, then use adults or multiple age groups (i.e. life time average daily dose or “LADD”) or provide a justification for not using adults or multiple age groups.
					Revised Response: The ingestion rates used for root vegetables (105 g/da) , other vegetables (67 g/day) , wild game (specific to native food ingestion of 85 g/day) and fish (specific to native food ingestion of 95 g/d) was for a toddler (age 7 months – 4 years). All of the COCs assessed as part of the country foods assessment (Scenario 3) were non-carcinogens. No carcinogenic compounds were identified as requiring a quantitative assessment of risk, thus the use adults or multiple age groups (i.e., life time average daily dose or “LADD”) was not required.

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					Treasury Metals notes that as part of process for responding to the Round 1 information requests (see response TMI_195-HE(1)-02), they have re-screened for human health COPCs, reassessed risk management measures, and highlights that given the risk management measures designed as part of the project no potential risks are anticipated as part of the Project via the ingestion of country foods. The results presented in Table 1 of the response to TMI_195-HE(1)-02 indicated that Antimony, Arsenic, Cobalt, Lead, Mercury and Zinc may have been considered human health COPCs (in addition to mercury and lead), if not for the implemented risk management measures at the Project. Risk management measures implemented in the Project design include additional PPE for site workers during operations, and encapsulation and/or water cover during post-closure no potential risk was identified as part of a qualitative risk assessment. No further quantitative assessment of risk was required. Additionally, no carcinogenic compounds were identified as requiring a quantitative assessment of risk, thus the use adults or multiple age groups (i.e., life time average daily dose or “LADD”) was not required. Of the human health COPCs assessed qualitatively (i.e., Antimony, Arsenic, Cobalt, Lead, Mercury and Zinc), only Arsenic is considered as have potentially carcinogenic effects, which were reflected in the Table 2 of the response to TMI_195-HE(1)-02. Treasury Metals notes that this is an overly conservative approach. Treasury Metals is aware that Health Canada is currently in the process of revising the toxicity reference value (TRV) for arsenic as it’s toxicity is no longer interpreted to be carcinogenic by toxicologists in all cases. The toxicity of arsenic depends on its chemical form and there was no distinction in the modelling reports to the speciation of arsenic in the tailings, waste rock or baseline soils. It is widely recognized that inorganic forms of arsenic are of greatest potential concern to human health as compared to organic forms. There was no differentiation between inorganic and organic arsenic during the modelling processes, therefore it would be overly conservative to assume that 100% of the arsenic modelled was carcinogenic. Although the discussion regarding the carcinogenicity of various arsenic species is important with respect to chemical toxicology, it has no impact on the overall results of the human health risk assessment. With the risk management measures designed as part of the project there are no potential risks (carcinogenic and non-carcinogenic) identified as a result of arsenic in tailings or waste rock during the operation or post-closure stages of the project. Given that arsenic was the only additional COPC identified having carcinogenic effects, the use adults or multiple age groups (i.e., life time average daily dose or “LADD”) was not required. Section 6.19 of the revised EIS describes the effects of the Project on human health. This section has incorporated the information presented in Appendix W, as amended by the revised responses to the Round 1 information requests.
202	HE(1)-09	CEA Agency		Section 10.1.3	**Summary of Comment / Rationale:**

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			Appendix W Section 4.3.2, Table J		A fish ingestion rate of 95 g/day (presumably for toddlers) is provided in Table J (Appendix W, page 30), based on defaults provided in the detailed quantitative risk assessment spreadsheet. Note that these rates are outdated and no longer supported. Current guidance describes fish consumption values considered from various studies and surveys on fish consumption in Canada: http://www.hc-sc.gc.ca/fn-an/pubs/mercur/merc_fish_poisson-eng.php Where subsistence users and populations are not addressed in the guidance, site-specific values (or other relevant data) should be used along with detailed rationale provided. If non-site-specific fish consumption rates are used, it is important to identify the uncertainties associated with their use (in terms of applicability to the particular site in question) and how it may impact risk assessment conclusions (e.g. level of conservatism).
					Information Request / Comment: A. Revise the assessment to adhere to current guidance on fish ingestion rates. For subsistence users and populations not addressed in the guidance, use site-specific values (or other relevant data) and provide a detailed discussion why non-site-specific values are used, along with the associated uncertainties.
					Response: A. The default fish ingestion rate used in the SLRA of 95 g/day for the toddler is more conservative than values recommended by Health Canada (2007) for 1-4 year old children who are part of the subsidence or recreational fishing culture. While Treasury Metals has made efforts to engage and elicit input from Aboriginal peoples regarding the Project, no Project-specific traditional knowledge and traditional land use studies were prepared for, or shared with, Treasury Metals. While there is no site specific information available on fish ingestion rates within the surrounding communities, the use of 95 g/day is considered sufficiently conservative to evaluate health risk associated with this exposure pathway at a screening level. References Health Canada. 2007. Human Health Risk Assessment of Mercury in Fish and Health Benefits of Fish Consumption. Available at: http://www.hc-sc.gc.ca/fn-an/pubs/mercur/merc_fish_poisson-eng.php
203	HE(1)-10	CEA Agency	Appendix W Section 4.4.2, Table M, Appendix C	Section 10.1.3	**Summary of Comment / Rationale:** A single toxicity reference value (TRV) for mercury is provided in Table M (Appendix W, page 32). This TRV appears to be for inorganic mercury. As TRVs for mercury depend on the form (i.e. metal species) of mercury present, please specify the specific species that is being assessed in the risk assessment and discuss whether other species of mercury are expected to be found as well at this site.

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					In addition, in the detailed quantitative risk assessment output sheets in Appendix C of Appendix W, both inorganic mercury and methylmercury were considered for country foods scenarios. It is also important to include the TRV used for methylmercury in Table M (Appendix W, page 32).
					Information Request / Comment: A. Specify the form(s) of mercury for the mercury TRV (i.e. inorganic mercury) and include a methylmercury TRV. B. Provide a rationale to explain which forms of mercury are expected to be present at this site and for which media.
					Revised Response: A. The forms of mercury evaluated in the risk assessment are elemental mercury (mercury, inorganic (ionic)) and methyl mercury. The toxicity reference values (TRV) applied for mercury and methyl mercury were those accepted by Health Canada. • Mercury (elemental) TRV= 0.003 mg/kg-day • Methyl Mercury TRV= 0.0002 mg/kg-day A summary of the specific TRVs used in the risk assessment including mercury and methyl mercury are included in Section 6.19 of the Revised EIS. This section of the revised EIS also includes a discussion of the methylation of mercury process and it is an important as part of the risk assessment. B. It was assumed that mercury would be present in both the inorganic (elemental mercury) and organic (methyl mercury) forms at the Project site. Elemental mercury is the form that occurs in natural rocks, and is the form found exclusively in the waste rock and tailings. Therefore, exposures through the inhalation and ingestion of soil pathways would be for inorganic mercury. Organic mercury (methyl mercury), which is a neurotoxin that is readily bioaccumulated by organisms, is formed in the environment through the reaction of inorganic mercury with bacteria present in waterbodies and sediments. Methyl mercury formation often results from the flooding of vegetation and soils when reservoirs are formed. It has also been noted in literature that elevated sulfate concentrations may enhance mercury methylation (Jeremiason et al., 2006) as increased sulfate concentrations can stimulate sulfate reducing bacteria (SRB) activity (Gilmour et al., 1992). Elevated methyl mercury levels are present in both Thunder Lake and Wabigoon Lake, which both already have fish consumption advisories due to the mercury levels in the fish.

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					Given that mercury and methyl mercury are known contaminants of concern in the area, and that Health Canada recommends the assessment of fish consumption for contaminants that are bioaccumulative, mercury and methyl mercury were elevated as part of the human health risk assessment process. For calculating the risks through exposure to mercury in fish, the evaluation was conducted assuming that the mercury was present as both 100% inorganic mercury, and 100% organic mercury (or methyl mercury). While this effectively "double counts" the mercury exposure, it ensures the risks related to mercury exposures are not underestimated.
204	HE(1)-11	CEA Agency	Appendix W Section 4.4.2, Table M	Section 10.1.3	**Summary of Comment / Rationale:** A toxicity reference value (TRV) for lead of 0.0036 mg/kg-bw/day (assuming the units of "µg/kg-bw/day" are erroneous) is provided in Table M (Appendix W, page 32) based on the detailed quantitative risk assessment spreadsheet. Note that this TRV is from outdated guidance. It is recommended that lead TRVs, which are based on more recent science be considered with sufficient rationale provided. The use of a TRV for lead from another regulatory agency should be accompanied with sufficient justification for its selection. Alternate TRVs, including risk-specific doses (RSDs) from EFSA (2013) or WHO/JECFA (2011) may be used in quantitative risk assessments, with appropriate scientific rationale.
					Information Request / Comment: A. Revise the assessment to use a lead TRV which is based on more recent science, such as EFSA (2013) or WHO/JECFA (2011), with rationale provided to support the choice as protective of the developing fetus and women of childbearing age.
					Response: There are few TRVs available for lead that are supported by regulatory agencies in Canada. CalEPA assumes that a blood lead level of 1 µg/DL equates to an IQ deficit of approximately 1 which is essentially considered *de minimus*. WHO/JEFCA, who use combination of statistical approaches to generate a relationship between dietary intake and deficits in IQ, suggest an intake of 30 µg/day equates to an IQ decrease of 1 in children. Based on a default body weight for a toddler of 16.4 kg, this equates to an oral TRV of approximately 1.8 µg/kg-d, essentially half that used in the SLRA. Considering the hazard quotients (HQ) determined for lead, the use of a more stringent TRV for this contaminant does not alter the conclusions of the report.
205	HE(1)-12	CEA Agency	Appendix W Section 4.5.5	Section 10.1.3	**Summary of Comment / Rationale:** Estimated concentrations of lead and mercury in plants were spatially adjusted based on the size of the tailings and waste rock management areas (125 ha) relative to the potential gathering area

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					in the region (6341 ha, based on the blueberry habitat size used as a surrogate to represent other plants). Spatially adjusting such concentrations assumes residents and recreational users are equally likely to gather plants from any one area in the region and no preferential gathering from specific areas would occur (which may or may not be the case for this region). There is an uncertainty in the assumption that receptors would be expected to exhibit an equal likelihood of gathering plants from any one location in the region. Also, the potential for preferential uptake of identified contaminants of concern (COCs) in waste rock and tailings, other than lead and mercury should be considered, and the impact of this in terms of human exposure (and risk) be discussed. In addition, only lead and mercury were considered in the country foods assessment, despite some other metals being identified as COCs in waste rock and tailings. The potential for these other identified COCs to be translocated into plants from soils has not been considered. Some of these metals could be preferentially taken up into plants, resulting in concentration profiles differing between plants.
					<u>Information Request / Comment:</u> A. Provide justification, using scientific rationale, to explain spatially adjusting the concentrations and the potential for preferential uptake of identified contaminants of concern in waste rock and tailings. B. Explain why metals other than lead and mercury are excluded and discuss the impact of this in terms of human exposure and risk.
					<u>Revised Response:</u> A. It is acknowledged there is considerable uncertainty regarding those portions of the study area that are capable of supporting the establishment of vegetation used for consumption as well as the extent of lands used for harvesting. However, considering the conservative nature of the plant uptake model, which assumes that the concentration in the tailings is equivalent to the capping material post-closure, the simplifying assumption involving area-weighted exposures for the plant harvesting area is considered inconsequential. The soil cap specified for the waste rock and tailings areas will consist of soil meeting appropriate risk-based criteria for unrestricted access (e.g., Table 1 or 2 of the Ministry of the Environment and Climate Change (MOECC) SCS) meaning the concentrations used in the modelling of uptake into the edible portions of plants has been overestimated. In the foreseeable future, Treasury Metals will control the type of vegetation that will be re-established on the rehabilitated tailings storage facility (TSF) and waste rock storage

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					area (WRSA). As part of the certified closure plan, it can be specified that none of the species planted on the TSF or WRSA be plants suitable or desirable for human consumption. B. In response to feedback from the Agency, Treasury Metals has re-evaluated the COPC screening process for human health, as presented in the revised response to TMI_195-HE(1)-02. As part of the justification for the COPC selection process, the selection of pathways and the risk management measures have also been described. The updated screening of COPCs provided in TMI_195-HE(1)-02_Table_1 identifies that Antimony, Arsenic, Cobalt, Lead, Mercury and Zinc in tailings and/or waste rock may be considered human health COPCs capable of posing potential risk to human health. However, they were excluded from further assessment (i.e., not assessed quantitatively) because, with the risk management measures including waste rock and tailings cover and encapsulations, and a health a safety plan that includes additional PPE and limiting site access to toddlers during operations. No potential risks to these compounds are identified as a result of the Project. Treasury Metals highlights that soils in the regional area have naturally high concentrations of arsenic. Treasury Metals also highlights that a fish consumption advisory is already in effect for the area due to concerns of mercury concentrations in fish. Furthermore, the toxicological interpretation of lead is currently under review and it is now considered a non-threshold substance. The MOECC requires that in the interim any concentrations of lead above 120 µg/g be considered for potential risk. Given that mercury and methyl mercury have been identified as COPCs in the regional area of the Project and the interim guidance on lead, it was appropriate to quantitatively assess mercury and lead even though with risk management measures in place as part of the design of the Project, no potential human health risks are identified. As demonstrated in the revised response to TMI_195-HE(1)-02, the exclusion of Antimony, Arsenic, Cobalt, and Zinc from the quantitative assessment of risk would have had no effect on the conclusions of the risk assessment. As described in the revised response to TMI_195-HE(1)-02, it was qualitatively determined that with risk management measures these COPCs are not expected to pose risk to human health.
206	HE(1)-13	CEA Agency	Appendix W Section 4.5.5	Section 10.1.3	**Summary of Comment / Rationale:** A planned cap of 1 m of clean soil over the waste rock and tailings areas post-closure is indicated to likely decrease the concentrations of lead and mercury (and potentially other metals that were not carried forward in the human health risk assessment as previously discussed) in plants that grow over these areas. While this assumption may be the case for plants with shallow root systems (i.e. berries and mushrooms), it may not be the case for other gatherable plants. The Canadian Council of Ministers of the Environment (CCME)'s definition of "surface soil" is soils located within 1.5 m below ground surface (mbgs) (CCME 2006). This definition is based on the

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					fact that terrestrial plant growth (i.e., root systems) may reach as deep as 1.5 mbgs. Therefore rationale is needed for the chosen depth which may include detailing the types of edible plants that are currently on the site and the depth of those root systems (and any other relevant information).
					Information Request / Comment: A. Explain why the depth of soil cap chosen, as opposed to 1.5 m, is sufficient to lessen human exposures (and risks) via consumption of plants growing on the waste rock and tailings areas post-closure.
					Response: While it is recognized that the Canadian Council of Ministers of the Environment (CCME) (and the Ministry of the Environment and Climate Change (MOECC)) define surface soils as being up to 1.5 mbgs, MOECC recommends the use of a 1.0 m soil cap as a risk management measure to block direct and indirect contact with contaminants present in soil. For the vast majority of plants, especially those used for foraging, the mass of root systems is typically found within the top 30 cm of soil (Suter et al., 2000). It is also important to note that Treasury Metals will retain control of the waste rock and tailings area until such time that it has been deemed closed by the appropriate regulatory agencies, and should the need arise, can revegetate with plant species that are not used for consumption. References Suter G.W., II, Efroymson, R.A., Sample, B.E., Jones, D.S. 2000. Ecological Risk Assessment for Contaminated Sites. Lewis Publishers.
207	HE(1)-14	CEA Agency	EIS Table 12.4.2 Appendix W Section 4.5.6	Sections 10.1.3, 11.4	**Summary of Comment / Rationale:** Table 12.4.2 (original EIS, page 12-9) does not provide information on the frequency, duration, and number of samples to be collected for each of the aquatic biology measures. Also, no information on measuring contaminants aside from mercury is mentioned in the proposed biological monitoring plan. In section 4.5.6 (Appendix W), lead fish tissue concentrations were based on lower-trophic level fish species caught from Blackwater Creek, unlike the higher-trophic level species caught in Wabigoon Lake used to measure mercury tissue residue data. The use of lower-trophic level species for lead may underestimate lead concentrations in fish tissue from Wabigoon Lake. The fish species and chemicals selected for this type of project were incomplete. Additional baseline tissues analyses would help to reduce the uncertainty surrounding baseline levels of

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					contaminants of potential concern in country foods, and particularly in the predicted project case scenario.
					<u>Information Request / Comment:</u> A. Provide details on the monitoring plan, including objectives and questions to be answered. Explain whether baseline data collection is adequate and if not, describe the plan to collect sufficient data for the monitoring plan. B. Provide a rationale as to why lead concentrations from lower-trophic level fish species would be a reasonable approximation of higher-trophic level species. C. Provide justification, using health science-based rationale, the plan to only measure mercury (i.e. no other contaminants) in fish tissue.

					<u>Revised Response:</u>
					
					A. Details of the follow-up monitoring plan for fish and fish habitat are described in Section 13.14 of the revised EIS. The objective of a Follow-Up Program is to validate the EIS predictions, as well as verify the effectiveness of the mitigation measures presented. To allow for a technical review, details regarding biological monitoring as part of the follow-up monitoring program have been included, and any contradictory language has been revised.
					Given that there is a regional concern associated with mercury and methyl mercury these parameters will be monitored as part of the Follow-Up Program; however, Treasury Metals have committed to maintain the mercury concentrations in effluent at, or below, the background levels in Blackwater Creek (<0.20µg/L).
					<u>Biological Monitoring</u>
					• Effluent:
					    o Sub-Lethal Toxicity / Acute Toxicity Test of sample taken from end of pipe location will be conducted for benthic invertebrate and fish species
					• Blackwater Creek:
					    o Sub-Lethal Toxicity / Acute Toxicity Test on benthic invertebrate and fish species from a sample taken from the discharge location on Blackwater Creek
					    o Survey of fish species composition using the same techniques from baseline studies once every three years
					• Thunder Lake Tributaries 2 and 3:
					    o Survey of fish species composition using the same techniques from baseline studies once every three years

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					• Little Creek and Hoffstrom's Bay Tributary: o Survey of fish species composition using the same techniques from baseline studies once every three years • Control Site: o Sub-Lethal Toxicity / Acute Toxicity Test of sample taken from end of pipe location will be conducted for benthic invertebrate and fish species o Survey of fish species composition using the same techniques from baseline studies once every three years <u>Fish Habitat Offset Monitoring</u> Fish surveys of the constructed habitat offset will be conducted to determine effectiveness: • Will be conducted using the same sampling techniques from baseline sampling • To be conducted 1 and 5 years following the construction of the habitat offset B. While lead can be taken up by aquatic organisms, it does not biomagnify in aquatic or terrestrial food chains. In aquatic systems, lead concentrations are typically higher in benthic organisms and algae, and lowest in upper trophic level predators (reviewed in ATSDR 2008, Toxicological Profile for Lead). Consequently, tissue concentrations in lower-trophic level fish species should represent a conservative estimation of levels in higher-trophic species. C. At the request of the Agency, Treasury metals has revised Section 13.14 to include a listing of contaminants in addition to mercury that require monitoring based on health science-based rationale. As referenced by the Agency, supplemental screening for human health COCs was included as part of the revised response to TMI_195-HE(1)-02, with a tabular summary included with the information request package as TMI_195-HE(1)-02_Table_1. The same approach has been employed herein for the selection of COCs that may leach to downgradient surface water bodies and pose potential risk to fish and fish habitat, or pose risk of bioaccumulation into the food chain (and subsequently to human health). The current risk assessment science in Ontario (as provided by the MOECC) states that the S3 component criteria may be used to provide an upper bound for the potential of metals to leach from soil to groundwater and eventually downgradient surface water bodies (MOECC 2016). The results of this Supplemental Screening for Aquatic Receptors are attached as TMI_207-HE(1)-14_Table 1. As shown in the attached table (TMI_207-HE(1)-14_Table_1), only arsenic in tailings and lead in waste rock and tailings exceed the S3 component criteria and subsequently have health science-based rationale for inclusion as part of a monitoring plan. Section 13.14 states that as part of the follow-up and monitoring programs, in addition to mercury, arsenic and lead

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					concentrations will be measured in fish tissue for fish collected in Blackwater Creek. For the other water courses, an adaptive management will be considered. In the event that changes in surface water quality in other water courses (lakes, rivers, steams) are identified as part of the surface water quality follow-up and monitoring programs (as outlined in Section 13.8), then biological monitoring via methods comparable to those outlined for Blackwater Creek will be completed. Reference: MGRA User Guide: A Guide to Using the "Approved Model" (November, 2016) When Submitting a Modified Generic Risk Assessment (MGRA) (MOECC, 2016) Rationale for the Development of Soil and Groundwater Standards for Use at Contaminated Sites in Ontario (MOECC 2011)
208	HE(1)-15	CEA Agency	Appendix W Sections 4.7, 7.3	Section 10.1.3	**Summary of Comment / Rationale:** The conceptual site model assumed that soil direct contact pathways of incidental ingestion and dermal contact were not operable for humans at this site during the post-closure phase as above-ground waste rock and tailings areas would be covered with either an impermeable barrier or with 1 m of soil and vegetation. To ensure that direct soil contact will not occur after closure, it will be beneficial to verify the integrity of the cover.
					Information Request / Comment: A. Describe a plan to monitor the cover for the above-ground waste rock and tailing areas during the post-closure phase to verify the exposure pathways remain inoperable. B. If on-site soils are used as cap soil, revise the assessment to include the potential for contamination of those soils due to wet/dry deposition of suspended dust during the operations phase or provide justification why the revision is not required.
					Revised Response: Since filing the EIS, Treasury Metals has advanced the engineering for the Project. One of the refinements was a change in the plans for closing the tailings storage facility (TSF). The current plans, as detailed in Appendix KK to the revised EIS and summarized in Section 3.7 of the revised EIS, are as follows: • At closure, the water on the TSF will be withdrawn, treated and used to help fill the open pit. • The tailings will be covered with a granular surface to physically isolate the tailings. • The tailings will then be isolated from oxygen to prevent acid rock drainage (ARD). This isolation will be achieved with either a low permeability dry cover or a wet cover with non-process water. If a low permeability dry cover is used, it will be covered with a layer of soil to

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					protect the low-permeability cover, and to provide a surface when shallow rooted, native vegetation will be allowed to grow. As described in Section 3.7 of the revised EIS, and detailed in Appendix KK to the revised EIS, the portion of the waste rock will remain on the surface and will be covered with a low-permeability cover to isolate the waste rock from oxygen and prevent ARD in the long-term. The low permeability dry cover is used, it will be covered with a layer of soil to protect the low-permeability cover, and to provide a surface when shallow rooted, native vegetation will be allowed to grow. Given the multiple layers of cover isolating the tailings within the TSF and the waste rock in the WRSA during the post-closure phase, this exposure pathway is not considered viable following closure. A. As part of the follow-up program for human health, described in Section 13.19 of the revised EIS, during post-closure the efficacy and integrity of the covers for the TSF and the waste rock storage area (WRSA) will be monitored to confirm the dermal exposure and direct ingestions pathways remain inoperable. Monitoring the integrity of the post-closure covers to the TSF and WRSA are also important with respect to the EIS predictions related to geochemistry and the potential for acid rock drainage and metals leaching (ARD/ML). Additionally, the geochemical predictions, which rely on the integrity of the post-closure covers to the TSF and WRSA, are important for ensuring the predicted effects to surface water quality and groundwater quality are managed. The revised EIS also described the follow-up plans for geochemistry (Section 13.3 of the revised EIS), surface water quality (Section 13.8 of the revised EIS) and groundwater quality (Section 13.10 of the revised EIS). B. The soils to be used for covering the TSF and WRSA will come primarily from the overburden stockpiles. While the overburden stockpiles are located on the site, only the very top layer will have been exposed to the small amounts of metals deposited over the relatively short period when mining occurs within the open pit. This shallow surface layer will be the first layer withdrawn from the overburden stockpiles and placed on either the TSF of WRSA. This thin layer will be covered by multiple layers of unexposed materials from within the overburden stockpiles. Information demonstrating the validity of assumption regarding the screening of potential exposure pathways during the post-closure phase have been fully described in Section 6.19 of the revised EIS.
209	HE(1)-16	CEA Agency	Appendix W Tables 1, 2, 5	Section 10.1.3	**<u>Summary of Comment / Rationale:</u>** Several chemicals had no measured concentration data available in waste rock (Table 1, Appendix W), tailings (Table 2, Appendix W) or impacted drinking water (Table 5, Appendix W) and were not retained in the human health risk assessment because "No site data provided do not retain." Further justification for screening out contaminants based on a lack of measured or modelled concentration data is needed, particularly as some of these chemicals had screening criteria

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					available and/or baseline concentration data available (e.g., beryllium, boron, molybdenum, selenium, etc.) but no waste rock, tailings or impacted drinking water concentrations with which to compare them.
					Information Request / Comment: A. Provide justification to explain why site data were not generated for some chemicals and whether such site data will be generated at a later point. B. Discuss whether a lack of site data for some chemicals should be cited as an uncertainty and indicate whether risks may be underestimated as a result.
					Response: A. COPCs in mine rock were identified based on their concentration in relation to crustal abundance. These were listed in Table 3.1 of Appendix K (Geochemistry Evaluation) of the EIS and form the basis for identification of COCs in Tables 2 and 3 of the SLRA. However, as these tables are based on a standard template they list a broader range of elements, many of which do not have analytical data. B. As indicated, COPCs were identified in the Geochemistry Evaluation based on their relative abundance when compared to crustal levels. On this basis the lack of data carried into the SLRA is not considered an uncertainty and does not unduly bias the results of the assessment.
210	HE(1)-17	CEA Agency	Appendix W Table 2	Section 10.1.3	**Summary of Comment / Rationale:** The maximum concentration of antimony in tailings, 11 mg/kg, exceeds the MOE (2011) Table 2 residential site condition standard of 7.5 mg/kg. Despite this, antimony was not retained as a contaminant of concern for tailings with the following rationale provided: “Does not exceed guideline, do not retain”.
					Information Request / Comment: A. Verify the antimony concentrations in the report and explain whether it should be retained as a contaminant of concern in tailings to ensure potential health risk is not underestimated.
					Revised Response: While the exclusion of antimony as a COC was an oversight in the SLRA (Appendix W to the revised EIS), the potential risk estimates for antimony in tailings is below the Ministry of the Environment and Climate Change (MOECC) / Health Canada risk benchmarks (Target Hazard quotient of 0.2). Table 1, below, provides the screening for antimony in tailings. The results are also included in the revised supplemental screening table completed for all additional COCs (TMI_195 HE(1)

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					02_Table_1). The screening shows that the maximum measured concentration of antimony in tailings (11 µg/g) exceeds only the overall MOECC Table 2 Site condition Standards (SCS) of 7.5 µg/g S1 contact pathway, which is established to be protective of a toddler via the direct dermal contact and incidental ingestion pathway. Table above indicates that potential risk to an adult receptor (S2, S3 component values) via direct dermal contact and incidental ingestion of soil, tailings or waste rock containing antimony at 11 µg/g would be within acceptable target risk benchmarks for both the MOECC and Health Canada.

Table 1: Qualitative Screening of Antimony in Mining Tailings									
Antimony	Human Health Table 2 Component Value				Qualitative Assessment of Human Health Risk				
Max Measured	S1	S2	S3	S-IA	S1	S2	S3	S-IA	
11	7.5	63	63	NV (not volatile)	Potential Risk	No Potential Risk	No Potential Risk	No Potential Risk	
Notes:									
	Units	µg/g							
	BOLD	Qualitative assessment indicates potential risk above MOECC/Health Canada risk benchmarks, risk management measures may be required							
	S1	Direct contact and dermal contact with soil-Toddler							
	S2	Direct contact and dermal contact with soil-Outdoor Worker (Long Term)							
	S3	Direct contact and dermal contact with soil-Subsurface Worker (Short Term)							
	S-IA	Volatilization from soil and inhalation by an indoor resident via the soil vapour pathway							
	REF	MOECC 2011- Rationale Document for the Development of Soil and Ground Water Standards for Use at Contaminated Sites in Ontario							

While the screening indicates that there may be the potential for risk associated with antimony in tailings, and illustrates that a quantitative assessment of risk and/or risk management measures are required, the SLRA stated that *"The direct contact soil exposure pathways were considered incomplete for all humans because access to the Project site will be restricted for residents and recreational users, and workers will use personal protective equipment (PPE)."*

More specifically, the following risk management measures (Section 2.3 of Appendix W) were assumed to be employed to eliminate the pathway of exposure (i.e., to eliminate the potential for toddlers to touch or incidentally ingest mine tailings), and thus eliminate the potential risk via antimony in mine tailings at the predicted maximum concentration of 11 µg/g:

- Covering waste rock piles with an impermeable barrier or with 1 m of soil and vegetation;
- A permanent, secure, and total confinement of all solid waste materials within the tailings storage facility (TSF);

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					• Maintain a water cover over the TSF during operations; • At closure encapsulating both tailings and waste rock with a pioneer layer, a water shedding layer, and a soil layer. Encapsulating, covering with 1 m of clean soil, or confining any material with concentrations of Contaminants of Concern in exceedance of their respective Table 2 Standards or CCME guidelines would provide a 100% reduction in potential exposure to the toddler, thereby producing an estimation of potential risk below the MOECC/ Health Canada risk benchmarks. Furthermore, conservative assumptions were built into the models to predict the maximum antimony concentration as well as the S1 component value. Given the rationale provided above, that administrative and engineering controls will provide sufficient reduction in potential risk, and the conservative nature of the risk assessment and modelling approaches, we are confident that potential risk as a result of antimony in tailings has not been underestimated. An uncertainty analysis including a statement of conservatism to ensure that potential risk was not underestimated is provided in Section 6.0 of the SLRA (Appendix W). Thus, although not considering antimony a COC as part of the SLRA was an oversight, the conclusions would remain the same if antimony were considered. Based on the above qualitative assessment of potential risk combined with the pathway analysis and receptor characterization in the SLRA, confirms the potential risk of antimony concentrations in tailings is below the acceptable MOECC and/or Health Canada Benchmarks. Any future risk assessment work for the Project should carry forward all parameters that exceed their respective Table 2 Standard, or CCME guideline in any media as COCs to ensure that it is clearly demonstrated that potential risk are not being underestimated.
211	HE(1)-18	CEA Agency	Appendix W Table 3	Section 10.1.3	**Summary of Comment / Rationale:** Analyte dust concentrations for a variety of metals are provided in Table 3 (Appendix W), but not for mercury (one of the two contaminants of concern retained in the human health risk assessment). As no mercury dust concentration is provided in this table or in Table H (Appendix W, page 29), it is unclear what mercury concentration in suspended particulate matter was used to derive the inhalation hazard quotient for mercury.
					Information Request / Comment: A. Provide the mercury exposure point concentration in suspended particulate matter that was used in the human health risk assessment for generating the inhalation exposure and risk estimates.

Revised Response:

The exposure point concentration of mercury in particulate matter that was used in the human health risk assessment was 4.71×10^{-10} mg/m^3. This value was calculated using the Health Canada default particulate concentration in outdoor air of 7.6×10^{-10} kg/m^3 (0.76 µg/m^3 for PM_{10}), multiplied by the concentration of mercury in the soil (i.e., 0.62 mg/kg). As per Health Canada DQRA guidance, in the absence of site-specific data, a typical airborne particulate matter concentration of 0.76 µg/m^3 may be assumed (Health Canada 2010b based on US EPA 1992a).

The RWDI air assessment completed to support the EIS (Appendix J) calculated the air emissions of metal compounds from the sources at the site using chemical assay data for waste rock and ore, depending on the specific source of emissions. This information is detailed in Appendix D to the ESDM included as Appendix J-3 to the revised EIS. The chemical assay data used for calculating metal emissions did not include quantified concentrations of mercury because the concentrations of mercury in the samples were not measured above the analytical detection limit. Therefore, no airborne mercury was calculated as part of the air modelling. In the absence of site -specific mercury concentrations in air, Tetratech followed the Health Canada guidance available at the time and calculated the exposure point concentration of mercury in air of 4.71×10^{-10} mg/m^3 using the Health Canada default airborne particulate matter concentration of 0.76 µg/m^3 (Health Canada 2010b based on US EPA 1992a).

The results of the quantitative human health risk assessment of the fugitive dust pathway indicated that there was no potential risk in exceedance of Health Canada risk benchmarks via the inhalation of fugitive dust pathway. Furthermore, as shown in the contaminant of concern selection table provided in Section 6.19 of the revised EIS (Table 6.19.2.1-4: Selection of COCs in Air and Dust) none of the parameters modelled in outdoor air exceeded their respective health based Ontario Ambient Outdoor Air Criteria. As discussed in Section 6.19 of the revised EIS, risk management measures including a health and safety plan which includes additional personal protective equipment (including a dust mask or respirator) is conservatively suggested following good construction and occupational health and safety practices.

As described in Section 6.6 of the revised EIS, the Project will result in increased particulate concentrations during the site preparation and construction, operations, and closure phases of the Project. There are no sources of air emissions at the Project during the post-closure phase. As presented in Table 6.19.2.1-of the revised EIS, the maximum predicted PM_{10} concentrations, including background, are: 39.9 µg/m^3 during the site preparation and construction phase; 36.6 µg/m^3 during operations; and 37.2 µg/m^3 during the closure phase. As these values are substantially larger than the concentration of PM_{10} of 0.76 µg/m^3 reported as “’typical” by Health Canada, Treasury Metals has provided a limited supplemental screening for mercury in fugitive dust for the purposes of achieving a completeness check. The analysis uses the maximum soil concentration of 0.62 µg/g (mg/kg) modelled for the Project, and the maximum PM_{10} concentrations described above during operations and post-closure.

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The Table below presents a more conservative exposure point concentration for mercury in air during operations and post-closure derived using predicted PM_{10} concentrations rather than the Health Canada default. The results indicate that the conservative exposure point concentrations of mercury are below the Ontario Ambient Air Criteria for a health-based endpoint, and therefore would be conservative screened out from inclusion as part of a quantitative risk assessment. To provide a second line of supportive evidence to confirm the results provided in the effects assessment in Section 6.19 of the revised EIS that there are no potential health risks anticipated via the inhalation of mercury in dust pathway, hazard quotients were generated using the DQRA exposure equations and the Health Canada Mercury toxicity reference value of 0.0003 mg/kg/day. The estimated hazard quotients for the mercury in dust pathway are well below the Health Canada risk benchmark of 0.2 using the more conservative exposure point concentration presented in Table 1 below.

It is Treasury Metals' opinion that the supplemental technical assessment provided in this information request has sufficiently answered both the original information request, as well as the additional information requested and allows the Agency sufficient rationale for the completeness check. This additional technical assessment confirms that no potential human health risks are anticipated as a result of mercury concentrations in soil/waste rock/tailings, via the fugitive dust inhalation pathway. The results provided in this additional technical assessment do not change the results of the risk assessment discussed in Section 6.19 of the revised EIS submitted April 20, 2018.

Table1: Additional Technical Assessment of Exposure Point Concentrations of Mercury in Air / Dust

Maximum Mercury Concentration in Soil (i.e. baseline soils, waste rock, and/or tailings)	PM_{10} Concentration Modelled by RWDI	Modelled Exposure Point Concentration of Mercury in Outdoor Air	Ontario Ambient Air Quality Criteria (24 Hour, Health)	Quantitative Assessment based on Criteria Exceedance?	Calculated HQ (Target =0.2)
OPERATIONS					
0.62 mg/kg	36.6 μg/m^3 3.66 x 10^{-8} kg/m^3	2.72 × 10^{-8} mg/m^3	0.002 mg/m^3	NO	Toddler: 2.9 × 10^{-6} Adult: 1.3 × 10^{-6}
POST-CLOSURE					
0.62 mg/kg	37.2 μg/m^3 3.72 x 10^{-8} kg/m^3	2.31 x 10^{-8} mg/m^3	0.002 mg/m^3	NO	Toddler: 2.4 x 10^{-6} Adult: 1.1 x 10^{-6}

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Refences: Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA) Version 2.0 (Health Canada 2012a); Part II: Health Canada Toxicological Reference Values (TRVs) and Chemical-Specific Factors Version 2.0 (Health Canada 2010a); Part V: Guidance on Human Health Detailed Quantitative Risk Assessment For Chemicals (DQRACHEM) (Health Canada 2010b); Supplemental Guidance on Human Health Risk Assessment of Indoor Settled Dust (HHRADUST) (Health Canada 2018); Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air Quality (Health Canada 2016); Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals). Washington, DC. EPA/54-/R-92/003 (U.S. EPA. 1992a.)
212	HE(1)-19	CEA Agency	Appendix W Table 3	Section 10.1.3	**Summary of Comment / Rationale:** Several analytes in Table 3 (Appendix W) have more than one MOE point of impingement (POI) limit (MOE 2012a) available for different averaging periods. Despite this, only maximum POI concentrations calculated for a single averaging period (usually 24-hr) were compared to the MOE POI limits. Note that MOE (2012a) indicates: “If there are multiple standards (i.e., standards with different averaging times) in Schedule 3 or multiple guidelines, when Section 20 applies, for a particular contaminant, all of them must be used for assessment purposes [emphasis added]. This is because each represents a different type of effect linked to a particular averaging period (i.e., averaging time).” Other types of effects from exposure to these substances in air may have not been considered.
					Information Request / Comment: A. Revise the assessment and use MOE POI limits for all averaging periods in screening maximum POI concentrations (as per MOE 2012a) or provide a justification that demonstrates other types of effects from exposure to these substances in air are covered without the revision.
					Response: The different averaging times used by the Ministry of the Environment and Climate Change (MOECC) are not based on risk related to differing durations of exposure but rather are based on

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					relationships established through dispersion modelling between short-term average concentrations at the point of impingement and those that can be expected over longer periods. In this respect, the assessment used appropriate averaging periods for those analytes where toxicity is manifest over longer-term exposure and those where the effects are more acute (e.g. SO2, CO and NO2).
213	HE(1)-20	CEA Agency	Appendix W Table 3	Section 10.1.3	**Summary of Comment / Rationale:** As noted in MOE (2012a), point of impingement (POI) limits are intended to assess air quality from a single facility, and not to assess general air quality from all sources. MOE (2012a) notes that ambient air quality criteria (AAQCs) are used for environmental assessments, general air quality assessments and some special studies. As such, in addition to screening against MOE POI limits, consider also summing the maximum incremental POI concentrations with the background air concentrations (for those analytes with background concentration data available) for comparison against the MOE's AAQCs and/or Canadian Ambient Air Quality Standards.
					Information Request / Comment: A. Revise the assessment to screen the total air concentrations (i.e. maximum incremental POI concentrations + background), where possible, against health-based air quality standards and guidelines.
					Revised Response: Treasury Metals, has revised the screening assessment to include total air concentrations (i.e. maximum incremental concentrations plus background) against health-based air quality standards and guidelines (e.g., AAQC or CAAQS), which has been provided in Table 6.19.2.1-4 of the revised EIS. The modelling results provided in Table 6.19.2.1-4 of Section 6.19 of the revised EIS, which include background concentrations for air quality (as per TMI_213-HE(1)-20), were screened against their respective Ontario Ambient Air Quality Objectives. The results presented in in Table 6.19.2.1-4 indicate that none of the predicted concentrations exceed their respective screening criteria, with the exception of total suspended particulate (TSP). The maximum 24-hour TSP concentration during the site preparation and construction phase was shown to marginally exceed (by 2.6%) it's Ontario Ambient Air Quality Objective. The Ontario Ambient Air Quality Objective was set based on visibility (i.e. aesthetic) criteria and not the protection of human health. Therefore, no COCs relevant to human health are identified in air and dust, and a quantitative assessment of potential human health risks via the dust/air pathway is not warranted. The SLRA in Appendix W conservatively included fugitive dust as an operable pathway as mercury had not been included directly as part of the air dispersion modelling.
214	HE(1)-21	CEA Agency		Section 10.1.3	**Summary of Comment / Rationale:**

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Appendix W Table 5		Several contaminants of concern (COCs) were excluded "due to a lack of risk-based standards for comparison". Absence of a screening criterion is not a sufficient justification for excluding a contaminant of concern. Further discussion may include whether the COCs are expected to be present at non-toxic levels or relevant to human health.
					Information Request / Comment: A. Provide health-based justification for excluding COCs without risk-based standards for comparison.
					Response: The comment is in reference to Table 5 where analytes such as hardness, pH, carbonate and sulphur were identified as not having risk-based standards. In all cases, the standards/guidelines available are based on aesthetics owing to the benign nature of the material at the concentrations typically encountered.
215	HE(1)-22	CEA Agency	Appendix W Table 5	Section 10.1.3	**Summary of Comment / Rationale:** Contaminants of concern appear to have been screened using incremental concentrations (i.e. contributions to concentrations in Blackwater Creek following application of a dilution factor). Human health risk depends on the total concentration of a substance following release, not an incremental concentration. In the case of cobalt, copper, and lead, the total concentrations in Blackwater Creek during the post-closure phase (i.e. 1.79, 5.30 and 3.89 µg/L, respectively) exceed the Blackwater Creek baseline concentrations (i.e. 1.76, 5.18 and 3.76 µg/L, respectively) and the provincial water quality objectives (PWQOs) and/or interim PWQOs (i.e. 0.9, 5 and 1 µg/L, respectively).
					Information Request / Comment: A. Revise the assessment to use total concentrations of substances in Blackwater Creek (incremental + baseline) for screening against Canadian Drinking Water Quality Guidelines (CDWQGs), PWQOs and MOE (2011) Table 2 site condition standards (SCSs) for the operations and post-closure phases for comparison to the CDWQGs, PWQOs and MOE (2011) residential Table 2 SCSs. B. Revise the assessment to retain copper and lead for drinking water purposes (post-closure phase) or provide a rationale for their exclusion.

					Revised Response: As part of the process to revise the EIS in response to the Round 1 information requests, Treasury Metals has revised its evaluation of surface water quality, including updating the description of the existing surface water quality conditions presented in Section 5.8.1.3 of the revised EIS. Specifically, Table 5.8.1.3-1 provides the mean baseline concentrations based on all of the available monitoring data at each of the a5 baseline sampling locations. These data are also used to characterize the measured baseline conditions in the six waterbodies (Table 5.8.1.3-2 of the revised EIS) within the regional study area (RSA). Treasury Metals notes that these composite measured concentrations differ from the values originally used for screening for contaminants of potential concern (COPCs) in surface water. As detailed below in the response, the screening for COPCs in the surface water has been updated in the revised EIS, and relies on expanded evaluation of baseline concentrations and the revised surface water quality model (as described in Section 6.8 of the revised EIS, and detailed in Section 6 of Appendix JJ to the revised EIS). A. Since the submission of the EIS, Treasury Metals has been advancing their engineering for the Project, including refining the water balance for the site. This refined water balance will modify some of the water related predictions. To capture these changes, and to reflect changes suggested by the responses to the Round 1 information requests, Treasury Metals have updated the water quality models, including updating the models of the water quality expected in the pit lake. The revised predictions of the effects of the Project on surface water quality are described in Section 6.8 of the revised EIS, and indicated that, with appropriate mitigation, the resulting water quality in the waterbodies around the Project would be the same or improved from existing conditions, or would meet the PWQO for the protection of aquatic life. The revised predictions of surface water quality represent the expected concentrations in the receiving environment (i.e., background plus contributions from the Project) were used to re-screen for potential COPCs in surface waterbodies surrounding the Project. The revised screening for COPCs in surface water in Blackwater Creek (downstream of the Project) and Wabigoon Lake is presented in Tables 6.19.2.1-4 (operations) and 6.19.2.1-5 (post-closure) of the revised EIS. The screening for COPCs in the post-closure surface water in Hoffstrom's Bay Tributary, Thunder Lake Tributaries 2 and 3, and Thunder Lake is presented in Table 6.19.2.1-6 of the revised EIS. B. The revised predictions of surface water quality presented in Section 6.8 of the revised EIS indicated that, with appropriate mitigation, the resulting water quality in the waterbodies around the Project would be the same or improved from existing conditions, or would meet the PWQO for the protection of aquatic life. Therefore, Cobalt, Copper and Lead were not identified as COPCs via the drinking water pathway based on the surface water modelling results presented in the revised EIS. This is confirmed in the focused screening of these compounds presented in Table 1 (operations) and Table 2 (post-closure), below. Table 1: Supplemental Screening for COPCs via the Drinking Water Pathway (operations)

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					(table continued below)

Contaminant of Potential Concern	Blackwater Creek (downstream of Project)		Provincial Water Quality Objectives (PWQO)	MOECC Table 2 GW-1 Component Value	Quantitative Assessment of Risk Required?
	Existing Conditions	Operations			
Cobalt (µg/L)	0.6	0.6	0.9	3	NO
Copper (µg/L)	1.2	2.0	5	1,000	NO
Lead (µg/L)	1.0	2.0	20	10	NO
Notes:	The concentrations in Blackwater Creek correspond to the results from the revised surface water quality modelling presented in Section 6.8 of the revised EIS, and the revised screening for COPCs in surface water presented in Table 6.19.2.1-4 of the revised EIS.				
	MOECC Table 2 GW-21 Component	Rationale for the Development of Soil and Groundwater Standards for Use at Contaminated Sites in Ontario, Table 2 groundwater components in a potable groundwater scenario, coarse-textured soils assumed for conservatism			
	BOLD Italics	Concentrations exceeds PWQO.			
	BOLD	Concentrations exceeds MOECC GW-1 Component Value, A quantitative assessment or risk management measure is required.			

Table 2: Supplemental Screening for COPCs via the Drinking Water Pathway (post-closure)

Contaminant of Potential Concern	Blackwater Creek (downstream of Project)		Provincial Water Quality Objectives (PWQO)	MOECC Table 2 GW-1 Component Value	Quantitative Assessment of Risk Required?
	Existing Conditions	Operations			
Cobalt (µg/L)	0.6	1.0	0.9	3	NO

<table>
<tr><th>TMI #</th><th>Agency Reference #</th><th>Parties Asking Questions</th><th>Reference to EIS</th><th>Reference to EIS Guideline</th><th>Comment / Information Request / Response</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>
<table>
<tr><td>Copper (µg/L)</td><td>1.2</td><td>2.0</td><td>5</td><td>1,000</td><td>NO</td></tr>
<tr><td>Lead (µg/L)</td><td>1.0</td><td>2.0</td><td>20</td><td>10</td><td>NO</td></tr>
<tr><td rowspan="4">Notes:</td><td colspan="5">The concentrations in Blackwater Creek correspond to the results from the revised surface water quality modelling presented in Section 6.8 of the revised EIS, and the revised screening for COPCs in surface water presented in Table 6.19.2.1-4 of the revised EIS.</td></tr>
<tr><td>MOECC Table 2 GW-21 Component</td><td colspan="4">Rationale for the Development of Soil and Groundwater Standards for Use at Contaminated Sites in Ontario, Table 2 groundwater components in a potable groundwater scenario, coarse-textured soils assumed for conservatism</td></tr>
<tr><td>BOLD Italics</td><td colspan="4">Concentrations exceeds PWQO.</td></tr>
<tr><td>BOLD</td><td colspan="4">Concentrations exceeds MOECC GW-1 Component Value, A quantitative assessment or risk management measure is required.</td></tr>
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<tr><td rowspan="3">216</td><td rowspan="3">HE(1)-23</td><td rowspan="3">CEA Agency</td><td rowspan="3">Appendix W Table 6</td><td rowspan="3">Section 10.1.3</td><td><u>Summary of Comment / Rationale:</u>
Baseline lead fish tissue data were measured based on 42 fillet samples. While sports fishermen typically consume only the skinless, boneless fillet, Aboriginal members may consume not only the fillet but also other parts of the fish (i.e. other tissues and organ meats). These other parts may or may not contain higher concentrations of some substances than in the muscle tissue.</td></tr>
<tr><td><u>Information Request / Comment:</u>
A. Establish baseline concentrations for whole fish consumption or for other parts of the fish consumed by Aboriginal peoples. If the baseline data is not available, indicate as an uncertainty/limitation that only fillet baseline data were available and explain how lead concentration in fillets may differ from whole fish.</td></tr>
<tr><td><u>Response:</u>
While lead can be taken up by aquatic organisms, it does not biomagnify in aquatic or terrestrial food chains. In aquatic systems lead concentrations are typically higher in benthic organisms and algae, and lowest in upper trophic level predators. In terms of tissue distribution, while concentrations of lead tend to be higher in gill tissue and liver considering the marginal increase in lead concentration over background, the simplifying assumption that lead concentration in fish are represented by the fillet makes does not alter the conclusions of the HHRA.</td></tr>
<tr><td>217</td><td>HE(1)-24</td><td>CEA Agency</td><td></td><td>Section 10.1.3</td><td><u>Summary of Comment / Rationale:</u></td></tr>
</table>

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Appendix W Table 9		Incremental concentrations of mercury and lead in fish were calculated in Table 9 (Appendix W), based on percent contribution of these two substances to Wabigoon Lake baseline water concentrations and the assumption of a direct linear relationship between water and fish tissue concentrations. These incremental concentrations were noted to be used in the "HQ spreadsheet". Risk estimates should be calculated based on total concentrations, not on incremental concentrations, as risks are proportional to total exposures. The important determinant is whether incremental contributions were sufficient to increase total levels beyond an accepted risk level.
					Information Request / Comment: A. Revise the assessment, using total concentrations of mercury and lead (i.e. sum of baseline and incremental contributions) in fish to calculate hazard quotients, so potential health risks are not underestimated.
					Revised Response: Treasury Metals has recalculated the potential risks associated with total exposures (background + Project) of lead and mercury (and methyl mercury) to help re-assure the Agency that potential risks have not been underestimated. The results of this additional technical assessment are provided in the series of tables below, as well as incorporated in the description of Project effects on human health presented in Section 6.19 of the revised EIS. Overall, the results indicate that expanding the technical assessment to include the total concentrations (baseline + incremental), results in a negligible increase in HQ of 0.02% for the Operations Phase and 0.04% for Post-Closure. The effect of the project alone results in HQs below the Health Canada and MOECC target of 0.2 for all chemicals, during Operations and Post-closure, and for all receptors (max project HQ= 0.001 for a toddler via ingestion of methyl mercury). However, the baseline concentrations of mercury and methyl mercury in fish result in HQs in exceedance of Health Canada acceptable levels for both toddler and adult receptors. Therefore, the estimated HQs based on total concentrations of lead, mercury, and methyl mercury to human receptors via fish consumption are as a result of baseline/background conditions in the area and not the result of incremental contributions from the Project. A review of the information provided by the government of Ontario regarding the consumption of fish (https://www.ontario.ca/environment-and-energy/eating-ontario-fish) indicates that there are currently fish consumption for both Wabigoon Lake and Thunder Lake. Table 1 lists the species for which there are advisories in place currently, as well as the contaminant(s) on which the advisory is based. Table 1: Listing of Fish Species with Consumption Advisories in Regional Study Area

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

Wabigoon Lake		Thunder Lake	
Species	Contaminant(s)	Species	Contaminant(s)
Black Crappie	mercury	Lake Trout	Mercury and PCBs
Cisco(Lake Herring)	mercury	Northern Pike	Mercury
Lake Whitefish	mercury	Smallmouth Bass	Mercury
Muskellunge	mercury	Walleye	Mercury
Northern Pike	mercury	White Sucker	Mercury
Redhorse Sucker	mercury		
Rock Bass	mercury		
Sauger	mercury		
Smallmouth Bass	mercury		
Walleye	mercury		
White Sucker	mercury		
Yellow Perch	mercury		

Source: https://www.ontario.ca/environment-and-energy/eating-ontario-fish

The following series of tables provided provides the technical support and rationale for the conclusions stated above. HQs were calculated based on 1. Measured (i.e. baseline) concentrations, 2. Project (i.e. incremental) concentrations, and 3.(baseline + incremental) for toddler and adult receptors via exposure to lead, mercury, and methyl mercury. As a conservative assumption it was assumed that 100% of the fish concentrations would be consumed and that 100% of the mercury would become methylated. Both of these assumptions are overly conservative and may result in an overestimation of potential risk.

As required as part of a Health Canada human health risk assessment, an exposure assessment, toxicity assessment, and risk characterization were performed and the results are provided in the following tables:

- Table 1: Exposure Point Concentrations,

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• Table 3: Receptor and Exposure Scenario Characteristics (Toddler and Adult, ingestion of fish), • Table 4: Calculated Exposure Estimates; • Table 5: TRVs, and • Table 6: Risk Characterization

Exposure Assessment

Table 2: Exposure Point Concentrations (mg/kg)- Fish Tissue					
Parameter	Measured (i.e. Baseline)	Project (i.e. incremental) Operations	Project (i.e. incremental) Post-Closure	Total Operations (Baseline+ Project Incremental)	Total Post Closure (Baseline+ Project Incremental
Lead	0.036	7.40E-06	1.60E-05	3.60E-02	3.60E-02
Mercury	0.3251	4.10E-05	5.30E-06	0.325141	3.25E-01
Methyl Mercury*	0.3251	4.10E-05	5.30E-06	0.325141	3.25E-01

Notes: * assumption that all mercury becomes methyl mercury- this is an overly conservative assumption that may result in an overestimation of potential risk

Table 3: Receptor and Exposure Scenario Characteristics		
Receptor Characteristics		
	Toddler	Adult
Active?	Yes	Yes
Age	7 mo. - 4 y	>= 20 y
Lifestage Length (y)	4.5	60
Body weight (kg)	16.5	70.7
Native food ingestion (g/d)		
- fish	95	220
Exposure Scenario		

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

Hours per day at site	24	24
Days per week	7	7
Weeks per year	52	52
Days/year of contaminated food ingestion	365	365
Exposure Duration (years)	80	80
Years for carcinogen amortization	80	80

Exposure Calculations:

Table 4: Exposure Calculations (mg/kg-day)					
Parameter	Measured/ Baseline	Incremental Operations	Incremental Post-Closure	Total Operations (Baseline+ Project Incremental)	Total Post Closure (Baseline+ Project Incremental
Toddler					
Lead	2.07E-04	4.261E-08	9.212E-08	2.07E-04	2.07E-04
Mercury	1.87E-03	2.361E-07	3.052E-08	1.87E-03	1.87E-03
Methyl Mercury*	1.87E-03	2.361E-07	3.052E-08	1.87E-03	1.87E-03
Adult					
Lead	3.60E-02	2.303E-08	4.979E-08	1.12E-04	1.12E-04
Mercury	3.25E-01	1.276E-07	1.649E-08	1.01E-03	1.01E-03
Methyl Mercury*	3.25E-01	1.276E-07	1.649E-08	1.01E-03	1.01E-03

Notes: * assumption that all mercury becomes methyl mercury-this is an overly conservative assumption that may result in an overestimation of potential risk

Toxicity Assessment

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

Table 5: Toxicity Reference Value (TRV): Toddler and Adult (mg/kg-day)

Parameter	Measured/ Baseline	Incremental Operations	Incremental Post-Closure	Total Operations (Baseline+ Project Incremental)	Total Post Closure (Baseline+ Project Incremental
Lead	0.0036	0.0036	0.0036	0.0036	0.0036
Mercury	0.0003	0.0003	0.0003	0.0003	0.0003
Methyl Mercury	0.0002	0.0002	0.0002	0.0002	0.0002

Notes: Reference: Health Canada, 2010. Part II - Health Canada Toxicological Reference Values and Chemical Specific Factors

None of the parameters listed have sufficient toxicological data to support assessment of carcinogenic effects, as such the assessment is limited to non-cancer effects.

Risk Characterization

Table 6: Hazard Quotient (unitless)

Parameter	Measured/ Baseline	Incremental Operations	Incremental Post-Closure	Total Operations (Baseline+ Project Incremental)	Total Post Closure (Baseline+ Project Incremental
Toddler					
Lead	0.05758	0.00001	0.00003	0.05759	0.05760
Mercury	6.23929	0.00079	0.00010	6.24008	6.23939
Methyl Mercury*	9.35894	0.00118	0.00015	9.36012	9.35909
Adult					
Lead	0.03112	0.00001	0.00001	0.03112	0.03113
Mercury	3.37209	0.00043	0.00005	3.37251	3.37214

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					<table><tr><td>Methyl Mercury*</td><td>5.05813</td><td>0.00064</td><td>0.00008</td><td>5.05877</td><td>5.05822</td></tr><tr><td>Notes:</td><td>BOLD</td><td colspan="4">Exceeds Health Canada and MOECC Target Hazard Quotient of 0.2. Risk management measures required.</td></tr><tr><td></td><td>*</td><td colspan="4">assumption that all mercury becomes methyl mercury- this is an overly conservative assumption that may result in an overestimation of potential risk</td></tr></table> Conclusions The results indicate that: • No additional potential risks in excess of Health Canada and MOECC thresholds potential risk to human health via fish consumption was identified as a result of the project. • No potential risk to human health via fish consumption was identified for background, Project, or total concentrations of lead. • Potential risk to toddlers and adults was identified as a result of baseline/background concentrations of mercury and methyl mercury in fish. A fish consumption advisory is already in place for the regional area to mitigate this risk. • The project contributes a negligible amount to the potential risk identified using total concentrations in fish, 0.001-0.04%. Section 6.19 of the revised EIS describes the effects of the Project on human health. The information described in this IR response is also described in Section 6.19 of the revised EIS.
218	HE(1)-25	CEA Agency	Appendix W Appendix C	Section 10.1.3	**Summary of Comment / Rationale:** The detailed quantitative risk assessment spreadsheet outputs are provided in Appendix C of Appendix W but no examples of worked calculations are included in the report. As per Health Canada's preliminary quantitative risk assessment guidance (Health Canada 2012b), sample calculations should be included in human health risk assessment reports. Omission of sample calculations does not allow the exposure and risk estimates to be validated. **Information Request / Comment:** A. Provide worked examples for exposure (and risk) estimates for a non-carcinogen and another for a carcinogen (if applicable) in the human health risk assessment report.

					<u>Revised Response:</u> The following Pathways were not Quantitatively Assessed as part of the Human Health SLRA and therefore no worked calculation are required / can be provided : • Drinking Water - no COCs identified during operations or post closure • Dermal contact with surface water - no COCs identified during operations or post closure • Dermal contact and incidental ingestion with soil - incomplete pathway, RMM in place including TMF, soil cap, and administrative controls. • Vapour Inhalation - considered incomplete pathway given the absence of residential buildings over the project area and that all COCs were considered non-volatile. Lead and Mercury are not considered carcinogens, therefore the following response does include worked example of a carcinogen as requested in the Health Canada PQRA guidance, however to ensure the response is self-contained does note where the exposure calculations would differ. All parameters, equations, and assumptions used to calculate exposure and potential risk were the defaults provided in Health Canada's DQRA Spreadsheet with the only user defined inputs being the exposure point concentrations for "soil" (Table H) (ie baseline soils, tailings, or waste rock), root vegetables (Table R), other vegetables (Table R), fish (Tanble T), and wild game (Table P). Input summaries are provided in Appendix C of the SLRA report. Worked Examples of Exposure and Potential Risk are provided for those pathway assessed Quantitatively as part of the human health risk assessment as per PQRA guidance. Equations for Pathways Quantitatively Assessed are as follows: 1. Inhalation of Fugitive Dust - Mercury in Waste Rock (Example for Scenario 1- Resident Toddler) i) Dose (mg/kg bw/day)= Cs x P_{air} x IRA X RAFinh x D1x D2 x D3 xD4/ BW x LE *Where:* *C_s = soil concentration (mg/kg)* *P_{air}= HC particulate in air (kg/m^3)* *IR_A= receptor inhalation rate (m^3/day)* *RAF_{inh}= relative absorption factor by inhalation (unitless)* *D1= hours/day/24 hrs* *D2= days per week exposed/7 days* *D3= weeks per year exposed/52 weeks* *D4= total years exposed to site (to be employed for carcinogens only)*

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					BW= body weight (kg) *LE= life expectancy (years) (to be employed for carcinogens only)* Dose (mg/kg bw/day) $_{Toddler}$ = 0.62 mg/kg x 7.6E-10 kg/m3 x 8.3 m3/day x 24 hrs/day/24 x 7 days per/wk /7 x 52 weeks/year/52 /16.5 kg = 1.48E-11 ii) HQ= Dose/TDI *Where:* *TDI Mercury Toddler= 0.003 mg/kg/day* HQ= 1.48E-11/0.003 = 4.93E-09 2. Food Chain Exposure-Plants: i) Concentration of lead in plant tissue: $C_{plant} = C_{soil}$ x TF x DTW Where: C_{plant} = Concentration in plant tissue (mg/kg) C_{soil} = Concentration in soil (mg/kg) – 870 mg/mg TF = Transfer factor - vegetative tissue 0.0049; root/berry 0.0015 DTW = Dry-to-wet weight conversion – vegetative 0.126; root/berry 0.222 $C_{root/berry}$ = 870 x 0.0015 x 0.222 = 0.289 C_{veg} = 870 x 0.0049 x 0.126 = 0.537 ii) Exposure adjusted plant tissue concentration $C_{plant(adjst)} = C_{plant}$ x area of tailings & waste rock/total area available for harvesting area of tailings & waste rock = 125 ha total area available for harvesting = 6341 ha $C_{root/berry(adjst)}$ = 0.289 x 125/6341 = 0.0057 mg/kg wet weight $C_{veg(adst)}$ = 0.537 x 125/6341 = 0.016 mg/kg wet weight

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					iii) Human Exposure from Consumption of Plant Tissue (Toddler) Intake = $C_{plant(adst)}$ x FIR / BW / 1000g/kg Where: BW = Body Weight = 16.5 kg FIR = Food Ingestion Rate – root veg = 105 g/d FIR = Food Ingestion – other veg = 67 g/d Intake = ((0.0057 mg/kg x 105 g/d) + (0.016 mg/kg x 67 g/d))/16.5 kg/1000 g/kg Intake = 7.95E-05 mg/kg-d iv) Hazard Quotient – consumption of vegetation HQ = intake/TRV HQ = 7.95E-05/0.0036 HQ = 0.022 (oral - for consumption of plants; total oral HQ is the sum of all relevant exposure pathways). 3. Food Chain Exposure- Wild Game EPC for Wild Game (Appendix Q, Table P, page 35): The exposures to the terrestrial mammals were based on estimates of soil ingestion, plant ingestion ($E_{total} = E_{food} + E_{soil} + E_{drinking\ water}$), and water ingestion for the animal as calculated for the ecological SLRA, and shown below in Table B. The modified wildlife dietary exposure model by Sample and Suter (1994) and is detailed in Appendix D of the SLRA. All intermediate equations for calculating an EPC for wild game are detailed in Appendix D of the SLRA. Ingestion of Contaminated Food- Example Wild Game – Toddler During Operations i) Dose (mg/kg/day) = $C_{Wild\ Game}$ x $IR_{Wild\ Game}$ x RAF_{GIT} x ET)/BW Where: $C_{Wild\ Game}$= Total Wild Game Concentration Mercury (mg/kg wet weight)= ∑ Concentration Mercury (mg/kg wet weight) in Moose, Deer, Grouse, and Hare = 2.89 x 10^{-3} mg/kg wet weight (Appendix W, Table P, page 35)

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					$IR_{wild\ game}$= 85 g/day (0.085 kg/day) of Wild Game $RAFG_{IT}$= 1 ET= D2= 7 days per week exposed/7 days * D3= 52 weeks per year exposed/52 weeks BW= 16.5 kg Dose (mercury in wild game to toddler)= 2.89 x 10^{-3} mg/kg x 0.085 kg/day x/16.5 kg= 1.49x 10^{-5} mg/kg/day TDI Toddler Mercury= 0.003 mg/kg/day ii) HQ= Dose/TDI HQ= 1.49 x 10^{-5}/0.003= 0.005 4. Food Chain Exposure Ingestion of Contaminated Food- Example Fish – Toddler During Operations i) Dose (mg/kg/day) = C_{Fish} x IR_{Fish} x RAF_{GIT} x ET)/BW Where: C_{Fish}= Total Concentration Mercury in Fish (mg/kg wet weight) = 4.1 x 10^{-5} mg/kg wet weight (Appendix W, Table T, page 38) IR_{Fish}= 95 g/day (0.095 kg/day) of Fish $RAFG_{IT}$= 1 ET= D2= 7 days per week exposed/7 days * D3= 52 weeks per year exposed/52 weeks BW= 16.5 kg Dose (mercury in fish to toddler)= 4.1 x 10^{-5} mg/kg x 0.095 kg/day x/16.5 kg= 2.36 x 10^{-7} mg/kg/day TDI Toddler Mercury= 0.003 mg/kg/day i) HQ= Dose/TDI HQ= 2.36 x 10^{-7} /0.003= 2.35 x 10^{-7}
219	HE(1)-26	CEA Agency	EIS Section 6, Table 6.4.4	Section 9.1.2	**Summary of Comment / Rationale:** NO_2 background concentrations are listed as 3.3 ug/m^3 for all timescales (1-hr, 24-hr, annual) in Table 6.4.4 (EIS, page 6-78 to 6-79). However, Table 1 (Appendix J, page 8) lists NO_2 background

<table>
<tr><th>TMI #</th><th>Agency Reference #</th><th>Parties Asking Questions</th><th>Reference to EIS</th><th>Reference to EIS Guideline</th><th>Comment / Information Request / Response</th></tr>
<tr><td></td><td></td><td></td><td>Appendix J Table 1</td><td></td><td>concentrations at 33 ug/m^3 for both 1-hr and 24-hr (90^{th} percentile) timescales.

It is somewhat unusual for the same concentration to be reported for all timescales.

<u>Information Request / Comment:</u>
A. Verify the background concentrations for NO_2 (1hr, 24hr, annual). Provide an explanation for the same concentrations. If there is an error, revise the affected table(s) accordingly.

<u>Response:</u>
The correct background concentration for NO_2 is 33 $\mu g/m^3$. The correct value is shown in both Table 1 and Table 5 of the Environmental Air Quality Assessment (included as part of Appendix J to the EIS). As described in Section 3.2 of the Environmental Air Quality Assessment, background concentrations for a compound were determined as the 90^{th} percentile of the available readings. Table 1 of the Environmental Air Quality Assessment indicates that the 90^{th} percentile of both the 1-hour and 24-hour NO_2 readings are 33 $\mu g/m^3$. For TSP, only 24-hour readings were available. The 90^{th} percentile of the 24-hour TSP readings was also, coincidentally, 33 $\mu g/m^3$.</td></tr>
<tr><td>220</td><td>HE(1)-27</td><td>CEA Agency</td><td>Appendix W Table R</td><td>Section 10.1.3</td><td><u>Summary of Comment / Rationale:</u>
Lead concentrations in vegetation and roots/berries of 39.15 and 9.83 mg/kg dry weight are provided in Table R (Appendix W, page 37). Verify whether these values should in fact be 4.263 and 1.305 mg/kg dry weight, based on a lead soil concentration of 0.62 mg/kg and based on soil-to-plant lead transfer factors of 0.0049 and 0.015 mg lead in dry tissue per mg/kg soil, respectively.

<u>Information Request / Comment:</u>
A. Verify the dry weight concentrations of lead in vegetation and roots/berries in Table R and revise the assessment and table accordingly.

<u>Response:</u>
Updated values are provided in a revised Table R included as Table 1 in the response. The correct values for dietary intake are included in Table U. As such the HQs do not change as a result of this correction.
<table>
<tr><th colspan="6">Table 1: Exposure concentrations for plant intake by humans</th></tr>
<tr><th rowspan="2">Analyte</th><th rowspan="2">Concentration in Soil (mg/kg)</th><th colspan="2">Concentration in Plant (mg/kg dry weight)</th><th colspan="2">Human Dietary Intake (mg/kg wet weight of plant)</th></tr>
<tr><th>Vegetative</th><th>Root/Berry</th><th>Vegetative</th><th>Root/Berry</th></tr>
<tr><td>Lead</td><td>870</td><td>4.26</td><td>1.31</td><td>0.016</td><td>0.0057</td></tr>
<tr><td>Mercury</td><td>0.62</td><td>0.06</td><td>0.02</td><td>0.000154</td><td>0.0000814</td></tr>
</table></td></tr>
<tr><td>221</td><td>HE(1)-28</td><td>CEA Agency</td><td></td><td>Section 10.1.3</td><td><u>Summary of Comment / Rationale:</u></td></tr>
</table>

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
			Appendix W Table 3		A MOE point of impingement (POI) limit of 36 200 µg/m³ is provided for carbon monoxide (CO) in Table 3 (Appendix W). However, MOE (2012a) only provides a 1/2-hour POI limit of 6000 µg/m³ for CO, not 36 200 µg/m³.
					Information Request / Comment: A. Verify whether the MOE point of impingement limit for carbon monoxide should be 6000 µg/m³ and not 36 200 µg/m³, and revise the assessment and Table 3 accordingly.
					Response: The value of 36,200 µg/m³ is the 1-hour AAQC, which is the appropriate criteria to use when considering the background contribution from combustion sources.
222	HE(1)-29	CEA Agency	Appendix W Appendix C	Section 10.1.3	**Summary of Comment / Rationale:** The "Spreadsheet Tool for Human Health Detailed Quantitative Risk Assessment (DQRA)" (Meridian 2011) was used for calculating exposure and risk estimates for the screening level human health risk assessment (HHRA). Note that this spreadsheet is a contractor report and not considered official guidance since the spreadsheet contains errors and omissions.
					Information Request / Comment: A. Revise the assessment to ensure all input parameters and calculations performed with the detailed quantitative risk assessment (DQRA) spreadsheet are in accordance with current guidance on preliminary quantitative risk assessment and DQRA for chemicals (Health Canada 2010c; 2012b).
					Revised Response: As detailed in the revised response to TMI_195-HE(1)-02 and TMI_217-HE(1)-24, Treasury Metal's consultants have reviewed the DQRA spreadsheet that was used in preparing Appendix W, and have confirmed that all of the calculations used in the human health risk assessment were in accordance with current guidance on preliminary quantitative risk assessment (PQRA) and DQRA for chemicals. Where changes to the inputs and calculations were warranted, as detailed in the revised responses to TMI_195-HE(1)-02 and TMI_217-HE(1)-24, the revised calculations show that there would have been no change to the conclusions reached in Appendix W.
223	HE(1)-30	CEA Agency	Appendix W Table 7	Section 10.1.3	**Summary of Comment / Rationale:** Predicted tissue concentrations of mercury and lead were summed across four wild game species (i.e., moose, deer, hare and grouse) to provide a total concentration. Summing concentrations of a

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					substance across multiple species does not seem warranted given that concentrations of different metals are not bioavailable identically across species.
					Information Request / Comment: A. Provide a technical justification and basis for summing concentrations across multiple species to generate a total concentration. B. Explain whether using the highest tissue concentration among the four species to represent all wild game consumed may be a more appropriate approach.
					Response: The exposure assessment for ingestion of wild game is based on a common BCF based the transfer of mercury and lead from food to bovine tissue. The fact that each species considered uses on the same BCFs means that the only difference in exposure relates to the animal's exposure to individual COCs and the consumption of that species. Summing tissue concentrations across species provides a conservative maximum value for use in estimating human exposure.
224	HE(1)-31	CEA Agency	Appendix W Section 4.5.7	Section 10.1.3	**Summary of Comment / Rationale:** A total hazard quotient (HQ) of 2.69E-02 is provided for the post-closure phase of the project for the country foods assessment. This seems to be inconsistent with the sum of the lead and mercury post-closure country foods HQs as 4.9E-02 (4.19E-02 + 7.25E-03 = 0.049).
					Information Request / Comment: A. Explain the apparent inconsistency between the total hazard quotient (HQ) for the country foods assessment for the post-closure phase and the sum of the lead and mercury HQs.
					Response: The correct HQ for post-closure is 0.049 as noted by the reviewer. Although the correction does not alter the conclusions of the assessment an updated version of Table U of Appendix W is included as Table 1 to this response. .

Table 1: Hazard Quotients for Country Foods Assessment

Analyte	Wild Game (mg/kg)	Plant (veg) (mg/kg)	Plant (root/berry) (mg/kg)	Fish (mg/kg)	HQ
Operational					
Lead	1.16E-02	NA	NA	7.46E-06	1.66E-02
Mercury (1)	2.89E-03	NA	NA	4.1E-05	5.04E-02
Total					6.70E-02
Post-Closure					
Lead	2.18E-07	1.06E-02	5.71E-03	1.6E-05	4.19E-02

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Mercury (1) | 5.98E-09 | 1.54E-04 | 8.14E-05 | 5.3E-06 | 7.25E-03 Total | | | | | 4.92E-02
225	HE(1)-32	CEA Agency	Appendix W Appendix C	Section 10.1.3	**Summary of Comment / Rationale:** The detailed quantitative risk assessment spreadsheet output for Scenario 3 (Country Foods, Resident receptor, Operational phase) provides an inhalation hazard quotient (HQ) for lead of “5.77E-06”. However, the inhalation HQ for lead for this same receptor in the spreadsheet output for Scenario 1 is “1.45E-03”. As both these inhalation HQs represent the same receptor group (Resident) and project phase (Operations Phase), the reason for this discrepancy is unclear whether it is a typographical or computational error.
					Information Request / Comment: A. Provide the rationale why the inhalation HQ for lead of “5.77E-06” for Scenario 3 (operations phase) is used instead of “1.45E-03” as per Scenario 1. Indicate whether there is an error and update the assessment accordingly.
					Revised Response: Response to Original Information Request/Comment The inhalation HQ for lead of “5.77E-06” for Scenario 3 (operations phase) is used instead of “1.45E-03” as per Scenario 1 because Tetratech selected a soil concentration of 870 mg/kg for Scenario 3, and 2362.85 for Scenario 1. The 870 mg/kg is the predicted post-closure exposure point concentration, whereas 2362.85 was the operations concentration of lead in soil. The logic behind using the lower concentration for lead in the country foods assessment is stated on page 34 of Appendix W which states: *“During operations, no gathering activities would occur and foraging by animals would be minimal due to human activity at the project and fencing of the area. Therefore, this is a conservative approach to estimating tissue concentrations in terrestrial plants and animals.”* Treasury Metals recognizes that this assumption made by Tetratech results in an underestimation of potential risk to an on-site worker via the fugitive dust inhalation pathway and thereby represents a source of uncertainty. Furthermore, Treasury Metals recognizes it would have been more appropriate to assess only country foods as part of Scenario 3 and not enable the fugitive dust pathway on the input page. It is possible that this was a computational error.in the risk assessment. Treasury Metals highlights that the results obtained from RWDI air modelling indicated that the concentrations of lead in air during site preparation and construction, operations, closure and post-closure were all below the risk-based Ontario Ambient Air Quality Objective as shown in the revised COC selection for air and dust in Table 6.19.2.1-4 of the revised EIS. Therefore, as part of the revised contaminant of concern selection process presented in Section

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					6.19 of the revised EIS, lead was not carried forward for quantitative assessment via the inhalation pathway. Treasury Metals has substantially revised Section 6.19 of the revised EIS to provide a qualitative assessment of potential risk of lead in soils, water, air, and county foods and well as risk management measures that would provide sufficient risk reduction via the direct contact pathway. Section 6.19 of the revised EIS states: *"Risk management measures are required for the protection of Residents, Site Visitors and Harvesters, Subsurface Workers, and/or Outdoor Workers for select metals in waste rock or tailings via the direct contact pathway. As part of the project design, during operations, administrative risk management measures including a Health and Safety Plan will be implemented with restricted access to the waste rock storage area and the tailings storage facility. Only workers with the required health and safety training and personal protective equipment (PPE) would have access to the waste rock storage area or TSF during operations, and therefore this is an inoperable pathway for a Resident and a Site Visitor and Harvester. Furthermore, Workers (Subsurface and Outdoor) would receive sufficient risk protection via the implementation of PPE which may include long pants, sleeves, hazardous materials suit, respirator, dust mask or face shield. During post-closure the waste rock storage area and TSF will be entirely encapsulated and subsequently direct dermal contact with tailings and waste rock is an inoperable pathway.* *With these risk management measures in place, no operable pathways exist for exposure and no potential risks are identified to Indigenous and non-Indigenous human receptors (Residents, Workers, and Site Visitors and Harvesters) via direct dermal contact with COCs in waste rock and tailings as a result of the project and no further assessment is required. "* Although not required based on the results of contaminant screening process, under good construction practices the Health and Safety Plan outlined above which includes dust masks and respirators for site workers during operations, would provide sufficient risk reduction for lead via the inhalation pathway. Furthermore, Treasury Metals is aware that the toxicity reference value used to calculate the HQs for lead in Appendix W is under scientific review by both the province of Ontario and has been removed from use by Health Canada and federal custodians. Any future risk assessments completed as part of the Project (such as those described in Section 13 of the revised EIS) would use for recent guidance for the risk assessment of lead including: • For contaminant of concern selection, the MOECC recommends using the Table 1 background of 120 µg/g. The current CCME guideline for lead (140 mg/kg) was developed prior to the recognition of lead as a non-threshold chemical, and using the withdrawn toxicological reference value. By performing a simple back calculation to calculate the guideline using the federal receptor characteristics and updated TRVs, any concentrations above 103 mg/kg will result in potential risk for toddlers from lead via soil ingestion.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					• No dose averaging • Use an updated toxicity reference value. It is Treasury Metals' understanding that although not officially endorsed by Health Canada the EFSA (European Food Safety Authority) toxicity reference values for lead have been used in recent federal risk assessments without rejection by Health Canada (EFSA values in table below) • Use an acceptable HQ of 1 (protocol with non-threshold chemicals)

Lead (Pb) TRV Selection for Future Work	Route of Exposure	TRV value (Tolerable Daily Intake) (mg/kg-day)
Pb (EFSA) – toddlers and children	Ingestion	0.0005
Pb (EFSA) – adults and teenagers, nephrotoxicity	Ingestion	0.00063
Pb (EFSA) – adults and teenagers, cardiovascular effects	Ingestion	0.0015

Source: EFSA (European Food Safety Authority) 2010/2013. EFSA Panel on Contaminants in the Food Chain (CONTAM); Scientific Opinion on Lead in Food. EFSA Journal 2010, 8(4): 1570. 2013 (replaces the original 2010 document). doi:10.2903/j.efsa.2010.1570. Available at: http://www.efsa.europa.eu. Accessed February 2015.

Prior to any future risk assessment completed as part of the Project, Health Canada would be consulted regarding the toxicity reference value selected for lead.

Response to Additional Technical Question Raised by the Agency

Treasury Metals has reviewed the tissue concentrations presented in Table P (wild game) and Table T (fish) in the text of Appendix W with the DQRA Spreadsheets in the appendix of Appendix W. The wildlife concentrations input for operations and post closure in the DQRA spreadsheet are consistent with the values in Appendix P. However, there are two errors identified between Table T and the DQRA spreadsheet. The table below provides a summary of the identified errors and the implications on the conclusions made in Section 6.19 of the revised EIS.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					The CEA Agency as part of the Round 1 Information Requests (TMI_217-HE(1)-24),requested that a revised assessment be completed using total concentrations of mercury and lead (i.e., sum of baseline and incremental contributions) in fish to calculate hazard quotients, so potential health risks are not underestimated. The results of that revised assessment were included in Section 6.19.4.3 of the revised EIS. The results indicate that the baseline concentrations of mercury (and by association methylmercury) in the regional area are sufficiently high to pose potential risk to human health. The Project however was found to contribute a negligible amount (0.001–0.04%.) to the HQ identified for Total Operations and Total Post-Closure. Therefore, the errors described in the table below are not anticipated to change the overall conclusions of potential risk at baseline, and the risk management recommendation that the fish consumption advisory implemented by the MOECC be adhered to. Any future risk assessment work would be cautious not to repeat these minor errors.

Parameter	Table T Value (mg/kg wet weight)	DQRA Input Value (mg/kg wet weight)	Implication on Risk Assessment Conclusions
OPERATIONS			
Mercury	4.1 E-05	4.06 E-05	Rounding discrepancy (<1% difference between the two values). Error does not result in any changes to the overall conclusions discussed in Section 6.19 of the revised EIS.
POST-CLOSURE			
Methyl Mercury	5.3E-06	5.28 E-05	Input error. The concentration entered into the DQRA spreadsheet was one order of magnitude GREATER than value in Table T. Therefore, this is an error that conservatively overestimated potential risk and therefore does not result in any changes to the overall

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					conclusions discussed in Section 6.19 of the revised EIS.
226	HE(1)-33	CEA Agency	EIS Sections 5.11.2, 5.11.3, 6.4.2.1, 6.4.2.2, 6.4.2.3, Table 6.4.1 Appendix T	Sections 9.1.3, 9.2, 10.1.2, 10.1.3	**Summary of Comment / Rationale:** Local and regional study areas for the socio-economic environment are not clearly defined or rationalized in section 5 (EIS). The local study area for the socio-economic baseline provided in Appendix T does not take into account all of the Aboriginal groups identified in the EIS Guidelines; Whitefish Bay First Nation, Wabauskang First Nation, Métis Nation of Ontario, Aboriginal People of Wabigoon, and Grassy Narrows First Nation are not included in the baseline assessment. There is no discussion of either on or off-reserve baseline or effects to Aboriginal socio-economic conditions within section 5 or 6 (EIS). Data presented in community profiles (Appendix T) is from secondary sources only and therefore is limited to largely regional scale information. Section 5.11.2(EIS) does not describe the baseline information for the communities or groups that are in closest proximity to the project site and are most likely to be impacted (e.g., Wabigoon Lake Ojibway Nation, Village of Wabigoon and City of Dryden).
					Information Request / Comment: A. Define local and regional study area for the valued socio-economic components of the assessment, including maps depicting the location of study areas in relation to the project site. B. Include all Aboriginal groups identified in the EIS Guidelines in the study area, including both on and off-reserve populations. C. Where possible, collect data from primary sources (i.e. key informant interviews) to fully characterize existing Aboriginal socio-economic conditions that may be affected by the Project, including the Aboriginal population that resides off-reserve. Seek to collect data related to the Aboriginal populations that reside off-reserve in communities in close proximity to the Project (i.e. Village of Wabigoon, City of Dryden). D. Reassess the potential effects to Aboriginal socio-economic conditions, including a description of baseline socio-economic conditions for Aboriginal peoples (First Nations and Métis) living in the Village of Wabigoon and the City of Dryden, and update the EIS accordingly.

					Revised Response: A. Define local and regional study area for the valued socio-economic components of the assessment, including maps depicting the location of study areas in relation to the project site. The following figures in the revised EIS describe the socio-economic study areas as well as the study areas for Aboriginal Peoples. These have been attached to this IR for reference as TMI_226-HE(1)-33_Attachment 1. Figure 6.1.4.16-1: Socio-economic Study Area Figure 6.1.4.20-1: Study Areas Used for Aboriginal Peoples VCs B. Include all Aboriginal groups identified in the EIS Guidelines in the study area, including both on and off-reserve populations. All Aboriginal groups, described as Ingenous communities in the EIA have been included in the revised EIS report. Section 5.13 of the revised EIS provides traditional knowledge and information obtained via meaningful engagement with the communities identified in the EIS guidelines regarding the current use of the land and resource for traditional purposes. This information was used to select the valued components for all disciplines in Section 6. The effects of the Project on Aboriginal peoples is described in Section 6.21 of the revised EIS. A summary of all identified residual adverse effects is included in the attachment with this IR. The Indigenous communities are shown on Figure 5.13.1-1and included in the attachment for this IR. A summary of the residual adverse effects of the project is provided for EACH Indigenous community in Section 6.22 of the revised EIS using the baseline information obtained via engagement activities as presented in Section 5.13.3 for EACH Indigenous community. A discussion of on and off reserve populations demographics was also provided in Section 5.13. C. Where possible, collect data from primary sources (i.e. key informant interviews) to fully characterize existing Aboriginal socio-economic conditions that may be affected by the Project, including the Aboriginal population that resides off-reserve. Seek to collect data related to the Aboriginal populations that reside off-reserve in communities in close proximity to the Project (i.e. Village of Wabigoon, City of Dryden). For the revised EIS, data regarding existing Aboriginal socio-economic conditions has been collected from primary sources (See engagement logs and Section 9 of the revised EIS report) and from secondary sources (2016 Census, Canadian Mental Health Association and peer-reviewed journal articles). For secondary sources, preference was given to the studies where the data was collected based on interviews with members of Indigenous communities, i.e. primary sources or “key-informant” interviews. The data collected from the 2016 census characterizes the % of First Nations, Metis, and Inuit residing in the key areas surrounding the project site in Ontario to account for those residing on

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					and off-the reserve. Section 5.12 presents socio-economic data in the context of the general public and Section 5.13 is specific for those who identify as having an Aboriginal identity as define by the Government of Canada. The traditional knowledge incorporated into each of the 20 disciplines in Section 5 was obtained via engagement activities between the Indigenous communities identified in the EIS guidelines and Treasury Metals. A summary of all engagement is provided in Section 9 of the revised EIS, and in Appendix V (general public) and Appendix DD (Indigenous communities). D. Reassess the potential effects to Aboriginal socio-economic conditions, including a description of baseline socio-economic conditions for Aboriginal peoples (First Nations and Métis) living in the Village of Wabigoon and the City of Dryden, and update the EIS accordingly. A reassessment of potential effects to Aboriginal peoples include socio-economic effects was performed as part of the revised EIS. Baseline socio-economic conditions are provided in Section 5.13 of the revised EIS. The residual effects on Aboriginal peoples are presented in Table 6.21.6-1 Aboriginal Peoples Residual Effects of the revised EIS and attached to this IR for Reference as TMI_226-HE(1)-33_Attachment 1. Socio-economic Factors was a valued component used in the assessment of effects on Aboriginal peoples in the revised EIS.
227	HE(1)-34	CEA Agency	EIS Sections 5.11.2, 5.11.3, 6.4.2.1, 6.4.2.2, 6.4.2.3, table 6.4.1 Appendix T	Sections 9.1.3, 9.2, 10.1.2, 10.1.3	**Summary of Comment / Rationale:** Section 6 (EIS) does not quantify potential population increases. Increases in population may result in increased hunting and fishing pressure, resulting in potential environmental effects that reduce the availability of resources for Aboriginal land and resource use. Therefore, sufficient information regarding local workforce availability, as well as workforce requirements for each phase of the Project is needed to adequately characterize potential effects to the environment from increased population. Section 3 (EIS) does not provide any details with regards to transportation components of the Project. The 'Land and Resource Use' paragraphs of section 6.4.2.1 (EIS) states: "The residual effect [to traffic] is predicted to be not significant based on the improved access and reduced travelling time to and from the site." It is unclear how the Project will improve access or reduce travel time. Without a clear description of the potential effects to traffic (i.e. route, number, type, frequency of additional vehicles), the significance of the adverse environmental effects related to traffic (e.g., air quality, noise, wildlife mortality, land and resource use) cannot be determined.
					Information Request / Comment:

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					A. Quantify potential environmental effects from population and traffic increases from the project including references to primary or secondary data sources which support conclusions. B. Assess potential impacts to current use of lands and resources from potential environmental effects related to increases in population and traffic (e.g., air quality, noise, water quality and quantity, vegetation, fish and fish habitat, wildlife).
					Response: A. As noted in the original EIS (Section 6.4.2.2) there exists the possibility of some in-migration to the regional study area in terms of job seekers and their families. The workforce requirements during construction are estimated to be 450 over a two-year period, with a steady-state operations workforce of approximately 250 individuals. The population in the socio-economic study area has experienced a pattern of out-migration of its young people, a pattern which has continued in the City of Dryden (Appendix T, p. 56). The creation of new employment opportunities through the Project may result in retention of some of the region's young people who may have otherwise chosen to leave their home communities in search of employment elsewhere. Further, Treasury has committed to develop and implement employment practices that give preference to local and regional labour where possible (EIS, p. 6-45). To support engaging the local and regional workforce in Project-related employment to the extent practicable, Treasury has committed to the development of training programs for unemployed and underemployed persons (EIS, p. 6-41). Overall, the increase in regional population as a result of the Project is expected to be small in comparison to the existing population, which will be mitigated further by the commitments to give preference to local and regional labour where possible. This slight increase will go some way to offset the general decline in the regional population resulting from out-migration of young people searching for opportunities elsewhere. On balance, there is not expected to be a measurable increase on the hunting and fishing pressure in the region given the relatively small workforce for the Project, coupled with the decline in regional population. Although Section 3 of the original EIS provides limited information of the potential traffic effects of the Project, Treasury Metals did commission a comprehensive Traffic Impact Study (included as Appendix E to the EIS). This study contained baseline traffic information as well as an assessment of the Project's potential effects on traffic. The Study determined that the peak hours for traffic to/from the Project site will not overlap with existing baseline peak hours for Highway 17 traffic flows; and with the additional anticipated Project-related traffic the existing level of service (LOS) will be maintained on Highway 17 and Anderson Road. Appendix E also includes a model analysis for total traffic conditions for anticipated levels of Project-related traffic during construction and operations phases considering the volume to capacity ratio for both Highway 17 and Anderson Road.

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					The detailed Traffic Impact Study (Appendix E to the EIS) demonstrates that the Project will not measurably affect travel times along Highway 17. Treasury Metals has committed to develop and implement a Transportation and Access Management Plan which will address potential Project traffic-related effects. Treasury will also establish and enforce traffic safety protocols, regulatory and cautionary signage, road maintenance and emergency response plans on all Project roads to prevent collisions and accidents. The detailed Traffic Impact Study (Appendix E to the EIS) also demonstrated that the daily traffic volumes associated with the Project are relatively small when compared to the existing volumes along Highway 17. These volumes are not expected to change the air quality or noise levels along the highway to an extent that would be noticeable or affect current or traditional uses of the land. B. The potential changes in traffic and population associated with the Project are not expected to have an appreciable effect on the environment, or the availability of resources for current and traditional uses of the lands by Aboriginal peoples and other stakeholders in the region.
228	HE(1)-35	CEA Agency	EIS Sections 6.4.2.3, 14	Sections 9.1.3, 10.1.2	**Summary of Comment / Rationale:** Section 6.4.2.3 (EIS) focuses only on positive economic effects to the public. Additional valued components are needed to assess the effects of changes to the environment from the Project on Aboriginal socio-economic conditions. For example, direct changes to the environment from the Project (e.g., air quality, noise, water quality and quantity) may cause potential adverse socio-economic effects to Aboriginal property values, tourism establishments (e.g. outposts, camps, motels, guiding operations), recreation activities (e.g. Lola Provincial Park, Butler Park, and Aaron Provincial Park) and other resource-based commercial operations (e.g. wild rice harvesting, chanterelle harvesting, baitfishing, trapping, hunting forestry). Valued components should be revisited in consultation with potentially affected groups. For example, based on input provided by Wabigoon Lake Ojibway Nation, consider wild rice as a valued component due to economic value. Aboriginal groups have also identified baitfishing within the project site. This activity has not been included or addressed in Section 6 (EIS). Section 14 (EIS) concludes that the Project will provide an economic net benefit to the local, Aboriginal, regional, and provincial economies; however, this conclusion is not supported by technical supporting documentation or references (e.g. no economic model completed). In addition, the preliminary economic assessment (Appendix BB) results have not been integrated into the EIS (section 6). Section 6 is limited to an assessment of economic development at the provincial level. During Agency consultation activities, concerns were raised from Aboriginal groups and members

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					of the public about effects to Aboriginal social conditions (i.e., quality of life and community character) from direct environmental changes of the Project (i.e. air quality, noise, dust, light and visual changes to the landscape). While potential effects to local ambience are identified in section 6 (EIS), they are not completely discussed or adequately characterized using measurable indicators.
					<u>Information Request / Comment:</u> A. Define valued components to assess potential adverse socio- economic effects to Aboriginal peoples from environmental changes of the Project. Aboriginal socio-economic conditions include to property values quality of life and community character, tourism, recreation, and resource-based commercial operations. B. Collect data from primary sources (i.e. key informant interviews) to fully characterize existing Aboriginal socio-economic conditions that may be affected by the Project, including, but not limited to, Aboriginal businesses and commercial operations, Aboriginal recreation activities. Aboriginal businesses and commercial operations may include tourism, recreation and resource-based commercial operations (e.g. commercial baitfish operators, sustainable forestry license holders, bear management area operators, and the local trapper's council). C. Identify mitigation measures for potential effects to Aboriginal socio-economic conditions. D. Utilize data to quantify, where possible, potential effects to local and regional economic conditions. Reference primary or secondary data sources which support conclusions. Provide economic modeling which substantiates conclusions identified in the EIS.
					<u>Revised Response:</u> Part A. The revised EIS sets out the assessment of effects and impacts associated with the Project in a clear and traceable manner. The Table below is an excerpt of Table 6.1.3.20-1: Aboriginal People VCs, Indicators, and Measures of the revised EIS. The excerpt specifically shows the answer to Part A, "Define valued components to assess potential adverse socio- economic effects to Aboriginal peoples from environmental changes of the Project". Treasury Metals note that their EIs guidelines stated to use the term measure rather than the term effect, however they mean the same thing as per conversations with the Agency.

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					A summary of Aboriginal People VCs, Indicators, and Measures is included as TMI_228-HE(1)-35_Attachment 1. Potential effects of the project on aboriginal peoples are assessed in Section 6.21.1 of the revised EIS using the VCs and indicators described in the attached Table (Table 6.1.3.20-1: Aboriginal People VCs, Indicators, and Measures in the revised EIS) . Predicted effects, identified mitigation, and residual effects on aboriginal peoples are assessed in section 6.21.4, 6.21.5, and 6.21.6, respectively of the revised EIS. Part B: Treasury Metals has made overtures to each community and collated all biophysical and traditional values/land and recourse use information within the EIS to date. This information in turn has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. All information received via engagement has been formally captured within the Stakeholder Engagement Report which is included in the revised EIS as appendix DD and summarized in Section 9 of the revised EIS. Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment) i.e. 5.1 climate, 5.2 air quality, 5.3 noise and light, 5.4 geology, 5.5 terrain and soil, 5.6 hydrogeology, 5.7 surface hydrology, 5.8 aquatic resources, 5.9 terrestrial resources, 5.10 migratory birds,5.11 species at risk, and 5.12 human environment; • Traditional land and resource use is discussed for each Indigenous community including in Section 5.13.3; • Section 13.2 was added in the EIS revision process to capture the 2016 Census Data published by Statistics Canada and includes information regarding population demographics, education levels, income and work force status, and crime and justice. These statistics in 13.2 are specific to members of the indigenous communities in areas surrounding the project. Population demographic data are provided for the general public in Section 5.12. • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Aboriginal peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential to the selection of valued components (VCs) as discussed in Section 6.1.3 of the revised EIS. • All engagement activities to date are summarized in Section 9 of the revised EIS and provided in detail in Appendix DD. Engagement logs for all indigenous communities are attached to Appendix DD.

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					• The executive summary has been updated to reflect the meaningful engagement activities with indigenous communities. In addition, in developing the Socio-economic Baseline Report (Appendix T), Treasury Metals' consultant (gck Consulting) engaged in discussions with a variety of organizations in an effort to verify data during the research and report development. The participating organizations included, but are not limited to: • Dryden Development Corporation; • Dryden Police; • Ontario Provincial Police; • Dryden District of the Ontario Ministry of Natural Resources and Forestry (MNRF); • Keewatin-Patricia District School Board; • Northwest Catholic District School Board; • Township of Ignace; • Municipality of Sioux Lookout; • Eagle Lake First Nation; • Ontario Ministry of Northern Development and Mines (MNDM); • Lac Seul First Nation; and • Municipality of Machin. Treasury Metals recognizes the importance of establishing comprehensive community baseline information to support future monitoring and management, including optimization, of potential Project-related effects. Part C. Identified mitigation measures for socio-economic effects on aboriginal peoples are identified in Section 6.21.5 of the revised EIS. They include (but are not limited to) updating baseline studies and a plan to incorporate this as a component in future monitoring and management plans. Part D. Section 5.12 and 5.13 were revised as part of the EIS revision process to provide a baseline regional and local economic conditions which therefore could be relied upon in Section 6 for assessing the potential effects of the project on local and regional economic conditions. Furthermore, Section 11 provides information regarding benefits to Canadians A summary of the identified benefits to Canadians is provided in Table 11.0-1. Table 11.0-1: Benefits to Canadians

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Discipline	VCs	Benefit to Canadians
Land Use	Cottagers and Outfitters	Outfitters may experience an increase in clientele related to the need for accommodations, which could be viewed as a positive economic effect to the outfitter.
Aboriginal Peoples	Labour Force, Labour Participation and Employment	During the construction and operations phases of the Project, there will be a demand for trained workers, and training opportunities will be available locally and regionally.
	Business Opportunities	The demand for services at the mine site will generate opportunities for Indigenous business and joint-venture enterprises
	Generalized socio-economic Effects	The demand for employees, goods and services will increase in the general study area during the construction and operations phases, creating employment and business spin-off benefits to Indigenous communities.
Economic Factors	Labour Force, Labour Participation and Employment	Site preparation and construction and operations will create a demand for workers, and increase employment and labour income in the Project area.

						Income Levels	During site preparation and construction and operations, employment from the Project will increase the labour income in the Project area.
						Real Estate	During the site preparation and construction and operations phases, workers moving into the Project area may cause an increase in the demand for housing, and therefore affect real estate prices.
						Economic Development	During site preparation and construction and operations, employment and purchasing from the Project will increase government tax revenues, which could be used for local development.
						Existing Businesses	During site preparation and construction and operations, the Project will increase the Project area demand for goods and services from local businesses, including from Indigenous businesses. This could be direct purchasing by Treasury Metals, or by the Project employees.
						Government Revenues	During site preparation and construction and operations, there will be an increase in government revenues through the payment of Project-related business and employment taxes.

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					<table><tr><td rowspan="2">Social</td><td>Education</td><td>Treasury Metals will provide opportunity for training and education opportunities for unemployed and under-employed residents and non-resident workers. It is anticipated that any increase in training would be able to be accommodated within existing education and training facilities.</td></tr><tr><td>Housing and Property Values</td><td>There is potential for an increase in property values with increased income levels.</td></tr></table>
229	HE(1)-36	CEA Agency	EIS section 5.4.3.5	Sections 9.1.2, 10.1.3, 11.2, 11.3	**Summary of Comment / Rationale:** Section 5.4.3.5 (EIS) indicates that the waste rock storage area (WRSA) will have a maximum vertical stack height of 20 m. The section states that "...current design criteria suggest ....that the vertical stack height will be limited to reduce the potential visual impact for neighboring residents." It is unclear what the height limit will be in order to reduce potential visual impact. Aboriginal peoples and members of the public mentioned impacts of the view of their use and enjoyment of Thunder Lake require analysis. The proponent should describe more precisely with text and figures how the WRSA will appear to Aboriginal peoples and the public from various vantage points, including from Thunder Lake.
					Information Request / Comment: A. Clarify what the height limit will be in order to reduce potential visual impact. B. Provide a comparative analysis including a description of how the waste rock storage area will appear from various vantage points throughout the various phases of the Project using both text and figures drawn to scale. Vantage points from Thunder Lake should be included in the analysis.

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					C. Identify and demonstrate how mitigation measures will reduce potential impacts to Aboriginal peoples, including current use of lands and resources for traditional purposes, physical and cultural heritage, and socio-economic conditions.
					<u>Revised Response:</u> A. Since the filing of the original EIS, Treasury Metals have revised the overall design of the Project to help minimize effects, which includes modifying the design of the aboveground features (i.e., waste rock storage area (WRSA) low-grade ore (LGO) stockpile, and the overburden stockpiles). Of these features, the WRSA is the "tallest" feature on the site. The design of the waste rock storage area (WRSA) was modified since filing the original EIS to reduce the overall footprint, which resulted in a corresponding increase in the maximum estimated height of the WRSA estimated to approximately 30 m (Section 3.5.1 of the revised EIS). The overburden stockpile, the footprint of which has been modified to avoid the bed of Blackwater Creek Tributary 1, will have a maximum height of 20 m (Section 3.5.2 of the revised EIS). The LGO stockpile will be no higher than 10 m (Section 3.5.3 of the revised EIS). Only the WRSA will remain following the closure of the Project, as the LGO stockpile will be decommissioned at the end of operations, and the overburden stockpiles will be fully used for reclaiming the site during the closure phase (Section 3.14 of the revised EIS). A GIS modelling exercise completed for the Project has confirmed the revised WRSA would be visible beyond the site. B. A GIS modelling exercise for the Project has identified that only the WRSA would be visible beyond the site. Figures 6.2.4.1-1 and 6.2.4.1-2 of the revised EIS show cross sections through the waste rock storage area (WRSA) along two line-of site from vantage points on Thunder Lake. These figures are included as TMI_229-HE(1)-36_Figure_1 and TMI_229-HE(1)-36_Figure_2. The GIS modelling identified that the WRSA would only be visible from portions of Thunder Lake, as illustrated in Figure 6.2.4.1-3 of the revised EIS (included as TMI_229-HE(1)-36_Figure_3). Although visible from portions of Thunder Lake, the WRSA would be difficult to distinguish from the surrounding area, especially once the WRSA is capped and vegetated following closure. How the WRSA would appear from someone on Thunder Lake is illustrated in Figure 6.2.4.1-4 of the revised EIS (attached as TMI_229-He(1)-36_Figure 3), and shown below in Figure 1 (current conditions), Figure 2 (fully developed WRSA prior to placement of a vegetated cover) and Figure 3 (fully developed WRSA with a vegetated cover). While Figures 2 and 3 illustrate that the WRSA is visible from Thunder Lake, they also show that the presence of the WRSA does not extend above horizon of other existing features in the views, nor does the presence of the WRSA alter the nature of the horizon.

					Figure 1: Current View from Thunder Lake  Figure 2: View of WRSA from Thunder Lake (prior to vegetated cover) 

					Figure 3: View of WRSA from Thunder Lake (with vegetated cover)  C. Treasury Metals has detailed the avoidance and mitigation measures used to reduce the potential effects of onsite structures the use and enjoyment of Thunder Lake by Aboriginal peoples and members of the public. As part of the overall mitigation strategy, Treasury Metals plans to implement the following to mitigate potential impacts of onsite structures: • During the initial stages of mining the open pits, waste rock will be placed in the waste rock storage area (WRSA), located immediately to the north of the open pit (Section 3.5.2 of the revised EIS). The height of the WRSA will be limited to a maximum of 30 m above the highest terrain on the site. The has proposed to use an overall slope of 3:1 (horizontal to vertical) for the WRSA to maintain a more natural looking slope. Further to this, Treasury Metals has also proposed a program of constructions and progressive reclamation in which the WRSA construction and revegetation is initiated on the western edge as soon as possible. This affords a benefit to the mitigation of effects on the surrounding areas in that it provides covering and revegetating the WRSA western slope to create a natural looking feature when viewed from Thunder Lake. Once mining has finished in the westerly open pit, Treasury Metals will start placing waste rock in the mined out areas of the open pit. This will limit the height and extent of the WRSA that is above grade. • The overburden stockpiles will be constructed to a maximum height of 20 m above grade (Section 3.5.2 of the revised EIS), and will be completely removed during the reclamation of the site during the closure phase (Section 3.14 of the revised EIS). The GIS modelling

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					completed for the Project confirms the overburden stockpiles would not be visible from Thunder Lake. • The low grade ore (LGO) stockpile will be limited to a maximum height of 10 m during the operations phase (Section 3.5.3 of the revised EIS). At the end of operations, any materials remaining in the LGO stockpile will be removed and placed with the waste rock in the mined out sections of the open pit (Section 3.14 of the revised EIS). The GIS modelling completed for the Project confirms the overburden stockpiles would not be visible from Thunder Lake. An evaluation of the potential effects of the onsite structures on the natural landscapes VC is provided in Section 6.2 (Terrain and Soils) of the revised EIS. The assessment describes that the mitigation measures implemented at the Project limit the height of the overburden stockpiles and LGO stockpile such they are not visible beyond the Project, and would not be visible to Aboriginal peoples of members of the public using Thunder Lake, thereby avoiding any impacts that views of these onsite features could have on use and enjoyment of Thunder Lake, including the use of Thunder Lake for use of lands and resources for traditional purposes. The assessment, which included the results of a GIS modelling exercise, identified that the fully developed WRSA would be visible from Thunder Lake, and could affect its use and enjoyment, including the use and enjoyment for traditional purposes by Aboriginal peoples. Therefore, the assessment of the effects of the Project on Aboriginal peoples presented in Section 6.21 of the revised EIS explicitly considers the potential effects of views of the WRSA on the uses of the lands by Aboriginal peoples for traditional purposes. These effects are captured using the “diminished on-the-land experience” indicators for the “gathering of plant materials”, “hunting and trapping”, “fishing” and “cultural and spiritual” VCs described in Section 6.1.3.20 of the revised EIS. Even with mitigation measures in place, residual effects remained associated with the views of the WRSA from Thunder Lake. on the onsite structures Although visible from portions of Thunder Lake, the GIS modelling and visualization illustrates the WRSA would be difficult to distinguish from the surrounding area, especially once the WRSA is capped and vegetated following closure. This was shown illustrated in Figure 6.2.4.1-4 of the revised EIS, and shown above in Figure 1 (current conditions), Figure 2 (fully developed WRSA prior to placement of a vegetated cover) and Figure 3 (fully developed WRSA with a vegetated cover) of this revised response.
230	HE(1)-37	CEA Agency	EIS Section 6.4.2	Sections 9.1.3, 10.1.2	**<u>Summary of Comment / Rationale:</u>** Definitions for characterization of magnitude provided in Section 6.1.3 (EIS) have not been applied appropriately across valued socio-economic components. For example, section 6.4.2.2 (EIS) states: “The residual effects have been categorized as Level I for magnitude (might or might not be detectable, but is within the normal range of variability)". This is not consistent with the definition of

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					Level 1 effects provided in section 6.1.3 (EIS): "no measurable residual effect". Based on the definitions in section 6.1.3 (EIS), magnitude should be characterized as Level II "residual effect is measurable but within range of natural variation". If magnitude is characterized as Level II, the decision tree must be reapplied to determine the significance of adverse effects. Further, no scientific or technical basis is provided to support characterization of residual effects. The method to determine geographic extent of effects is not clear as study areas are not clearly defined in the EIS. Each level used to characterize residual effects for the valued socio-economic components needs to be clearly defined. For example, Magnitude – Level II was defined as "Residual effect is measurable but within range of natural variation". In section 6.4.2.1 (EIS), residual effects to local ambience and traffic are characterized as level 1 - might or might not be detectable, but is within the normal range of variability. It is unclear how this score was applied, as effects due to air quality, noise, vibration, traffic and decreased aesthetics associated with the Project would not occur normally (i.e. without the Project). Also unclear is how effects are reversible in the long term as visual changes to the site will be permanent.
					Information Request / Comment: A. Explain how natural variation was defined for socio-economic valued components. B. Revise determination of significance analysis based on definitions provided in section 6.1.3 of the EIS. C. Substantiate the characterization of residual effects by applying traceable technically valid methodology, including references to primary or secondary data sources which support conclusions.
					Revised Response: A. In order to effectively address the issues and concerns raised through the responses to Round 1 questions, Treasury Metals has prepared a revised EIS. As part of the revisions, Section 6 (effects assessment) and Section 8 (determination of significance) were updated to incorporate the Agency and other reviewer concerns. The revised magnitude characterization for human environment disciplines can be found in Section 8.1.1.15 (Land Use), Section 8.1.1.16 (Social),

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					Section 8.1.1.17 (Economic), Section 8.1.1.18 (Human Health), Section 8.1.1.19 (Heritage Resources) and Section 8.1.1.20 (Aboriginal Peoples). B. As stated in the response to Part A, the determination of significance has been updated in Section 8 of the revised EIS. The revised determination of significance relies on the methods and definitions set out in Section 8.1 of the revised EIS, specifically in the following sub-sections: • Magnitude: Section 8.1.1 of the revised EIS; • Geographic Extent: Section 8.1.2 of the revised EIS; • Timing: Section 8.1.3 of the revised EIS; • Duration: Section 8.1.4 of the revised EIS; • Frequency: Section 8.1.5 of the revised EIS; • Reversibility: Section 8.1.6 of the revised EIS; and • Likelihood: Section 8.1.7 of the revised EIS. C. A determination of significance was completed for each of the disciplines for which residual adverse effects were predicted to occur. The determination of significance, presented in Section 8 of the revised EIS, describes the residual effects advanced for assessment, clearly sets out the how the various assessment measures (magnitude, geographic extent, timing, duration, frequency, reversibility) were assigned. Two separate, and historically valid approaches (reasoned hypothesis and decision tree) were then used to determine the significance of the residual effects.
231	HE(1)-38	CEA Agency	EIS Sections 5.11.5.1, 5.11.5.2, Tables 5.11.8, 5.11.9 Appendix DD	Sections 2.3, 9.1.3, 9.2, 10.2, 11.2, 11.4	**<u>Summary of Comment / Rationale:</u>** According to Aboriginal groups and government reviewers, Treaty 3 was misinterpreted in section 2.1 (Appendix DD). Section 9.2 of the EIS Guidelines states that the proponent is required to engage with Aboriginal groups whose potential or established Aboriginal or Treaty rights and related interests may be affected by the Project. Additionally, section 2.3 of the EIS Guidelines states that Aboriginal persons involved must be provided with access to relevant information that allows them to understand the proposed project and to determine its impacts on their rights and interests. The proponent is not required to determine rights through the environmental assessment but rather, as identified in section 10.2 of the EIS Guidelines, to identify and assess potential adverse impacts of the Project on Aboriginal and Treaty rights and related interests. The proponent should refrain from interpreting Treaty rights in the EIS. Currently potential impacts to treaty rights are discussed in Appendix DD. While some information has been integrated into the baseline and effects assessment (sections 5 and 6 of the EIS), the proponent has not sufficiently integrated and addressed potential impacts to Aboriginal peoples in the EIS. The summary of engagement activities should include:

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					- activities conducted with each group; - an overview of key comments and concerns by each group and responses provided to issues identified; - where and how Aboriginal traditional knowledge or other Aboriginal views were incorporated into the consideration of environmental effects and potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests; and - future planned engagement activities. The assessment of adverse impacts should consider both access to lands and resources used for the exercise of rights and the availability of resources important for the exercise of rights. The assessment should also consider impacts to cultural sites and heritage resources important for the exercise of rights. The baseline description of Aboriginal peoples, including Aboriginal land and resource use in the project area, provided in section 5 (EIS) does not fully and adequately address the requirements outlined in the EIS Guidelines. The EIS Guidelines state that the EIS should "Summarize available information on the potential or established Aboriginal and Treaty rights and related interests of the named Aboriginal groups that have the potential to be adversely impacted by the project…In describing current uses of land and resources by Aboriginal groups for traditional purposes, the proponent will include activities related, but not limited, to hunting, fishing, trapping, cultural and other traditional uses of the land (e.g. collection of medicinal plants, use of sacred sites). Potential effects on current uses include access to areas that are of importance or concern to Aboriginal groups." Information on and assessment of potential impacts to Aboriginal or Treaty rights also serves to inform the assessment of effects on Aboriginal peoples, pursuant to section 5(1)c of CEAA 2012.
					<u>Information Request / Comment:</u> A. Revise text to remove interpretation of Treaty rights. B. Integrate existing information pertaining to potential impacts to Aboriginal peoples, including land and resource use, into the description of baseline conditions and effects assessment sections in the EIS. C. Collect baseline information related to potential impacts to Aboriginal peoples by the Project from primary (potentially affected Aboriginal groups) and secondary sources (i.e., community and

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					organization websites, existing government reports, case law, etc.), including but not limited to: - maps and background information of each potentially affected groups' traditional territory; - geographic extent of practices , including maps showing: o Areas uses for hunting, fishing, trapping and harvesting practices (e.g. hunting camps, cabins, harvesting, fishing and trapping areas) o Waterways or land travel routes traditionally used for traditional practices - nature of practices, including: o Hunting, fishing, trapping, and harvesting practices o Wildlife species of importance for hunting, fishing, and trapping practices (including, but not limited to, waterfowl, ruffed grouse, moose, etc.) o Plant species of importance including for berry and plant harvesting (including, but not limited to, wild rice, blueberries and chanterelle mushrooms) o Cultural and other traditional uses of the land (e.g. collection of medicinal plants, use of sacred sites, annual gathering, meeting and teaching grounds) - frequency of practices, including data sets (e.g., fish catch numbers, harvest data by species); and - timing of practices exercised within recent memory. D. Provide documentation of baseline information identified by each group specifically.
					Revised Response: A. The text in the original EIS that interpreted Treaty Rights has been removed from the revised EIS. For the purposes of the EIS, Aboriginal and Treaty Rights are defined as the historic and current uses of lands and resources for traditional purposes by members of Indigenous communities. B. Information pertaining to potential impacts to Aboriginal peoples, including land and resource use including information obtained through engagement to date summarized in Section 9, has been incorporated into the description of baseline conditions for all 20 disciplines in Section 5. Information obtained regarding the current use of the land and resources for traditional purposes by each Indigenous community is included in Section 5.13.3 of the revised EIS. Part C: Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities via meaningful engagement activities has been incorporated into each subsection of Section 5 (Existing

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Environment) (i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community including in Section 5.13.3; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Aboriginal peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential to the selection of Valued Components (VCs) as discussed in Section 6.1.3 of the revised EIS. • All engagement activities to date are summarized in Section 9 of the revised EIS and provided in detail in Appendix DD. Engagement logs for all indigenous communities are attached to Appendix DD. • The executive summary has been updated to reflect the meaningful engagement activities with all Indigenous communities. D. Since the time of the original EIs a number of meaningful engagement activities have occurred, and those that had occurred previously have been better presented. A summary of all engagement related activities is included in Section 9 of the revised EIS and full details including engagement logs are provided in Appendix DD.
232	HE(1)-39	CEA Agency	EIS Section 5.11.5.2, Tables 5.11.8, 5.11.9	Section 9.2	**<u>Summary of Comment / Rationale:</u>** Section 5.11.2 (EIS) states: “The mine site area is fully enclosed within Wildlife Management Unit (WMU) 8; WMU 5 and WMU 9A are within the LSA. Trapping locations within the LSA include Trap lines DR026, DR027, and DR021. Current numbers for active hunters within the region are detailed in Table 5.11.8 and Table 5.11.9.” The tables detailing hunting activity in WMU 8 do not align with the section’s intent. Section 5.11.5 (EIS) is titled Aboriginal Peoples and the information in the tables comes from recreational hunters who are not necessarily Aboriginal. Similarly, for trapping references, the trapline numbers align with commercial trappers but Aboriginal subsistence trapping does not need to occur on a registered trapline. To meet the section’s intent, more pertinent information on Aboriginal hunting and trapping within the project area is required. **<u>Information Request / Comment:</u>** A. Ensure that baseline data are accurately presented and clearly identify data limitations and gaps. See IR above for specific data requirements for Aboriginal land and resource use.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Response: Traditional and non-Traditional land use information are integrated into various areas of the original EIS and its appendices. Treasury Metals has consolidated the information on Traditional Land Use and non-Traditional Land Use into Appendix DD (the Aboriginal Engagement Report). Efforts to obtain relevant information the affected Aboriginal peoples are documented in the Aboriginal Engagement Report. Treasury Metals will continue to discuss potential Projects on traditional land use activities, including subsistence trapping, with potentially affected Aboriginal communities throughout the life of the Project. Should additional information regarding an Aboriginal community's traditional practices become available, Treasury Metals will review and consider any potential effects, and develop and implement necessary mitigation measures in Project plans and operations as appropriate.
233	HE(1)-40	CEA Agency	EIS Figures 5.11.1 and 5.11.2	Section 9.2	**Summary of Comment / Rationale:** References for land-use information (e.g. known fishing, minnow trapping, Chanterelle mushroom harvesting, and blueberry harvesting area) presented in Figures 5.11.1 and 5.11.2 (EIS) are not clear. Aboriginal groups have also identified that the information is incomplete.
					Information Request / Comment: A. Provide references for all data that are depicted in Figures 5.11.1 and 5.11.2, and clearly identify data limitations.
					Revised Response: Figures 5.12.1.1-1 and 5.12.1.1-2 of the original EIS are located in the Land Use section (Section 5.12.1) of the existing environment description. These figures, which are now in the description of existing land use, are included as Figures 5.12.1.1-1 and 5.12.1.1-2 of the revised EIS, and are also included in the Country Foods Assessment (Appendix EE to the revised EIS). The data used was sourced from the Ontario Base Map Index, and the Land Information Ontario (LIO) Warehouse. The data was then selected for the regional and local site, and Forest Resource Inventory data was interpreted for habitat characteristics that are associated with the select properties of the map. Additionally, locations on the map were also based on local and regional residents visiting the site and signing in at the front gate before going to collect country foods. The data gathered represented information from both Aboriginal and non-Aboriginal peoples, but has not been attributed to members of any individual Indigenous community. Text has been added to the Section 5.12.1 of the revised EIS to clearly state where the information in the figures was sourced and that it represents both Aboriginal and Non-aboriginal country food collection. The

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					current use of land and resources for traditional purposes by Indigenous peoples including for country foods is specifically discussed in Section 13.3 of the revised EIS. A summary of the available information regarding the traditional land use in the area by members of the Indigenous communities identified in the EIS Guidelines has been provided in Section 5.13.3 of the revised EIS.
234	HE(1)-41	CEA Agency	Appendix DD	Section 9.2	**Summary of Comment / Rationale:** Fishing practices within the project area have been identified by Aboriginal groups to the Agency. Inconsistencies are present throughout Appendix DD in regard to fishing practices. For example section DD.5.1.2.4 states: "As there is no existing opportunity to fish on the Goliath Gold Project site, the development of the project will not result in any on site impacts to fishing." Then section DD.5.1.2.7 states: "Treasury has received some individual requests from persons wishing to trap minnows in the ponds adjacent to the Treasury offices. These ponds were created by the damming of a creek flowing past the former OMNRF Tree Nursery for the purpose of providing irrigation water to the tree nursery. In all cases, access to these ponds to trap minnows has been provided during business hours." The proponent must ensure that Aboriginal land and resource use activities identified by Aboriginal groups are accurately captured in the EIS and appropriate mitigation measures are identified where impacts are expected on Aboriginal land and resource use activities.
					Information Request / Comment: A. Identify and describe Aboriginal land and resource use activities identified by Aboriginal groups that could be affected by the Project. B. Identify mitigation measures where impacts are expected on Aboriginal land and resource use activities.
					Revised Response: A. Appendix DD has been entirely revised as part of the revised EIS submission, Treasury Metals recognizes that Indigenous people live, work, hunt, fish, trap, and harvest throughout their lands and rely on them for their individual as well as their communities overall cultural, social, spiritual, physical, and economic well-being. Further to this Treasury recognizes that these lands are inextricably connected to a communities identify and culture, inclusive of ceremonial and spiritual recognition. Treasury in respect to this recognizes the importance of assessing any impact as it relates to traditional land use activities and practices, and protection of spiritual and ceremonial aspects. Treasury Metals acknowledges that the Project may impact these availability or practices

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					within the Project area, and is committed to working with all communities to identify, mitigate, and avoid these respective aspects. Treasury Metals has made overtures to all designated communities all biophysical and traditional values and land use information within the EIS to date including those aspects relating to heritage, spiritual and ceremonial aspects. This information has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. All information received via engagement has been formally captured within the Stakeholder Engagement Report which is included in the revised EIS as Appendix DD and summarized in Section 9 of the revised EIS. Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous has been incorporated into each subsection of Section 5 (Existing Environment(i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community including identified heritage, spiritual and ceremonial resources is presented within Section 5.13; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Indigenous peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential as part of the Valued Component selection process outlined in Section 6.1.3 of the revised EIS. Treasury Metals has revised the EIS to reflect the valued traditional land and resource use information shared by communities to date and will continue to work with this community to ensure that any potential impacts of the project on their traditional land and resource use are properly mitigated. Further to this based on the traditional knowledge and traditional land and resource use knowledge shared by all Indigenous communities the additional information obtained from the traditional knowledge/land use study (TKLUS) is not anticipated to result in substantial changes to the EIS, given the conservative approach already employed in the assessment of the effects of the project on Indigenous communities. Treasury Metals welcomes ongoing engagement and information it will further the understanding of traditional land and resource use and assist in ongoing monitoring and mitigation of potential effects with respect to the Project. B. The effects of the project on the ability of each Indigenous community to practice their traditional land and resource uses have been assessed in Section 6.22 of the revised EIS. Where a potential effect ash been identified, Treasury Metals has presented mitigation measures, and as per the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Agency's recommendation, Treasury Metals has also offered an opinion of the magnitude of the potential effect. For example as stated during engagement activities, members of the Wabigoon Lake Ojibway Nation indicated that they harvested blueberries in the area of the project site where the TSF is proposed. Treasury Metals has offered guided access to other areas of the project site where blueberries grow to offset the impact of losing this berry patch. Therefore, it is Treasury Metals' opinion that this impact on the ability of Wabigoon Lake Ojibway Nation to practice their traditional land use of picking blueberries in the area of the proposed TSF is not substantial and other berry patches are available.
235	HE(1)-42	CEA Agency	EIS Section 5.11.5.2, Tables 5.11.8, 5.11.9	Sections 9.2, 10.2, 11.2, 11.4	**Summary of Comment / Rationale:** The discussion of impacts to Aboriginal traditional land and resource use provided in the EIS is limited to the project area. Study areas (either spatial or temporal) have not been clearly described. Study areas should be defined that include impacts from both on and off-site, direct and indirect, environmental effects and align with relevant bio-physical study areas so that potential impacts to land use activities from environmental effects are adequately characterized. For example, the study area for the assessment of potential impacts to hunting moose should align with the range of moose that may be affected by the Project.
					Information Request / Comment: A. Define temporal and spatial study areas for Aboriginal land use. Ensure that study areas align with relevant bio-physical study areas, and include potential direct and indirect impacts to access, availability and resource use.
					Revised Response: Spatial Study Areas Section 6.1.4.21 of the revised EIS describes the study areas used for evaluating the effects of the Project on Aboriginal peoples. For evaluating the effects on traditional uses of the land by Aboriginal peoples, the study areas varied by type of land and resource use, and correspond with the local and regional study areas used in the revised EIS for terrestrial or aquatic biology disciplines. For hunting and gathering of terrestrial plant materials, the local study area (LSA) and regional study area (RSA) are the same as used for the wildlife and wildlife habitat (Section 6.1.4.12 of the revised EIS) and wetlands and vegetation (6.1.4.15 of the revised EIS) disciplines. The LSA corresponds to the watersheds in which the Project is situated, while the RSA corresponds to the Wabigoon Ecoregion. The LSA and RSA for effects on Aboriginal people hunting and gathering of terrestrial plant materials are shown in Figure 6.1.4.21-1 of the revised EIS.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					For fishing (subsistence, recreational, commercial and baitfish harvesting) and gathering aquatic plants, the LSA and RSA are the same as used for the fish and fish habitat discipline (Section 6.1.4.14 of the revised EIS). The LSA includes the watercourses where direct effects associated with the Project could potentially occur and the lake habitats in the immediate vicinity of the mouths of these creeks. The RSA includes Wabigoon Lake and Thunder Lake to which the watercourse in the LSA are tributaries. The LSA and RSA for effects on Aboriginal peoples fishing (subsistence, recreational, commercial and baitfish harvesting) and gathering aquatic plants are illustrated in Figure 6.1.4.21-2 of the revised EIS. The study areas used for describing the socio-economic effects to Aboriginal peoples, which is the same as the one used for the other socio-economic VCs (Section 6.1.4.17 of the revised EIS), is illustrated in Figure 6.1.4.21-3 of the revised EIS. Selection of Temporal Boundaries The effects of the Project on each of the valued components used in the effects assessment were determined temporally for each phase of the Project: • Site preparation and construction phase; • Operations phase; • Closure phase; and • Post-closure phase. The above phases are deemed suitable to capture all of the environmental effects associated with the Project. Although the majority of activities associated with the Project will occur during the first three phases, some effects will occur during the post-closure phase. An expanded discussion on the selection of temporal boundaries used in the effects assessment can be found in Section 6.1.5 of the revised EIS. Potential Direct and Indirect Impacts to Access, Availability and Resource Use The above spatial and temporal study areas used in the effects assessment of Aboriginal peoples land use (Section 6.21 of the revised EIS) sufficiently captures and assesses the potential impacts to direct and indirect access, availability and resource use.
236	HE(1)-43	CEA Agency	EIS section 6.4.2.5, Table 6.4.6-8	Sections 9.2, 10.2, 11.2, 11.4	**Summary of Comment / Rationale:** The valued components identified in section 6.3.2.5 (EIS) do not address all potential effects to current use of lands and resources for traditional purposes documented in Appendix DD. Valued components for land use are limited to land and resource use, transportation, and Aboriginal peoples. While in section 6.3.2.5 (EIS) it is identified that valued components with respect to Aboriginal peoples include health, country foods, and hunting/trapping/fishing, the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					effects assessment presented in Tables 6.4.6 to 6.4.8 (EIS, pages 6-81 to 6-94) does not treat these items as separate valued components but rather potential effects. Potential effects to each of these table items (gathering and quality of country foods, hunting/trapping/fishing for traditional purposes) should be fully described and, where possible, quantified based on the results of the effects assessment of bio-physical environmental changes. For each pathway, more detailed information is required to fully understand baseline activities and to quantify potential effects. Adequate measures are not identified to mitigate potential effects of the Project on current use of lands and resources for traditional purposes or potential or established Aboriginal or treaty rights. For example, no mitigation measures are identified for impacts to hunting and trapping. Significance conclusions provided in the EIS for potential effects to gathering country foods, hunting, trapping and fishing should be substantiated by technical information, traditional knowledge, and input from potentially affected Aboriginal groups. In addition to changes to land use resulting from environmental effects of the Project, the EIS should, in consultation with potentially affected Aboriginal groups, document Aboriginal groups' views on the perception of environmental effects and how in turn this may affect current use of lands and resources for traditional purposes.
					<u>Information Request / Comment</u>: A. Identify and assess separate valued components to assess all potential impacts to activities relating to the current use of lands and resources for traditional purposes and incorporate the valued components into the effects assessment. B. Identify appropriate mitigation and accommodation measures for effects to current use of lands and resources for traditional purposes. For each mitigation and accommodation measure, provide the following details, if applicable: - which Aboriginal group each measure applies to (e.g. if a protocol is developed to notify a community whenever a burial site is found during construction, which community is notified); - whether the mitigation/accommodation was proposed by and/or shared with the Aboriginal group(s), for their consideration and feedback; - the geographic extent (e.g. area of compensatory habitat); and - duration (construction, operation, decommissioning, and abandonment). C. Apply an impact matrix methodology to determine the significance of residual impacts of the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Project on current use of lands and resources for traditional purposes for each of the project components and physical activities, in all phases. D. Substantiate characterization of residual effects and associated impacts by applying traceable technically valid methodology, including references to primary or secondary data sources which support conclusions.
					Revised Response: A. Appendix DD has been revised as part of the EIS resubmission/ revision process. Treasury Metals has made overtures to each community, and collated all biophysical and traditional values/land and recourse use information within the EIS to date. This information in turn has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. All information received via engagement has been formally captured within the Stakeholder Engagement Report which is included in the revised EIS as Appendix DD and summarized in Section 9 of the revised EIS. Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment(i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community including Wabauskang First Nation in Section 5.13; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Indigenous peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential as part of the Valued Component selection process outlined in Section 6.1.3 of the revised EIS. The valued components, indicators and measures for the assessment of effects on Aboriginal peoples is included in attachment TMI_236-HE(1)-43_Attachment 1 (Table 6.1.3.20-1 in the revised EIS) Potential effects of the project on aboriginal peoples are assessed in Section 6.21.1 of the revised EIS using the VCs and indicators described in the Table attached (Table 6.1.3.20-1: Aboriginal People VCs, Indicators, and Measures) Predicted effects, identified mitigation, and residual effects on aboriginal peoples are assessed in section 6.21.4, 6.21.5, and 6.21.6, respectively of the

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					revised EIS. The same is done for the effects of the project on the ability of each Indigenous community to practice their traditional land and resource use in Section 6.22 of the revised EIS. B. Potential effects of the project on aboriginal peoples are assessed in Section 6.21.1 of the revised EIS using the VCs and indicators described in the Table above (Table 6.1.3.20-1: Aboriginal People VCs, Indicators, and Measures) Predicted effects, identified mitigation, and residual effects on aboriginal peoples are assessed in section 6.21.4, 6.21.5, and 6.21.6, respectively of the revised EIS. The same is done for the effects of the project on the ability of each Indigenous community to practice their traditional land and resource use in Section 6.22 of the revised EIS. The effects of the project on the ability of each Indigenous community to practice their traditional land and resource uses have been assessed in Section 6.22 of the revised EIS. Where a potential effect has been identified, Treasury Metals has presented mitigation measures, and as per the Agency's recommendation, Treasury Metals has also offered an opinion of the magnitude of the potential effect. In addition, to ensure that Indigenous communities most affected by the Project have input into the effectiveness of the Environmental Management Plans and Follow-up Programs, Treasury Metals proposes to form an Environmental Management Committee (Section 12.22 of the revised EIS). This committee would be made up of members from Indigenous communities and would meet with representatives from Treasury Metals on a to-be-determined basis, possibly quarterly or at least semi-annually. C. As discussed with the Agency, in the last subsection of Section 6, a mitigation summary table has been produced that is essentially a matrix table aligning each discipline (i.e. including Aboriginal peoples) to the phase of the project, the activities associated with that project phase, the VC it aligns to (for example gathering of plant material) , the potential effect (for example: changes to aboriginal peoples to practice their traditional uses of the land by changes in ability to harvest plants), the mitigation / commitment by Treasury, and the residual adverse effect. This included incorporating the results from relevant sections of the biophysical, land use, traditional land use, and human health risk assessments. D. The revised EIS provides characterization of residual effects and associated impacts by applying traceable technically valid methodology, including references to primary or secondary data sources which support conclusions. This information is incorporated into the respective subsection of each discipline in Section 6 of the Revised EIS (i.e. 6.2 through 6.22), however summarized in Section 6.1 of the revised EIS. The Table of Contents for Section 6.2 of the revised EIS is as follows: 6.1 Methods Used in the Assessment of Project Effects 6.1.1 Integration of Public and Aboriginal Feedback 6.1.2 Integration of Responses to Round 1 Information Requests

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					6.1.3 Selection of Valued Components (VCs) and Indicators 6.1.4 Selection of Study Areas 6.1.5 Selection of Temporal Boundaries 6.1.6 Approaches for Prediction/Description of Project Effects 6.1.7 Approach for Evaluating Cumulative Effects 6.1.8 Approach for Determination of Significance
237	HE(1)-44	CEA Agency	EIS sections 6.2.2.1, 6.2.4.5, Tables 6.4.6, 6.4.7	Section 10.1.1	**Summary of Comment / Rationale:** Section 6 (EIS) does not address all the potential land use effects that may occur from gating Nursery Road. Assuming the road will be closed to the public, including Aboriginal peoples, starting at the proposed new section of the Tree Nursery Road (as stated in the Project Description) the following land use effects for Aboriginal peoples would occur: 1) Restricted access to portions of Crown Land; 2) Restricted access to patent land not owned by the proponent; 4) Restricted access to recreational trails on Crown Land that are located behind the gate or directly affected by the open pit; and 5) Restricted access to lands previously accessible by trappers, bear management area operators, commercial baitfish operators, and sustainable forest license holders.
					Information Request / Comment: A. Describe the effects of restricting access to Tree Nursery Road on potentially affected Aboriginal groups and their associated land uses. B. Identify appropriate mitigation measures for potential effects to access to land and resource uses from gating Tree Nursery Road. C. Determine the significance of potential effects to uses of land and resources due to this change in access, taking into account that the geographic extent of effects will likely exceed the footprint of the mine.
					Revised Response: A. The effects of restricting access to Tree Nursery Road on potentially affected Aboriginal groups and their associated land uses was assessed as part of the valued component “cultural and spiritual” as described in Section 6.1.3 Selection of Valued Components of the revised EIS. Given that during engagement activities Wabigoon Lake Ojibway Nation indicated that “North of Project area and directly south of Tree Nursery (and Tree Nursery itself), area of proposed TSF. Berries were harvested in Johnsons Beach area”, loss of road access was also identified as a measure for the VC “Harvesting of Plants”.

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					B. The appropriate mitigation measures for potential effects to access to land and resource use are identified in Section 6.21.5 of the revised EIS both with respect to harvesting of plants being identified as a traditional land use, and access being considered as part of cultural and spiritual traditional land use. The potential effect of the project on the ability of each Indigenous community to practice their traditional uses of the land are assessed and mitigation measured provided in Section 6.22 of the revised EIS. As per the Agency recommendation, in instances where the project may have a potential effect, Treasury Metals has propose mitigation and offered an opinion on the meaningfulness of the effect. C. As per the Agency recommendation, in instances where the project may have a potential effect, Treasury Metals has propose mitigation and offered an opinion on the meaningfulness of the effect. Significance is formally assessed in Section 8, specifically this information is provided in Table 8.21.1-1: Summary of Residual Aboriginal Peoples Effects. Treasury Metals is mindful that the significance of potential effects to uses of land and resources due to this change in access, taking into account that the geographic extent of effects will likely exceed the footprint of the mine, however also highlights that the footprint of the mine is relatively small relative to other gold mining project in Ontario. Treasury Metals will continue to actively and meaningfully engage with Indigenous communities to ensure that project effects are mitigated appropriately.
238	HE(1)-45	CEA Agency	EIS Sections 5.9.2, 5.9.3, 5.9.4, 5.9.5, 5.9.8, 5.10.3.1, 5.10.3.25.11.5.1, 5.11.5.2, Tables 5.11.8, 5.11.9	Sections 7.2.1, 9.2, 10.2, 11.2, 11.4	**<u>Summary of Comment / Rationale:</u>** In addition to collecting adequate information from Aboriginal groups to understand land use in the area, the baseline and effects assessment should analyze potential environmental effects from bio-physical changes (e.g. air, noise, light, and water quality) to the environment from the Project to wildlife, plants, and fish that have a land and resource use value and are of importance to Aboriginal peoples. Species of importance and/or that may be potentially affected by the Project identified during Agency consultation events include: • wild rice • bear • moose and deer • fox • furbearers (e.g. beaver, muskrat, rabbit) • small mammals (i.e. chipmunks, mice, and squirrels) • chanterelle mushrooms • medicinal plants (e.g. low bush cranberries, snowbush berry, Labrador tea, low bush hemlock/ ground hemlock). • birds (partridge, waterfowl, ruffed grouse) • blueberries • fish

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					• turtles and frogs Habitat of importance and/or that may be affected by the Project identified during Agency consultation events include areas of: • Lola Lake Nature Reserve • Aaron Provincial Park • Butler Provincial Park • Wabigoon lake • Thunder Lake • Thunder Creek • Blackwater Creek • Rice, Sandy, Mud and Turtle Lakes • Ghost Lake • Mavis Lake • portions of the project area (e.g., fox dens within the tailings storage facility, moose habitat along Blackwater Creek, and bear dens near the entrance of the site)
					Information Request / Comment: A. Describe baseline conditions and the environmental effects to wildlife and vegetation that may impact Aboriginal land and resource use, including the following at a minimum: • Furbearers and their habitat; • Amphibians and reptiles and their habitat; • Ungulates and their habitat; • Migratory and non-migratory birds and their habitat; • Wild rice; • Fish and their habitat; and • Aquatic and terrestrial vegetation. B. Incorporate or link the results from the assessment of potential environmental effects into the determination of significance of impacts on current use of lands and resources for traditional purposes.
					Revised Response: A. Extensive baseline studies were conducted in the local study areas and regional study areas for wildlife, migratory birds, vegetation and wetlands. This information was augmented by reviews of published literature, database searches and traditional knowledge shared by members of

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					Indigenous communities through the ongoing engagement activities by Treasury Metals and through the Round 1 information request process. Table 1 provides the specific location in the revised EIS where the baseline information for each of the points outlined in the questions can be found.

Table 1: Relevant Sections of the Revised EIS

IR Part	Requested Information	Location in the revised EIS
A	Baseline information on furbearers and their habitats	Section 5.9.4
A	Baseline information on amphibians and reptiles and their habitats	Section 5.9.6
A	Baseline information on ungulates and their habitats	Section 5.9.4
A	Baseline information on non-migratory birds and their habitats	Section 5.9.5
A	Baseline information on migratory birds and their habitats	Section 5.10
A	Baseline information on wild rice	Section 5.11.3.1
A	Baseline information on fish and fish habitat	Section 5.8.4
A	Baseline information on aquatic and terrestrial vegetation	Section 5.9.2

B. The predicted effects of the Project on the wildlife and vegetation components highlighted in the request are presented in Section 6 (Description of Project Effects) of the revised. The specific sections where the predicted effects are described have been set out in Table 2.

Table 2: Relevant Sections of the Revised EIS

IR Part	Requested Information	Location in the revised EIS
A	Effects assessment on furbearers and their habitats	Section 6.12
A	Effects assessment on amphibians and reptiles and their habitats	Section 6.12
A	Baseline information on ungulates and their habitats	Section 6.12
A	Effects assessment on non-migratory birds and their habitats	Section 6.12
A	Effects assessment on migratory birds and their habitats	Section 6.13
A	Effects assessment on wild rice	Section 6.15
A	Effects assessment on fish and fish habitat	Section 6.14
A	Effects assessment on aquatic and terrestrial vegetation	Section 6.15

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					The revised EIS also links the predicted effects of the Project on the environment to the potential effects on the current use of lands and resources for traditional purposes by members of Indigenous communities. This evaluation is presented in Section 6.21 of the revised EIS, which includes a summary of the potential effects for each of the Indigenous communities identified in the EIS Guidelines. How the effects of the Project on various environmental VCs are linked to effects on members of Indigenous communities, including the effects on the current use of lands and resources for traditional purposes by Aboriginal peoples in shown in Figure 6.21.1-1 of the revised EIS.
239	HE(1)-46	CEA Agency	EIS Sections 6, 13, Tables 6.4.6 – 6.4.8	Section 11.4	**Summary of Comment / Rationale:** Section 11.4 of the EIS Guidelines states: "The Follow-up Program will also be designed to monitor the implementation of mitigation measures resulting from Aboriginal consultation, including: - Verifying predictions of environmental effects with respect to Aboriginal peoples, as well as residual impacts that could not be addressed within the context of the EA; - Determining the effectiveness of mitigation measures as they relate to environmental effects with respect to Aboriginal peoples in order to modify or implement new measures where required; - Supporting the implementation of adaptive management measures to address previously unanticipated adverse environmental effects with respect to Aboriginal peoples or unanticipated adverse impacts to Aboriginal rights; - Verifying measures identified to prevent and mitigate potential adverse effects of the project on potential or established Aboriginal and Treaty rights; and, - Providing information that can be used to improve and/or support future EAs and Aboriginal consultation processes." With the exception of Aboriginal human health, no follow-up programs are identified for any of the human environmental valued components in Tables 6.4.6 - 8 (EIS).
					Information Request / Comment: A. Describe the proposed follow-up program in sufficient detail to reliably verify predicted effects (or absence of them), and to confirm both the assumptions and the effectiveness of mitigation related to potential effects to Aboriginal peoples, including potential adverse impacts of the Project on asserted or established Aboriginal and Treaty rights. B. Identify and describe how and which Aboriginal groups will be engaged during implementation of the follow-up program.

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					Response: A. Treasury Metals recognizes that the Agency and other technical reviewers identified a number of issues through the IR Round 1 questions with the approach used in the EIS for organizing and presenting the relevant information regarding the potential effects of the Project. In order to effectively address these issues, Treasury Metals has prepared a revised EIS. The revised EIS sets out the assessment of effects and impacts associated with the Project, including a discussion of follow-up monitoring, in a clear and traceable manner. Section 6 of the revised EIS provides a summary of identified mitigation, follow-up monitoring and management plans. Section 13.20 outlines the follow-up monitoring of the effects on Aboriginal Peoples. B. Treasury Metals is committed to ongoing engagement with Aboriginal peoples throughout the life of the Project and will work with communities to develop monitoring and management plans designed to address potential Project-related effects identified through the environmental assessment process and/or at later stages of the Project, including implementation of any follow-up programs. Treasury Metals intends to continue to look for ways to continue engaging these groups identified through the environmental assessment process.
240	HE(1)-47	CEA Agency	EIS Sections 5.11.4, 6.3.2.4, 6.4.2.4, Table 6.4.6, and 14 Appendix DD	Sections 9.1.3, 10.1.3	**Summary of Comment / Rationale:** Section 6.3.2.4 (EIS) does not adequately describe the assessment of potential effects for heritage valued components (i.e. archaeological sites, and historic heritage sites). The Agency's Technical Guidance (http://www.ceaa-acee.gc.ca/default.asp?lang=en&n=536A4CFE-1) defines heritage as: "A land or resource (e.g., an artifact, object or place) that is considered as heritage or any structure, site or thing is distinguished from other lands and resources by the value placed on it." Aboriginal groups, members of the public, as well as other government departments, have identified items of physical and cultural heritage value, including cultural, archaeological, and heritage sites that have not been included in section 6 (EIS), such as: • sacred aspects of the environment located in the project site, including turtles, frogs, rocks and boulders; • sacred sites south of Wabigoon; • sacred site called the Serpent, located at Mavis and Ghost Lake; • ceremonial sites in proximity to the project site; • sites of historical and archaeological importance within the project boundaries, including grave sites; • landscape views of cultural importance; • view of Thunder Lake; • traditional and historical travel routes, including portage routes, connecting historic and present communities to meeting sites and wild rice sites; and

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					• wild rice areas in Wabigoon Lake (have spiritual and cultural value for elders to pass on practices). During Agency consultation Aboriginal groups suggested that spiritual values and wild rice should be assessed as separate valued components. Appendix DD includes a brief discussion of potential effects to traditional travel routes, and responses to comments about potential effects to landscape views of cultural importance, and sacred sites. The discussion is an inadequate assessment of potential effects. Conclusions are drawn on potential effects without references or demonstration of meaningful engagement efforts to verify the conclusions and mitigation measures presented and identify, through collaboration with Aboriginal groups, accommodation measures, as appropriate. The primary goal of mitigation and accommodation measures is to avoid, eliminate, or minimize the adverse impacts on Aboriginal peoples with respect 5(1)c of CEAA 2012 and potential or established Aboriginal or Treaty rights. If mitigation and accommodation measures are developed in response to an assessed impact, provide specific responses to the following, if applicable: • which Aboriginal group each measure applies to (e.g. if a protocol is developed to notify a community if a burial site is found during construction, which community is it for?) • whether the mitigation and accommodation measure was proposed by and/or shared with the Aboriginal group(s), for their consideration and feedback • what is the geographic extent of each mitigation measure • what is the duration of each mitigation measure (e.g., construction, operation, decommissioning, and abandonment). Built heritage and cultural heritage landscapes are not clearly screened in section 5 (EIS), notably section 5.11.4.2. While some cultural heritage resources have been formally identified, others may be identified through screening and evaluation. Aboriginal communities may have knowledge that can contribute to the identification of known or potential cultural heritage resources, such as sites of spiritual, cultural, ceremonial, or teaching significance, and physical and cultural landscapes of importance for spiritual or ceremonial purposes. See further comments regarding the provincial requirements for a Heritage Impact Assessment (HIA) in the Ontario Ministry of Tourism Culture and Sport (MTCS) letter dated May 21, 2015.
					Information Request / Comment: A. Engage Aboriginal groups to identify and understand the value of known or potential physical and cultural heritage resources in the local study area that may be affected by the project. Include identification of which specific Aboriginal groups identified each site, structure or thing of heritage value. B. Review valued components based on additional information collected from Aboriginal groups, determine if additional valued components (e.g. spiritual sites or wild rice) are needed to assess

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					potential effects to physical and cultural heritage, and explain the decision to add or exclude new valued components. C. Define local and regional study areas for the heritage assessment, including maps that depict the location of study areas in relation to the project site. D. Identify appropriate mitigation and accommodation measures for effects to physical and cultural heritage. For each mitigation and accommodation measure, provide the following details, if applicable: • the name(s) of the Aboriginal group(s) to which each measure applies (e.g. if a protocol is developed to notify a community when a burial site is found during construction, the community to be notified) • explanation whether the mitigation and accommodation measure was proposed by and/or shared with the Aboriginal group(s), for their consideration and feedback • the geographic extent of each mitigation and accommodation measure • the duration of each mitigation and accommodation measure (e.g. construction, operation, decommissioning, and abandonment). E. Define and apply an impact matrix methodology to determine the significance of the adverse effects of the project on physical and cultural heritage for each of the project components and physical activities, in all phases. Complete a visual rendering of the view of project site from points of cultural heritage importance to support assessment of potential effects and adequacy of proposed mitigation measures.
					<u>Revised Response:</u> A. Since the original EIS submission Treasury measures has participated in a number of meaningful engagement activities with the Indigenous communities identified in the EIS guidelines, all of which have been summarized in Section 9 of the revised EIS, and full details are provided in Appendix DD. From these activities traditional knowledge has been obtained on nearly all 20 disciplines assessed in the EIS and is presented in each subsection of Section 5 of the revised EIS. Information regarding the current use of land and resources for traditional purposes has also been shared and is summarized in Section 5.13 of the revised EIS. Information shared by Indigenous communities was fundamental in selecting the valued components to be used in each of the 20 disciplines in the assessment of effects of the project. A summary of the residual adverse effects on the ability of Indigenous people to practice their current use of land and resources for traditional purposes is included in Section 6.22 of the revised EIS.

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					Treasury Metals recognizes that Indigenous people live, work, hunt, fish, trap, and harvest throughout their lands and rely on them for their individual as well as their communities overall cultural, social, spiritual, physical, and economic well-being. Further to this Treasury recognizes that these lands are inextricably connected to a communities identify and culture, inclusive of ceremonial and spiritual recognition. Treasury in respect to this recognizes the importance of assessing any impact as it relates to traditional land use activities and practices, and protection of spiritual and ceremonial aspects. Treasury Metals acknowledges that the Project may impact these availability or practices within the Project area, and is committed to working with all communities to identify, mitigate, and avoid these respective aspects. Treasury Metals has made overtures to all designated communities all biophysical and traditional values and land use information within the EIS to date including those aspects relating to heritage, spiritual and ceremonial aspects. This information has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. All information received via engagement has been formally captured within the Stakeholder Engagement Report which is included in the revised EIS as Appendix DD and summarized in Section 9 of the revised EIS. Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous has been incorporated into each subsection of Section 5 (Existing Environment, i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community including identified heritage, spiritual and ceremonial resources is presented within Section 5.13; • The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Indigenous peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential as part of the Valued Component selection process outlined in Section 6.1.3 of the revised EIS. Potential effects of the project on aboriginal peoples are assessed in Section 6.21.1 of the revised EIS using the VCs and indicators described in Attachment TMI_240-HE(1)-47_Attachment_1 (Table 6.1.3.20-1: Aboriginal People VCs, Indicators, and Measures in the revised EIS) Predicted effects, identified mitigation, and residual effects on aboriginal peoples are assessed in section 6.21.4, 6.21.5, and 6.21.6, respectively of the revised EIS. B. Based on feedback about the EIS in the IR Round 1, Treasury Metals has prepared a revised EIS. The discussion about the selection of valued components concerning Indigenous peoples is in

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					Section 6.1.3. Potential effects of the project on aboriginal peoples are assessed in Section 6.21.1 of the revised EIS using the VCs and indicators described in the Table above (Table 6.1.3.20-1: Aboriginal People VCs, Indicators, and Measures). Predicted effects, identified mitigation, and residual effects on aboriginal peoples are assessed in section 6.21.4, 6.21.5, and 6.21.6, respectively of the revised EIS. C. Archaeological assessment of the Heritage Resources, Local Study Area (see Figure 6.1.4.19-1 for the boundaries of this area) was completed in compliance with Ministry of Tourism, Culture and Sport (MTCS) direction. This figure has been revised at the request of the agency and is attached as TMI_240-HE(1)-47_Attachment_1. The archaeological assessment did not identify archaeological resources within the area to be impacted by the proposed mine development. Further, the assessment determined that the area had been previously disturbed to the extent that no potential for the identification of archaeological resources remained. The disturbance noted is characteristic of the potential effects to archaeological sites in development. Specifically, any activity that causes extensive or intensive disturbance to the surface soils (i.e. within 50cm of the natural surface) holds the potential to impact archaeological resources. Regional study area expansion will not substantively change the result of the assessment of evaluation of impacts associated with heritage resources. However, the archaeological evaluation also considered the potential for areas adjacent to the subject property to confirm the accuracy of evaluations made, and to identify whether there were nearby areas that would have been the preferred locations for settlement, with an emphasis on factors such as available food resources (e.g., fish, rice), and access (travel routes). D. Treasury Metals committed in the EIS to developing an Archaeological and Heritage Resource Management Plan with the objective to identify and appropriately protect heritage resources. This plan will be prepared before Project construction begins and Treasury Metals will engage Project area Aboriginal peoples as appropriate in the development of the plan. An outline of this plan has been provided in Section 12.11 of the revised EIS. Mitigation measures for heritage resources are also discussed in Section 6.20.5 of the revised EIS. In addition, to ensure that Indigenous communities most affected by the Project have input into the effectiveness of the Environmental Management Plans and Follow-up Programs, Treasury Metals proposes to form an Environmental Management Committee (Section 12.22 of the revised EIS). This committee would be made up of members from Indigenous communities and would meet with representatives from Treasury Metals on a to-be-determined basis, possibly quarterly or at least semi-annually. E. Section 8.20 in the revised EIS presents the significance assessment for archaeological and historic heritage sites. Significance determination of effects on heritage resources is discussed in Section 8.20.2 of the revised EIS. As described in Section 6.20.6, there were no predicted adverse effects of the Project on heritage resources or on heritage resources of Aboriginal peoples (6.21).

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					Because there were no predicted residual adverse effects on heritage resources, no determination of significance is required.
241	HE(1)-48	CEA Agency	Appendix DD EIS Section 6.2.2.4	Sections 9.1.3, 10.1.3	**Summary of Comment / Rationale:** There are inconsistencies in the description of potential effects to archeological sites between Appendix DD and the effects assessment presented in Section 6 (EIS). For example, section 7.1 (Appendix DD) identifies "archaeological sites" discussed by Wabigoon Lake Ojibway Nation on August 2, 2011. Section 6.2.2.4 (EIS) states no sites were identified by Aboriginal groups.
					Information Request / Comment: A. Revise the effects assessment to include all potential effects to archaeological sites identified by Aboriginal groups, and identify appropriate mitigation measures and a follow-up monitoring program.
					Revised Response: Information request TMI_241-HE(1)-48 seeks detailed effects assessment that includes all potential effects to archaeological sites identified by Aboriginal groups, and identify appropriate mitigation measures and a follow-up monitoring program. Archaeological assessment of the Heritage Resources Local Study Area (see Figure 6.1.4.19-1 for the boundaries of this area, attached as TMI_240-HE(1)-47_Attachment_1) was completed in compliance with Ministry of Tourism, Culture and Sport (MTCS) direction. MTCS is the Crown agency responsible for regulation of archaeology in the province. The archaeological assessment did not identify archaeological resources within the area to be impacted by the proposed mine development. Further, the assessment determined that the area had been previously disturbed to the extent that no potential for the identification of archaeological resources remained. The disturbance noted is characteristic of the potential effects to archaeological sites in development. Specifically, any activity that causes extensive or intensive disturbance to the surface soils (i.e. within 50cm of the natural surface) holds the potential to impact archaeological resources. Disturbance typically results from clearing, grubbing and earthmoving related to site preparation, road building and site development, including construction and normal mining activities (Revised EIS Section 6.20.1: Potential Effects of the Project on the Environment). The potential effects to archaeological sites resulting from disturbance include: accidental discovery of archaeological sites, displacement of archaeological materials, and archaeological site destruction. While noting the potential for disturbance, we reiterate that no archaeological resources were identified in previous studies, and extant disturbance indicates that there is no potential for resources to be present. Analysis of the results of the archaeological assessment indicate that predicted effects to archaeological sites are absent (Revised EIS Section 6.20.4: Predicted Effects). This is based on

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					the absence of archaeological potential and archaeological sites within the Local Study Area examined during the archaeological assessment. The Revised EIS notes that information shared with TMI in response to Round 1 information requests identified a number of additional cultural heritage values. A traditional canoe route between Wabigoon Lake, through Thunder Lake and Ghost Lake to access Rice Lake was identified. The importance of this route from a cultural perspective is recognized by Treasury Metals. However, the canoe route identified lies beyond the area anticipated to be directly affected by the development of the Project, and should not be compromised. The information shared that Elders camped on sandy beaches along the route is valuable, and confirms the general approach taken in evaluating archaeological potential. Areas in close proximity to navigable waters represent areas of higher potential, while areas that are distant from navigable waterways, like the Project site, will have a lower archaeological potential. Notwithstanding the absence of archaeological resources within the Project area where effects are anticipated, mitigation measures have been prepared. Archaeological potential is determined to exist within 50m of existing watercourses (permanent and navigable), and in areas where extensive and intensive disturbance has not previously occurred. On this basis, the mitigation measures include minimizing the overall footprint of the Project, and leaving a 50m buffer zone around all remaining watercourses within the Project area. In addition, measures will be put in place under the Archaeological and Cultural Heritage Resource Management Plan to respond to archaeological resources that may be encountered in the execution of the Project. These would include the following: • If previously undocumented archaeological resources be discovered, the person discovering the resources must stop alteration of the site immediately of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (I) of the Ontario Heritage Act. • If human remains are discovered, alteration of the site must stop and the person making the discovering must immediately notify the police, or coroner, and the Registrar of cemeteries, at the Ministry of Consumer Services, as required under the Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33. • Restrict activities and development within 300 m of major water sources and within 300 m of historical travel routes, to only those areas where an archeological assessment has been completed. • Do not allow new ground altering activities to occur in areas where an archaeological assessment has not been completed. • Complete archaeological assessments for any new areas not previously assessed prior to allowing ground altering activities.

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					These measures recognize the acknowledged limitations to the MTCS methodology followed in completing the archaeological assessment, consider the possibility that archaeological sites may be located in unanticipated locations or settings, and reflect current ministry direction. Further to this Treasury Metals continues to make overtures to each community designated and collated all biophysical and traditional values/land use information within the EIS to date. This information in turn has been sourced from engagement with Indigenous communities (open houses, presentations, meetings, calls, discussions), and secondary source information. This information has been formally captured within the Indigenous Stakeholder Engagement Report (Appendix DD). Current engagement efforts have not disclosed sites of archeological potential within the proposed development area. If these resources are disclosed within the EIS process, and subsequent engagement Treasury Metals will enact the protocols above and is committed to working with regional Indigenous communities to protect, and prevent disruption to these resources.
242	HE(1)-49	CEA Agency	EIS Section 6.4.2.4, Tables 6.4.6 – 6.4.8	Sections 9.1.3, 10.1.3, 11.4	**Summary of Comment / Rationale:** Section 6.4.2.4 (EIS) identifies an Archaeological and Cultural Heritage Resource Management Plan as a mitigation measure and indicates that follow-up monitoring is not needed. During Agency consultation activities, Wabigoon Lake Ojibway Nation expressed concern about how archaeological resources will be managed. It is unclear why no follow-up monitoring is proposed. Section 11.4 of the EIS Guidelines states: "A Follow-up Program is designed to verify the accuracy of the effects assessment and to determine the effectiveness of the measures implemented to mitigate the adverse effects of the project… The Follow-up Program will also be designed to monitor the implementation of mitigation measures resulting from Aboriginal consultation…"
					Information Request / Comment: A. Clarify whether the Archaeological and Cultural Heritage Resource Management Plan will include follow-up monitoring and provide a rationale that takes into account the requirements of the EIS Guidelines. B. Describe how and which Aboriginal groups may be engaged during the implementation of the Archaeological and Cultural Heritage Resource Management Plan, including how they may be involved upon discovery of archaeological resources on the site, and during any follow-up monitoring that is developed.
					Response: The comment notes that the mitigation proposed for the Archaeological and Cultural Heritage Resource Management Plan does not include follow-up monitoring. The comment further notes

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					that this does not address WLONs expressed concern about archaeological resource management. Reference is made to Section 11.4 of the EIS Guidelines, which indicate that a follow-up monitoring program is a necessary to verify the accuracy of the effects assessment, and determine the effectiveness of measures implemented to mitigate effects. The summary of proposed mitigation in Section 6.4.2.4 (EIS) does not include a commitment to follow-up monitoring for archaeological sites, as no sites were identified by the archaeological assessment completed. In addition, it was the recommendation of the assessment that the development area did not "*exhibit archaeological potential therefore it is recommended that the location does not require further archaeological assessment*". Low archaeological potential does not constitute a valued component of the environment. Since the purpose of follow-up monitoring is to measure development impacts to identified valued components, a monitoring program in this instance would represent a test of the validity of the MTCS criteria for evaluating archaeological potential, and therefore be beyond the scope of the EA. The information request seeks clarification on the Archaeological and Cultural Heritage Resource Management Plan, specifically the monitoring and follow-up provisions, and how these address the requirements of the EIS Guidelines. The request also asks for a description of proposed Aboriginal engagement during follow-up monitoring. The Archaeological and Cultural Heritage Resource Management Plan will specify that archaeological assessment will be required for all new ground altering activities outside of the development area assessed to date. This assessment will be required to include consideration of all available data. The plan will also identify the process for addressing archaeological or cultural heritage resources uncovered during the course of construction, operation and decommissioning phases of the Project. As a result of the archaeological assessments completed, the development area was evaluated as holding low archaeological potential for the identification of archaeological resources. Consequently, the plan does not outline a process for protecting archaeological sites identified, but will identify a process for the protection of any unexpected resources identified during the life of the Project. Section 5.0 of the archaeological assessment reports include required text on ongoing obligations under the *Ontario Heritage Act* and the *Funeral, Burial and Cremation Services Act*. We note that these obligations, and others under the *Coroners Act* continue to apply throughout the duration of Treasury Metals' activities at the property. The obligations include protocols when archaeological resources or human remains are discovered. The revised EIS will provide an overview of the potential effects to archaeological and cultural heritage resources from the proposed development, and identify appropriate mitigation measures and follow-up monitoring. The revised EIS sets out the assessment of effects and impacts associated with the Project in a clear and traceable manner.

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					The Archaeological and Cultural Heritage Resource Management Plan will include direction for active involvement of local Aboriginal communities when archaeological or cultural heritage resources are discovered. We note that engagement of local communities is mandatory when human remains of a possible Aboriginal origin are discovered. The information request also asks that the EIS describe how and which Aboriginal peoples may be engaged during the implementation of the Archaeological and Cultural Heritage Resource Management Plan, including how they may be involved upon discovery of archaeological resources on the site, and during any follow-up monitoring that is developed. The Archaeological and Cultural Heritage Resources Management Plan will set out the process for notification and engagement of Aboriginal community members in archaeological assessment in areas of archaeological potential, and the management of accidental discoveries.
243	AM(1)-01	CEA Agency	EIS Section 4.1	Section 7.1.2	**Summary of Comment / Rationale:** Section 4.1 (EIS) states that the identification of the magnitude of an accident and/or malfunction (e.g., quantity, mechanism, rate, form, and characteristics of the contaminants) is included in section 6 of the EIS. The magnitude of accidents and malfunctions should assume that no response measures are put in place to minimize or reduce effects. By referring to section 6 (EIS) for the magnitude, it implies that the magnitude of the accident and/or malfunction is the same magnitude of a residual effect with the application of mitigation measures. The magnitude of an accident or malfunction needs to take into account failure of design features and needs to be assessed without applying mitigation measures. Section 7.1.2 of the EIS Guidelines states that "the proponent will identify the probability of potential accidents and malfunctions related to the project, including…potential consequences (including the environmental effects), the plausible worse case scenarios and the effects of these scenarios."
					Information Request / Comment: A. Describe the potential environmental effects from spills and releases, and cyanide-related accidents and malfunctions on fish and fish habitat, migratory birds, current use of lands and resources for traditional purposes, Aboriginal health and socio-economic conditions, Aboriginal physical and cultural heritage, and any structure, site, or thing of historical, archaeological, paleontological or architectural significance to Aboriginal groups. B. Provide the magnitude, including the quantity, mechanism, rate form and characteristics of the contaminants and other materials likely to be released from spills and releases, and cyanide-related accidents and malfunctions.

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					C. Describe contingency and emergency response procedures for the potential effects noted above if spills and releases, and cyanide-related accidents and malfunctions occur.
					<u>Revised Response:</u> *Spills and Releases* A. and B. Operating procedures at site will limit the potential volume released from a spill. The most likely spill to occur during operations of the Project will be the spill of petroleum products from equipment in need of maintenance. The volumes associated with such a release would be minimal and would be restricted to active work areas. Even if a spill or release were not immediately contained and remediated, in accordance with the spill response plan, the spill would not be released from the site into the environment. All runoff from the site, regardless of the area, will be collected and directed to the water management system. This water will be used in the process plant and ultimately treated before being discharged to Blackwater Creek. C. As described in Section 4.3.3 of the original EIS, Treasury Metals has committed to implementing secondary controls at the processing plant and chemical storage areas to prevent spills from entering the environment. Spill prevention procedures will be enforced to reduce the potential for spills. A detailed spill response plan will be developed as part of the final design and permitting process that will outline responsibilities and procedures that will be enacted in the unlikely event of a spill on-site. Incidental spills that occur during transport within the site, or associated with mobile equipment, will be contained and isolated to prevent the spread of the materials released, and then cleaned up at source. Contaminated soils removed during clean-up will be transported to a licensed off-site facility for safe disposal. All spills at the Project will be reported in accordance with the Ministry of the Environment and Climate Change (MOECC) protocols. All deliveries of fuel and chemicals to the site would be done by regulated transport companies, who would be required to comply with relevant federal regulations such as the Transportation of Dangerous Goods Act. All carriers would be required under the Act to have in place detailed emergency response and contingency plans in the unlikely event of an accident during transport to the site. The control measure and preventative procedures, emergency response and contingency procedures, and follow-up monitoring have been provided for spills and releases in Table 4.3.1-1 of the revised EIS under the Accidents and Malfunctions section. *Cyanide-Related Accidents* A. As described in Section 3.6 of the original EIS, gold will be extracted from the ore in the processing plant using a standard carbon-in-leach (CIL) process. In this process, a cyanide solution will be used. Once the gold has been extracted from the crushed ore using the cyanide solution, the process waters containing cyanide will be reused to the extent possible, and then

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					treated using the INCO/SO_2 process (which is widely used in the mining industry) to destroy the majority of the remaining cyanide. The resulting waste from processing, known as tailings, is a mixture of liquid and finely crushed rock from which gold has been extracted. The tailings will be pumped to the tailings storage facility (TSF) where the finely crushed rock in the tailings will settle over time. After treatment using the INCO/SO_2 cyanide destruction process, tailings directed to the TSF will meet the 1 mg/L total cyanide effluent discharge limit set out in the federal Metal Mining Effluent Regulations (MMER). The water covering the TSF will be recycled and used in the processing plant, and excess water that cannot be recycled will be treated in the effluent treatment plant and ultimately discharged to Blackwater Creek. Treasury Metals has committed that during operations, effluent discharged from the Project to Blackwater Creek will meet the Provincial Water Quality Objectives (PWQO), or background concentrations if background levels are above the PWQO. Where there is no PWQO for a parameter, the commitment will be to meet the Canadian Water Quality Guidelines (CWQG). For total mercury, the commitment will be that effluent discharged to Blackwater Creek will meet background concentrations for that watercourse. Background concentrations for Blackwater Creek are defined as the 75th percentile in accordance MOECC receiving water assessment policy. Detailed parameters will be determined through engagement with appropriate Provincial and Federal regulatory bodies.[Cmt_034]. During operations, excess water not required in the process will be treated to concentrations that meet Provincial Water Quality Objectives (PWQO) or Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life, or background if background levels exceed the PWQO, prior to discharging to Blackwater Creek. In the case of mercury, effluent will be treated to meet the background concentrations in Blackwater Creek. [Mit_053]. The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek. [Mit_024]. B. and C. All aspects of the Project associated with the handling, use and treatment of cyanide are designed to operate and comply with the International Cyanide Code. Cyanide that will be used in the process will be delivered by truck in the preferred form of dry (solid) sodium cyanide pellets or briquettes, to avoid the possibility of liquid spills during transport. Three to five days' worth of cyanide pellets will be stored in the processing plant, with additional storage (two to four days' worth) provided at the existing warehouse at the former Ontario Ministry of Natural Resources and Forestry (MNRF) tree nursery. All deliveries of cyanide to the site would be done by regulated transport companies, who would be required to comply with relevant federal regulations such as the Transportation of Dangerous Goods Act. All carriers would be required under the Act to have detailed emergency response and contingency plans in place in the unlikely event of an accident during transport. Within the Project site, Treasury Metals has committed to develop detailed emergency response and contingency measures in the event of an accident or spill involving cyanide. These plans and

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					safeguards would be consistent with the International Cyanide Code, and would, at the most fundamental level, be focused on procedures and safeguards to avoiding accidents. The control measure and preventative procedures, emergency response and contingency procedures, and follow-up monitoring have been provided for cyanide in Table 4.3.1-1 of the revised EIS under the Accidents and Malfunctions section.
244	AM(1)-02	CEA Agency	EIS Table 4.2.3	Section 7.1.2	**Summary of Comment / Rationale:** Table 4.2.3 (EIS, page 4-5) notes a duration for the rating of the environment. The definitions of the criteria for each environment rating are not clear.
					Information Request / Comment: A. Provide explanations for the durations used in each of the five environment rating criteria. B. Define the terms "moderate environmental impact, medium term environmental impact and severe long term environmental impact"; "major regulatory violations versus severe breach of regulations with operation suspended".
					Revised Response: A. The findings of the Failure Modes and Effects Analysis (FMEA) area presented in Appendix HH to the EIS and summarized in Section 4 of the EIS. Within Section 4, a description of the ratings used in scoring the three categories of accidents and malfunctions evaluated (i.e., Safety and Health, Environment, Stakeholder Relations & Reputation) are presented in Table 4.2.3. In this table, timescales are assigned to the various levels of severity. However, these timescales should not be confused with the "duration" used in assigning significance of the residual adverse effects of the Project (see Section 6 of the EIS). The timescales used for determining the levels of severity of environmental consequences associated with accidents and malfunctions were identified as part of the FMEA analysis, and loosely relate to the Project timelines as follows: • Severity Rating 1 (limited environmental impact) o 1 to 2 years o This corresponds with the length of the approximate site preparation and construction phase, or the closure phase of the Project • Severity Rating 2 (minor on-site environmental impacts) o 3 to 6 years o This corresponds with the length of time the open pit mine is anticipated to be in operations • Severity Rating 3 (moderate environmental impacts)

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					o 6 to 10 years o This corresponds with the expected operating life of the Project • Severity Rating 4 (severe medium-term environmental impacts) o greater than 10 years o This corresponds with effects and impacts that would be more than the expected operating life of the Project • Severity Rating 5 (severe long-term environmental impacts) o Closure severely impacted o This suggests a scenario where the planned closure of the Project would be compromised B. Table 4.2.3 of the EIS provides a description of the ratings used in scoring the accidents and malfunctions evaluated as part of the EIS. In the table, there are three categories described (i.e., Safety and Health, Environment, Stakeholder Relations & Reputation) and 5 levels of severity. The five escalating levels of severity for environmental effects were named and described in Table 4.2.3. The names and descriptions are as follows: • Limited environmental impact: o Restricted to the Project site (implied) o No regulatory reporting required o Delays between 1 to 2 years • Minor on-site environmental impacts: o Restricted to the Project site (implied) o Incident is reportable to regulators o Delays between 3 to 6 years • Moderate environmental impacts: o Extends beyond the site boundary o Regulatory violations with fines o Delays between 6 to 10 years • Serious medium-term environmental impacts: o Extends beyond the site boundary (implied) o Major regulatory violations (operations continue, significant fines) o Delays greater than 10 years • Severe long-term environmental impacts: o Extends beyond the site boundary (implied) o Severe breach of regulations (operations suspended, significant fines and/or charges) o Closure severely impacted

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					As part of the process of responding to the Round 1 information requests, the text and tables (e.g., Table 4.2.3) presented in Section 4.2 of the revised EIS have been modified to include text reflecting the above definitions.
245	AM(1)-03	CEA Agency	Appendix HH EIS Section 4.3.2	Section 7.1.2	**<u>Summary of Comment / Rationale:</u>** Appendix HH does not consider slope failures of the open pit, waste rock and low-grade ore stockpiles. In addition, section 4.3.2 (EIS) does not include an assessment of the failures of the seepage collection system, the tailings or effluent pipelines.
					<u>Information Request / Comment:</u> A. Describe the potential environmental effects from potential slope failures of the open pit, waste rock and low-grade ore stockpiles and failures of the seepage collection system, the tailings or effluent pipeline on fish and fish habitat, migratory birds, current use of lands and resources for traditional purposes, Aboriginal health and socio-economic conditions, Aboriginal physical and cultural heritage, and any structure, site, or thing of historical, archaeological, paleontological or architectural significance to Aboriginal groups. B. Describe contingency and emergency response procedures for the potential effects noted above if accidents and/or malfunctions occur.
					<u>Revised Response:</u> A. Treasury Metals takes all accidents and potential malfunction seriously, and in principle design taken in consideration environmental, social, and economic considerations to ensure the responsible development and operation of the Goliath Gold Project. Indigenous TKLU aspects are a consideration and have been considered as part of the documentation supporting and within the EIS. • The potential for slope failures for the rock wall of the open pit was not considered to cause any environmental effect as any potential failure will be wholly contained within the open pit. • Slope failures of the waste rock and/or low-grade ore (LGO) stockpiles are a very unlikely event due to the very low proposed design slop and height of these facilities. In the highly unlikely event that one of the slopes does fail it would be within a localized area and wholly contained within the water and seepage collection systems of the operating mine. Prior to construction, geotechnical assessments would be completed to

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					allow detailed engineering of these features to ensure physical stability, as required by O. Regulation 240/00 (as amended) and the Occupational Health and Safety Act. • In regards to the tailings pipeline, a pressure transmitter and flow meter would be installed on the tailings discharge pipeline downstream of the tailings pumps to provide the control room operator (control room manned 24 hours per day) with simultaneous pipeline pressure and flow. A critical tailings pipeline failure (i.e., burst pipe, etc.), will be detected from activation of a tailing pump discharge low pressure and high flow alarm. These high priority alarms will be generated on the control system SCADA interface and alarm log to instantaneously notify the control room operator of a potential burst pipe condition and causing immediate shutdown of the tailings line. The tailings pipeline failure scenario will be further documented during detailed design and HAZOP studies, which will be used to identify any additional design and operating controls for this critical item. Any system failure will result in the shutdown of operations to ensure the safety of not only infrastructure but all applicable environmental criteria, inclusive of TKLU aspects. • Failure of the seepage collection infrastructure a very unlikely event. Prior to construction, geotechnical assessments would be completed to allow detailed engineering of these features to ensure that the design is suitable for current climatic and operational constraints. Any system failure will result in the shutdown of operations to ensure the safety of not only infrastructure but all applicable environmental criteria, inclusive of TKLU aspects. Further to the design taking into account TKLU aspects, and applicable engineering constraints all facets of the Project will be subject to a rigorous HAZOP and operational procedures to ensure proper and safe operation subject to approval from the Crown as it relates to the safe operation of the Project. Overall environmental effects to each component cannot be quantified however Treasury Metals has revised the EIS to include the following key changes with respect to traditional knowledge and traditional land and resource use: • Traditional knowledge obtained from various Indigenous communities has been incorporated into each subsection of Section 5 (Existing Environment(i.e. 5.1 Climate, 5.2 Air Quality, 5.3 Noise and Light, 5.4 Geology, 5.5 Terrain and Soil, 5.6 Hydrogeology, 5.7 Surface Hydrology, 5.8 Aquatic Resources, 5.9 Terrestrial Resources, 5.10 Migratory Birds,5.11 Species at Risk, and 5.12 Human Environment); • Traditional land and resource use is discussed for each Indigenous community in Section 5.13;

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					• The information presented in Section 5 of the revised EIS was essential to the effects assessment completed for Indigenous peoples in Section 6.21 and specifically for each community in Section 6.22 of the revised EIS. It was also essential as part of the Valued Component selection process outlined in Section 6.1.3 of the revised EIS. Treasury Metals has revised the EIS and the Project design to reflect the valued traditional knowledge shared by all communities and will continue to work with all community to ensure that any potential impacts of the Project on their traditional land and resource use are properly mitigated. B. Contingency and responses procedures will be designed prior to construction and operation of the Project. Current engineering design is in preliminary stage. All management systems associated with the Project will be subject to Federal and Provincial jurisdictions, and as such will reflect the requirements of legislation and ensuring the safety of all employees and associates of Treasury Metals. Typically in the slope failure type of incidents there is significant warning from monitoring equipment that is installed on site. Such is the case the operations can be ceased and or adjusted to maintain the safety of mine personnel or otherwise. Contingency emergency response for all of the aforementioned incidents will be guided by the emergency response procedure and all technical details of the contingency will heavily rely on the actual failure should it occur.
246	AM(1)-04	CEA Agency	Appendix GG section 3.3.4 EIS, Sections 4.3.2.3, 6.4.1.12	Section 7.1.2, 10.1.2	**<u>Summary of Comment / Rationale:</u>** Appendix GG describes what would happen to water quality in the unlikely event of a TSF breach. All of the information is based on a comparison of contaminant concentrations in water to Provincial Water Quality Objectives (PWQO). The conclusion of the study is that material that enters Wabigoon Lake from a hypothetical dam breach is diluted within several days to concentrations that meet PWQO. There is no discussion of what the contaminant levels may be within the sediment and food web of Wabigoon Lake in the event of a hypothetical breach. Although the contaminant concentration in water will be diluted, the contaminant does not disappear. Depending on the particular pathway of each contaminant, the contaminant may settle in sediment or bioaccumulate in aquatic life. A discussion of these pathways and projected concentrations within sediment and fish should be provided to fully understand the potential environmental effects from this worst case scenario. Appendix GG also does not take into account the possibility of a dam failure washing out the culverts along Tree Nursery Road, Highway 17 and the Canadian Pacific rail line. There are only three 1m wide culverts grouped together at the Canadian Pacific rail line. These three culverts are highly unlikely to accommodate the wave of water that would result from a dam failure. Section 6.4.1.12 (EIS) states that "In the highly improbable event of a catastrophic failure of the TSF, the resulting flood wave would increase the potential for fish mortality within Blackwater Creek as a result of its high kinetic energy until the flood wave velocity is attenuated as it reaches

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					bends and beaver ponds along the creek. This highly unlikely scenario would be of a relative short duration (several hours to few days) until the flow would return to seasonal normal (Section 4.3.2).” The main concern about fish mortality due to accidental release of deleterious substances lists the volume and velocity of water as main consequences of a TSF dam breach. There is no mention of the substances that would be released in this scenario, their effect on fish health and mortality and their persistence in the downstream local environment. Section 4.3.2.5 (EIS) states that “if the tailings solids dispersed on land and water bodies are not removed in a timely manner following a TSF dam breach, there could be a long term risk of migration. Runoff could mobilize tailings particles into Blackwater Creek and negatively affect its water quality (i.e., turbidity and chemical composition). It is less likely that remobilized particles would affect the quality of Wabigoon Lake since they would likely settle in low moving water such as beaver ponds along Blackwater Creek. However, high water levels and velocities, such as spring freshet, could remobilize the settled particles and affect the water quality of Wabigoon Lake. In addition, acid generating conditions may begin where tailings solids are exposed constantly or intermittently to air.” This section precludes that in the event of a dam failure most of the tailings solids and particles would settle in Blackwater Creek behind beaver dams and settle to the bottom. However, there is a risk high water levels and velocities such as spring freshet would remobilize the settled particles and affect the water quality of Wabigoon Lake and acid generating condition may also begin. However, this document fails to identify how long this is likely to occur and what the specific effects would be to the users of the lake and fish and fish habitat. This missing information is important to understanding the effects of a hypothetical dam breach on fish and fish habitat over the long term.
					Information Request / Comment: A. Provide an analysis of what the contaminant levels would be within the sediment and within the aquatic food web following a tailings storage facility failure, with a focus on contaminants that persist in the environment, bioaccumulate in fish or are toxic to fish, migratory birds or Aboriginal people. B. Describe the effects and their duration if particulate materials remobilize with every heavy rainfall or spring freshet. C. Describe detailed contingency and emergency response procedures, for a tailings storage facility failure to address effects to fish and fish habitat, migratory birds, and effects to Aboriginal peoples including, but not be limited to, country foods, current use of lands and resources for traditional purposes, and health and socio-economic conditions.
					Revised Response: Part A:

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					As described in Section 4.3.2 and Appendix GG-1 of the revised EIS, in the highly unlikely event of a failure of the tailings storage facility (TSF), only the water present in the TSF would reach Wabigoon Lake. In contrast, the solids present in the TSF (i.e., tailings) released in the highly unlikely event of a TSF failure would remain on the land, or within Blackwater Creek, without reaching Wabigoon Lake as shown on Figure 4.3.2.3-3, and in Appendix GG-2 to the revised EIS. These solids would be contained as set out in the spill management plan, and remediated as soon as practicable. Section 4.3.2.5 of the revised EIS has been re-written to confirm that tailings released in the highly unlikely event of a TSF failure would not be left in the environment, but would be contained and remediated as soon as practicable. While the specific details of the tailings recovery strategy would be dependent on the extent and nature of the spill, a general strategy would involve remediating the tailings spilled on land between the TSF and the creek as soon as the TSF could be stabilized to receive the spilled tailings. Tailings that reach Blackwater Creek would need to be contained with sediment traps, and would then be remediated in winter, where the ground bordering the creek can be frozen, and when creek flows are predictably low. Although the excavation of the tailings present in Blackwater Creek would not likely occur until the winter months following a highly unlikely breach of the TSF, Blackwater Creek is sufficiently close to the roadway that mitigation activities to control the movement of sediments within Blackwater Creek could be done immediately, without the need for access by heavy materials. Although the tailings released in the highly unlikely event of a TSF have been shown to deposit primarily on land and in the stretches of Blackwater Creek in the vicinity of the TSF as shown on Figure 4.3.2.3-3, and in Appendix GG-2, there is the potential for the compounds present in water released will reach Wabigoon Lake and could deposit within the water column, affecting sediment concentrations within the lake. In addition, there is the potential for sediments deposited within Blackwater Creek to become suspended and transported downstream towards Wabigoon Lake in the implausible situation that Treasury Metals to do implement any measures to contain the sediments and prevent their migration downstream. An estimate of worst case sediment concentration increases of critical parameters have been approximated from the worst case failure modelling results presented in Appendix GG-1 of the revised EIS, along with the information available regarding the existing behavior of sediments within Blackwater Creek. This analysis is included as an addendum to this information request response (TMI_246-AM(1)-04_Addendum_1). This analysis does not include consideration for any mitigation measures that would be implemented by Treasury Metals in the highly unlikely event that a TSF failure occurs to contain tailings that are deposited within Blackwater Creek and prevent their resuspension and transport to Wabigoon Lake. The analysis (see TMI_246-AM(1)-04_Addendum_1) also goes on to evaluate the effects and consequence of contaminants that persist in the environment to affect fish, fisheries, wildlife, migratory birds, as well as the potential effects and consequence on members of Indigenous communities. The analysis includes identification of effects on the use of lands and resources for

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					traditional purposes, as well as the health and economic effects for members of Indigenous communities. Part B Metals do not biodegrade or disappear, but over time it would be expected that they would become distributed within a greater depth of the sediment column due to the actions of sediment burrowing organisms, and as a result of new sediment influx from lake inflow waters. As such, initial metal concentrations observed in the upper 2 cm layer of the lake sediment would become gradually reduced over time. If concentrations of metals in the sediments were to become affected as described in response TMI_246-AM(1)-04_Addendum_1, it would be expected that benthic organisms would ingest these sediments and that fish that feed upon these organisms would take up additional metal concentrations. It would also be expected that fish that feed upon these fish, such as pike and walleye, would also tend to biomagnify metals such as cadmium, lead and mercury. The extent to which such metal uptake would be expected to occur would depend on the fish species involved and the amount of time they spend feeding in the zones where sediments are likely to be most affected (i.e., the yellow and orange zones show on Figure 2-3 of response TMI_246-AM(1)-04_Addendum_1). With the levels of uncertainty it is not reasonably possible to predict increased body burden concentrations of metals that could occur in the different fish species over time. Nor are such predictions justified given the unlikely scenario being considered. It is recognized that metals such as cadmium, lead and mercury biomagnify within aquatic food chains. However, the ecological health risk of sediment contamination in the event of a catastrophic spill is considered to be limited, as the zone of influence is expected to be confined primarily to the areas at the mouth of Blackwater Creek, Keplyn Bay, and extending towards Bonny Bay (the yellow and orange zones on Figure 2-3 of TMI_246-AM(1)-04_Addendum_1). These zones comprise a very small portion of the lake area, and would therefore be expected to have only a limited effect, if any, on fish tissue metal levels as measured on a lake-wide basis. Human health is protected via the pre-existing fish consumption advisory in the area surrounding the Project. With respect to Blackwater Creek, it would be expected that most fish mortality would come from the high kinetic energy associated with the release, as this would likely result in a number of individuals becoming stranded as the flood pulse waters receded. Parameter concentrations shown in Table 2-1 of response TMI_246-AM(1)-04_Addendum_1 may or may not be acutely toxic to some forms of aquatic life depending on hardness and other exposure related factors; but based on the modeled concentrations any such toxic effects would be very short-term, if they occur at all. The aspect of greatest interest, in the event of a catastrophic tailings spill, is the efficiency of tailings solids clean-up as stressed by the reviewer. Spilled tailings solids would end up on land as well as in Blackwater Creek. Appendix K projects that the tailings will be metal leaching and

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					potentially acid generating, and that the time to acidic onset of exposed tailings could be as little as a few years. Any tailings that are spilled on land could be cleaned-up within a reasonable timeline, likely less than one year, before the onset of acid mine drainage. Part C Details of the tailings recovery strategy would be dependent on the extent and nature of the spill. The first task would be to survey the extent of the spilled deposit and to plan recovery strategy details. Such strategies would be developed in consultation with government agencies and the local Indigenous communities. As a general strategy, measures to contain and prevent the migration of tailings deposited in Blackwater Creek from getting transported further downstream would happen immediately, and given the proximity of Blackwater Creek to existing roadways could be done manually, without the need for heavy equipment. The tailings spilled on land between the TSF and the creek would be cleaned up as soon as the TSF could be stabilized to receive the spilled tailings. Clean-up in this case would involve the use of dozers, excavators, loaders and haul trucks. Spilled tailings in the creek would need to be cleaned up mainly in winter, where the ground bordering the creek can be frozen, and when creek flows are predictably low. Access by heavy equipment to the creek would be provided by an emergency winter road constructed parallel to the creek. Heavy equipment (excavators, loaders, dozers) would operate from off the winter road, and spilled tailings would be excavated and transferred to haul trucks for transport back to the TSF. Once the spilled tailings have been removed, the creek would have to be re-shaped, using natural channel restoration strategies, and rock check control structures would likely be required at critical points in the system, to reduce creek flow velocities and erosion potentials until the creek banks can be successfully revegetated. Despite having a strategy available for responding to and cleaning up a tailings spill in Blackwater Creek, the challenges of any such action should not be under estimated.
247	AM(1)-05	CEA Agency	EIS Section 3.7.1 Appendix D Section 5.5 Appendix GG	Section 7.1.2	**Summary of Comment / Rationale:** Section 3.7.1 (EIS) states: "The freeboard will be based on peak water levels occurring within the spillway during the occurrence of the inflow design flood (IDF). The IDF will be based on the hazard potential classification (HPC) as identified by the Canadian Dam Association (CDA) guidelines and also the OMNRF Best Management Practices." A Hazard Potential Classification (HPC), even if preliminary, is required to report the Dam Break Analysis, Inflow Design Flood, Spillway Capacity, and Maximum Design Earthquake within the EIS. To establish the HPC two scenarios must be analyzed: one under normal operation (sunny day break), and one under flood conditions. The HPC is established as the worst of the two cases. Refer to Classification and Inflow Design Flood Criteria Technical Bulletin August 2011 (Lakes and Rivers Improvement Act – Administrative Guideline, Technical Bulletins, and Best Management Practices 2011- Classification and Inflow Design Flood Criteria Technical Bulletin, August 2011).

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					Section 7.1.2 of the EIS Guidelines states that the EIS will describe the safeguards that have been established to protect against tailings storage facility dam failure.
					Information Request / Comment: A. Provide the Hazard Potential Classification (HPC) (even if preliminary). B. Provide a revised Dam Break Analysis, Inflow Design Flood, Spillway Capacity, and Maximum Design Earthquake, taking into account the HPC. C. Using the revised Inflow Design Flood, revise Breach scenario 2 involving the overtopping failure caused by the local 100-year storm event inflow.
					Response: A. A preliminary HPC has been determined for the tailings storage facility (TSF). The HPC is based on the work that has been completed to date as well as available background information. The HPC will be confirmed and revised, as required, as the design of the facility is advanced. Determination of the HPC was completed in accordance with Ontario Ministry of Natural Resources Technical Bulletin “Classification and Inflow Design Flood Criteria”, August 2011 (MNR BMP). The HPC is determined from potential incremental losses for Life Safety, Property Losses, Environmental Losses and Cultural-Built Heritage Losses. The following provides a summary of the HPC assessment. Life Safety: Flood routing and inundation mapping was previously completed and included in the EIS as Appendix GG – Tailings storage facility Failure Modelling. The results of the flood routing provided were used to assess the potential houses or dwellings that fall within the potential flood plain. The results indicate 1 (one) house or dwelling lies within the flooded area with an additional house or dwelling as potentially being within the flood plain. The MNR BMP utilizes the following criteria to establish potential loss of life: • 2 x 2 rule – product of velocity and depth exceeds 0.37 m^2/s • Velocity > 1.7 m/s • Flood depth > 0.8 m Velocity data is not yet available and therefore flood depth has been used to identify hazards to life safety for houses that are within the inundation zone. The results of the flood mapping indicate that the water levels in the area of the house(s) can have a maximum depth of 1.3 m that exceeds the minimum depth identified above. The 2011 Statistics Canada data indicates an average of 2.6 persons per house for Ontario that corresponds to a minimum of 2.6 persons and a maximum 5.2 persons potentially at risk within the flooded area. A classification of “High” has therefore been assigned to Life Safety that corresponds to potential loss of life of 1-10 persons. Property Losses:

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					Property losses were assessed by inspecting the downstream infrastructure that could be affected by a dam failure. The infrastructure present in the downstream area consists of a hydro line, Tree Nursery, Normans and Anderson Regional Roads, CP railway line and Highway 17. The incremental losses in the event of a dam breach may consist of washouts to the roads that will include Highway 17 and the CP railway line. The loss of Highway 17, including the potential detour roads, would restrict emergency vehicle access from Dryden to the Mine Site as well as the Community of Wabigoon in addition to severely reducing Highway 17 vehicle movement. Similarly, loss of the rail line would restrict freight movement across Canada until the crossing could be re-established. The damage is expected to exceed \$3 million and may exceed \$30 million. Due to the potential loss of major infrastructure consisting of Hwy 17 and the rail line the failure was the basis for assigning a HPC of "Very High" for Property Losses. <u>Environmental Losses:</u> The majority of the tailings solids are anticipated to remain on the mine site and near the TSF resulting from the high viscosity of the material. Appendix GG of the EIS identified that the tailings would occupy an approximate area of 0.39 km^2 if released from the facility. The occurrence of the dam breach would most likely happen during operations and mine staff would be on-site to provide short-term containment of tailings solids as well as initiate rehabilitation activities. The impact to fish or wildlife habitat would therefore be short-term with restoration likely and low likelihood of negatively affecting the natural environment. Supernatant and tailings pore water would also be released and, if the water managed to also breach the mine site perimeter ditch and berm containment system, would flow into Wabigoon Lake. The water would enter Wabigoon Lake at Kelpyn Bay, located near the east end of the lake and would disburse westerly towards the City of Dryden and the Dryden Water Intake. Potential species of fish that are present within the lake include Lake Whitefish, Muskellunge, Northern Pike, Sauger, Smallmouth Bass, Walleye, Yellow Perch and Black Crappie. There are no known critical fish or species classified under the Ontario Endangered Species Act. Although the water released from the TSF would meet the Metal Mining Effluent Regulations (MMER), water quality would be affected by the inflow of water from the TSF in the event of a dam breach as identified by the water quality modelling provided in Appendix GG of the EIS. The concentrations are anticipated to be highest at the point of entry into Wabigoon Lake with high concentrations (>50%) occurring Kelpyn Bay. Table 8 in Appendix GG identifies that water quality parameters do not exceed the Ontario drinking water standards, or the more stringent Provincial Water Quality Objectives (PWQO) at either the Dryden Water Intake, or the outlet of the lake at Dryden. However, levels for several water quality parameters are predicted to exceed the PWQO, with the worst conditions shown in the modelling occur along the northeast shoreline from Keplyn Bay heading going northwest along the shoreline for about 5 km. There are 40 homes and 1 resort along the shore who most likely get their potable water from the lake and who will not be equipped

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					to filter and treat the water. Provisions to provide drinking water until conditions return to normal may be required in the event of a dam breach. The Village of Wabigoon or the more distant Wabigoon Lake Ojibway nation reservation are not predicted to be affected by a plume from as it is predicted to travel westward after entering Wabigoon Lake from Blackwater Creek. The results of the water quality modelling provided in Appendix GG of the EIS indicated that the degraded water quality conditions would improve naturally with the dilution in the water body indicating that there is a reasonable likelihood of being able to apply natural or assisted recovery activities to promote species recovery to viable population levels. A potential HPC of “High” to “Very High” can be applied to the Environmental Losses based on the above assessment. The HPC has therefore been assigned as “Very High”. <u>Cultural – Built Heritage – Losses:</u> Appendix U of the EIS provided the Archaeological and Heritage Assessment for the Goliath Site. The results of the assessment did not indicate the presence of Cultural Heritage Sites. A HPC of “Low” has therefore been assigned. <u>Summary</u> The following provides a summary of the preliminary HPC for the TSF at the Goliath Site: Loss of Life High Property Losses Very High Environmental Losses Very High Cultural – Built Heritage Losses Low The preliminary HPC for the TSF has therefore been assigned as “Very High.” B. A revised Dam Break Analysis is not required in determining the HPC. The dam break is used to develop the HPC for the dam based on incremental losses. The maximum volume of water that can be released from the dam is based on the storage capacity and is independent of the storm. The preliminary HPC that has been developed for the TSF, above, has been assigned as “Very High” that is already the highest HPC that can be assigned. The Inflow Design Flood (IDF) for the TSF based on a “Very High” HPC for Property and Environmental Losses is identified as 1/3 between the 1,000 Year Flood and PMF to PMF. The IDF for the TSF has therefore been conservatively assigned as the PMF. The PMF for the TSF has been selected as the PMP occurring in the spring. Applying the PMP in the spring season will result in the addition of snowmelt to the IDF. The PMP for the site has been preliminarily identified as 435 mm in 24-hrs. A snowmelt element has been added to the stormwater modelling for the site to include runoff from snowmelt during the occurrence of the PMP to model PMF conditions. Adding the snowmelt component essentially converts snowpack, present within the containment

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					area of the TSF, to runoff. The PMP was assumed to occur in April, to model the IDF, and used the meteorological parameters for April, from station data for the Dryden area to assess potential snowmelt. The resultant snowmelt component of the PMF, for the TSF impoundment area, was identified as a base flow of 0.9 m^3/s that has been assigned to the stormwater model for spillway assessment. Spillway capacity and the ability to effectively pass the IDF is based on peak flow depth and the spillway width. A trapezoid spillway is planned for the TSF and the final spillway invert identified for the EIS is El. 418.5 m with a final dam crest at El. 420.0 m. These levels will be confirmed as the Project is advanced through engineering design. A spillway width of 5.0 m with side slopes of 3H:1V will result in a peak depth of flow through the spillway during the occurrence of the IDF of 0.4 m. The assessment was completed assuming that all contingency storage within the facility had been depleted and the pond level in the TSF is at the spillway invert at the start of the storm event. The Design Earthquake Criteria requirements are outlined in Table 1 of the MNR Technical Bulletin for Seismic Hazard, Assessment and Considerations. The TSF has a HPC of “Very High” with Property and Environmental Losses being the controlling category identifies the annual exceedance probability for earthquake design ground motion as the 2,500 to 10,000 year event. The 2,500 year event was identified in Appendix D, Table 2.1 as the peak horizontal ground acceleration (PGA) of 0.036g. Seismic data for the area was updated in 2015 (NBCC) and the updated 2,500 year event is 0.044g. A preliminary assessment has been completed to infer the 5,000 and 10,000 year events that will be confirmed using a site specific seismic study as the Project is advanced through detailed engineering. The results of the preliminary assessment indicate that the 5,000 and 10,000 peak ground accelerations are 0.075g and 0.128g, respectively. At present, the return period that has been assigned to the TSF is the 5,000 year event with a corresponding peak ground acceleration of 0.075g. C. As identified above as part of the response to Part B, completion of an additional Dam Break Study is not required to assess the HPC of the TSF. The volume of water that would be released from the TSF from an overtopping type failure is independent of the storm event and consists of the volume of water within the TSF impoundment. Although the IDF identified for the TSF is larger than the 1:100 yr. event previously used for the assessment, the preliminary HPC for the TSF has been assigned as “Very High” that is the highest classification for a dam as outlined by the MNR BMP. The HPC would therefore not be increased as a result of an additional Dam Break Assessment.
248	AM(1)-06	CEA Agency	EIS Section 3.7.5	Section 5.6 and 7.1.2	**Summary of Comment / Rationale:** Tailings spills can occur from pipeline breaks. Environmental damage increases with the length of time that a spill goes undetected. Pipeline routing should be designed to avoid environmentally

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					sensitive areas, such as waterbodies and wetlands. Fortifying the pipeline in these areas to reduce the risk of a pipeline break is also an option.
					Information Request / Comment: A. Describe what will be used for a tailings spill detection system (e.g. monitor for pressure drops within the tailings pipeline). B. Identify what, if any, pipeline routing and design features have been incorporated to reduce the risk and severity of impacts associated with pipeline breaks in any environmentally sensitive areas (e.g. waterbodies).
					Response: A. Pressure gauges at strategic points in the tailings discharge line and in the reclaim water line will be monitored in the process plant control room to identify potential pipeline breaks. Pipelines will be inspected on a shift basis by operations personnel and also environmental personnel. B. The pipelines will be routed as indicated on Figure 3.0-1A in the revised EIS. The routing is within the perimeter runoff and seepage collection ditch system that will contain contact water from the operations area to comply with Metal Mining Effluent Regulations and provincial legislation. Given this positioning, any spillage would be completely contained within the operations area. Pipelines will be durable, thick walled HDPE that is protected from accidental vehicular traffic.
249	AM(1)-07	CEA Agency	EIS, sections 3.0, 5.0 Appendix D Section 6.5 Appendix HH	Sections 7.1.2, 7.1.3	**Summary of Comment / Rationale:** According to Figures 5.5.3.to 5.5.5 (EIS) and section 3.3.1 (EIS), the overburden thickness varies from about 0-2 m to 10-15 m North and South of the proposed open pit area, respectively. As the overburden consists mainly of soft glaciolacustrine clays (Appendix D, section 6.5), landslides could be triggered by excavation operations during the opening of the pit. There at least three documented cases of large landslides (earthflows) that were triggered by mining or excavation operations in similar deposits. These landslides involved either glaciolacustrine clays in western Quebec (Eden, 1964; NRCan, 2011), or sensitive Champlain Sea clays (MTQ, 2014). All resulted in casualties. References: Eden, WJ (1964). Earthflows at the Beattie Mine Quebec, Canada. Canadian Geotechnical Journal, 1(2): 104-114. NRCan (2011). List of major landslide disasters in Canada – Belmoral Mine earthflow.

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					-MTQ (2014). Glissement de terrain du 29 janvier 2013 à la carrière Maskimo de l'Épiphanie. Rapport présenté à la Commission de la santé et de la sécurité du travail (CSST), Transports Québec, 211 p.
					Information Request / Comment: A. Document the physical and mechanical properties of the glaciolacustrine clays (e.g. liquidity index to assess the capacity of these soils to flow once mobilized by a failure; piezocone tests to obtain a more detailed stratigraphy and more representative strength parameters). B. Provide information of the possibility that down-hill progressive landslides (e.g. Bernander, 2008) could be induced by the weight of the two storage areas (Waste Rock Storage Area and the Overburden Storage Area, e.g. Fig. 3.01 (EIS). C. Provide results of slope stability analyses and mitigation measures if required in (Appendix HH). Reference: -Bernander, S. (2008). Down-hill progressive landslides in soft clays. Research Report, Lulea University of Technology, Lulea, Sweden, 120 p.
					Revised Response: A. The implications associated with a failure is discussed in Section 4 Accidents and Malfunctions of the revised EIS. Since the time of the original EIS submission Treasury Metals has been advancing their geotechnical investigation, and information received from the geotechnical teams regarding the physical and mechanical properties of the glaciolacustrine clays (including liquid limit, plastic limit, plasticity index) was used to revise this Section of the EIS. The most recent borehole logs are attached to this IR for reference as TMI_249-AM(1)-07_Attachment 1. B. As stated in Section 3.5.1 and Section 4 of the revised EIS, the waste rock stockpile are anticipated to have a footprint of 37 ha, a height of 30 m above grade, and side slopes with a final overall grade of 3 horizontal width to 1 vertical height (3H:1V). The stockpiles are being designed to have stable slopes under seismic conditions utilizing the most recent site data available (i.e. TMI_249-AM(1)-07_Attachment 1). At this time the geotechnical evidence suggests that the possibility of down-hill progressive landslides induced by the height of the WRSA is extremely low. In the event new geotechnical data suggests otherwise, Treasury Metals will alter the design to incorporate stable slopes. C. At this time, the geotechnical work does not suggest any instability of the slopes of the WRSA. As Treasury Metals progresses its operations the slope stability and monitoring programs will be in place to ensure prevention and proper mitigation of any failure event. With the aforementioned

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					measures the possibility of a slope failure is a highly unlikely event and as such is not required as part of the Failure Modes and Effects Analysis.
250	AM(1)-08	CEA Agency	EIS Section 5.4.1 EIS Appendix D Figure 1.1	9.1.2	**Summary of Comment / Rationale:** No contour information appears on Figure 1.1 (Appendix D), which is referenced in EIS Section 5.4.1 as evidence that the project area is one of relatively low relief and support for the assertion that landslides, slope erosion, and potential for instability is limited in the project area.
					Information Request / Comment: A. Provide a revised Figure 1.1 (Appendix D) with contour information.
					Response: Since the submission of the original EIS, Treasury Metals has been advancing their engineering for the Project. A summary of the refinements to the Project since the completion of the EIS are presented in Section 3.16 of the revised EIS. The requested topography is provided in Figure 3.0-1A of the revised EIS.
251	CE(1)-01	CEA Agency	EIS Sections 7.0, 7.2.1, 7.3.6	Section 12.1.2	**Summary of Comment / Rationale:** The methodology for the cumulative effects assessment must be clearly described in order for reviewers of the EIS to examine how the analysis was conducted and what rationale supports the conclusions reached. Section 7.0 (EIS) describes the definition of cumulative effects, scope, and the results of the assessment; however, it does not describe the methodology used in conducting the cumulative effects assessment. The spatial and temporal boundaries of cumulative environmental effects must be justified clearly.
					Information Request / Comment: A. Clearly describe the methodology used to predict cumulative environmental effects, including a description of how an effects rating criteria was applied and the method by which criteria were combined and weighted. B. Provide justification for choosing the three spatial scales (LSA, RSA and 40km radius centered on the Project pit). C. Provide a map that clearly defines the spatial boundaries that encompass the potential environmental effects on the selected valued components of the Project in combination with other physical activities that have been or will be carried out, including the additional projects listed in CE(1)-02. D. Provide justification for choosing the temporal boundary of 10 years.

					Revised Response: Section 7 Cumulative Effects of the revised EIs (April 2018) has been revised substantially to reflect a number of comments received as part of the Round 1 Information Request Process. Please refer to Section 7 of the revised EIS for full details. Details pertinent to this specific IR have been included for reference in order to achieve completeness. A. The approach and methods used for scoping cumulative effects are clearly set out in Section 7.3 of the revised EIS, and follows the recommended process set out in the operation policy statement for evaluating cumulative effects (CEAA, 2014). This process allows for the identification of projects whose potential effects overlap with those of the Goliath Gold Project on both a temporal and spatial scale. Projects that potentially overlap both spatially and temporally were advanced for further analysis. The analysis of cumulative effects varied depending on the VC considered, and used a combination of quantitative, and if necessary, qualitative evaluations. The evaluation of cumulative effects presented in Section 7 of the revised EIS was done in accordance with the EIS Guidelines for the Goliath Gold Project. The Guidelines indicate that the determination of significance is a separate step from the assessment of residual and cumulative effects, and occurs after the evaluation of both residual and cumulative effects have been completed (and as set out in Figure 1 of the EIS Guidelines reproduced below). Section 13.1.1 of the EIS Guidelines further reinforce the organization provided in the revised EIS, in stating that the significance section of the EIS "*…will provide a detailed analysis of the significance of the residual environmental effects (including cumulative environmental effects) that are considered adverse*". For these reasons, a determination of significance was not presented in cumulative effects assessment presented in Section 7 of the revised EIS. In keeping with the EIS Guidelines, the evaluation of significance of residual and cumulative effects have been presented in Section 8 of the revised EIS. Section 8.1 of the revised EIS describes the "*…effects rating criteria was applied and the method by which criteria were combined*" (per Comment A above). B. The evaluation of cumulative effects was updated during preparing the revised EIS. The updated cumulative effects assessment (Section 7) addresses specific issues identified in the Round 1 information request process, and follows the recommended process set out in the operation policy statement for evaluating cumulative effects (CEAA, 2014). The spatial boundaries used for evaluating cumulative effects are described in Section 7.3.2 of the revised EIS, and are defined in Table 7.3.2-1 for each of the VCs for which residual adverse effects were predicted. The spatial boundaries used are consistent with the refined study areas used for evaluating the effects of the Project, as described in Section 6.1.4 of the revised EIS. C. As part of the updated cumulative effects assessment presented in Section 7 of the revised EIS, additional maps have been provided to show the relationships between the spatial boundaries used for evaluating cumulative effects and those current and certain or reasonably foreseeable projects evaluations (including those listed in TMI_253-CE(1)-02): • Terrain and soils: Figure 7.3.2-1;

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					• Geology and geochemistry: Figure 7.3.2-1; • Noise: Figure 7.3.2-2; • Air quality: Figure 7.3.2-2; • Surface water quality: Figure 7.3.2-3; • Surface water quantity: Figure 7.3.2-3; • Ground water quality: Figure 7.3.2-3; • Ground water quantity: Figure 7.3.2-3; • Wildlife and wildlife habitat: Figure 7.3.2-4; • Migratory birds: : Figure 7.3.2-4; • Fish and fish habitat: Figure 7.3.2-4; • Wetlands and vegetation: Figure 7.3.2-4; • Land use: Figure 7.3.2-5; • Social factors: Figure 7.3.2-5; • Economic factors: Figure 7.3.2-5; and • Aboriginal peoples: Figure 7.3.2-6. D. The evaluation of cumulative effects was updated in the revised EIS to address specific issues identified in the Round 1 information requests, and to follow the recommended process set out in the operation policy statement for evaluating cumulative effects (CEAA, 2014). The temporal boundaries used for evaluating cumulative effects are described in Section 7.3.3 of the revised EIS, and are defined in Table 7.3.3-1 for each of the VCs for which residual adverse effects were predicted. The temporal boundaries used for assessing cumulative effects were selected to be consistent with those used in evaluating the effects of the Project, as described in Section 6.1.5 of the revised EIS, namely: • Site preparation and construction phase (2 years); • Operations (11 to 12 years); • Closure (3 years); and • Post-closure (beyond year 17).

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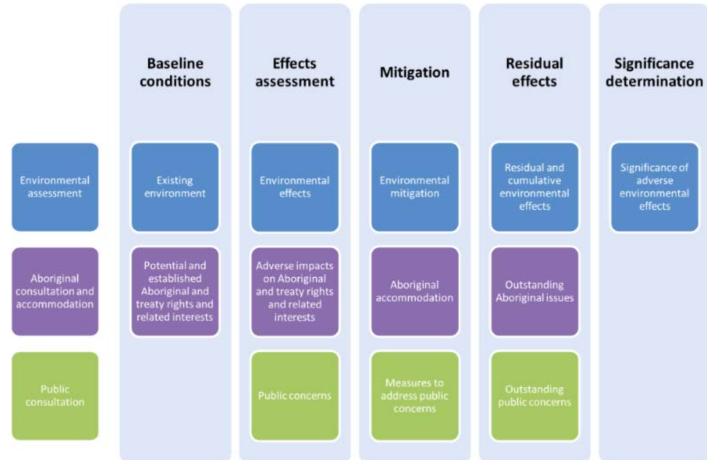
					Figure 1: EA Process Diagram for the Goliath Gold Project from the EIS Guidelines  *Source: Canadian Environmental Assessment Agency 2013. Environmental Impact Statement Guidelines: Guidelines for the preparation of an Environmental Impact Statement for an environmental assessment conducted pursuant to the Canadian Environmental Assessment Act, 2012, Goliath Gold Project, Treasury Metals Inc., February 21, 2013*
252	CE(1)-02	CEA Agency	EIS Sections 7.0, 7.2.3, 7.2.3.1	Section 12.1.2	**Summary of Comment / Rationale:** Section 7.2.3.1 (EIS) states that "due to the lack of existing or planned mining projects within the cumulative effects study areas, mining and exploration projects are not expected to contribute to cumulative effects in the foreseeable future". However, Treasury Metals Inc. announced, on February 12, 2015, the addition of a second diamond drill to accelerate Phase II of the exploration program at its Goliath Gold Project. Table 1.5.1 (EIS, page 1-20) also shows anticipated provincial permits required for a 1-5 MW power generation facility constructed by a power supplier to support the Project. Despite these activities occurring or proposed at the project site, they were not included in the cumulative effects analysis. Information on the environmental effects of these activities will assist in the understanding of cumulative environmental effects on fish and fish habitat, migratory birds, Aboriginal health and current use of lands and resources for traditional purposes. In addition, the following past, existing and reasonably foreseeable future projects within the cumulative effect study areas needs to be included in the cumulative effects assessment: A. Highway 17 B. Canadian Pacific Rail

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					C. Forestry operations by Dryden Forest Management Company D. Domtar Corp.'s Dryden Pulp Mill E. Proposed 1-5 MW power generation facility F. Proposed Energy East Pipeline G. Proposed Josephine Cone Mine Project H. Aggregate pits or quarries The mining claim #: 3017940 overlays Aggregate Permit #: 46764, permitted to D&D Contracting as a commercial operation. Aggregate extraction occurs in the Local Study Area and should be taken into consideration in the cumulative effects assessment. The proponent's characterization of cumulative effects for air and surface water quality are unclear. Statements in the EIS contain a number of assumptions that do not appear to be based on actual numerical data. For example, section 3.2 (Appendix J) and section 5.2.1.1 (EIS) contradict each other in terms of the potential for existing projects to contribute to baseline air quality at the project site and within the LSA. The EIS does not assess the potential effects to recreational and commercial, trapping, hunting and/or fishing. Due to the potential for certain project activities requiring other federal approvals to have indirect effects on human health and socio-economic conditions not tied to Aboriginal peoples, these effects need to be assessed. Furthermore, section 7.0 (EIS) does not address the potential cumulative effects of the Project in combination with other activities, such as recreational and commercial, trapping, hunting and/or fishing. This analysis is necessary to examine whether the proposed project, in combination with other activities could result in the overexploitation of resources during the life of the proposed project. Sections 7.2.3.3 and 7.2.3.4 (EIS) note that none of the major projects of the Northern Highways Program slated for 2015-2017 construction and completion or the Hydro One transmission system projects fall within the cumulative effects study areas. The locations of these major projects and transmission system projects would assist in substantiating this claim. Section 7.2.3.4 (EIS) states that Wataynikaneyap Power is proposing a 300-km long 230-kV transmission line from south of Dinorwic to Pickle Lake, Ontario. The proposed project falls within the defined spatial boundaries of the cumulative effects study area. The potential effects of the proposed alternative routes of the 230kV transmission line need to be considered to assist in the understanding of cumulative effects assessment. The Operational Policy Statement (http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=1DA9E048-1) states that potential cumulative environmental

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					effects should be considered in the analysis even when there is little supporting data or there is predictive uncertainty. Section 7.2.3.5 (EIS) states that the development of local infrastructure and minor road upgrades are expected in communities within the cumulative effects study area (i.e., Dryden and Wabigoon). The locations, descriptions and the potential effects of the physical activities noted above are required to assist in the understanding of cumulative effects assessment.
					Information Request / Comment: A. Provide a revised cumulative effect assessment that includes an analysis of the potential environmental effects of the Project in combination with the following projects: Treasury Metals Inc. exploration program, Highway 17, Canadian Pacific rail line, forestry operations by Dryden Forest Management Company, Domtar Corp.'s Dryden Pulp Mill, proposed 1-5 MW power generation facility, Energy East pipeline, Josephine Cone Mine Project, aggregate pits or quarries, the 230kV transmission line proposed by Wataynikaneyap Power and the development of local infrastructure and minor road upgrades in Dryden and Wabigoon. Provide clear rationale for the exclusion of projects from the cumulative effect assessment, if applicable. Provide detailed descriptions of the projects listed above. B. Revise the cumulative effects assessment to include an analysis of the potential environmental effects of the Project in combination with other ongoing activities such as, but not limited to, hunting, trapping and fishing. C. Provide a map that shows the Project and all the locations of the past, existing, certain and reasonably foreseeable physical activities identified in section 7.2.3 (EIS) and those listed above in comments A and B.
					Revised Response: Section 7 Cumulative Effects of the revised EIS (April 2018) has been revised substantially to reflect a number of comments received as part of the Round 1 Information Request Process. Please refer to Section 7 of the revised EIS for full details. Details pertinent to this specific IR have been included for reference in order to achieve completeness. A. Section 7 of the revised EIS provides an updated cumulative effects assessment that considers the following existing and/or reasonably foreseeable projects listed in the information request and comments: • Treasury Metals Inc. exploration program; • Highway 17; • Canadian Pacific rail line; • Forestry operations by Dryden Forest Management Company;

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					• Domtar Corp.'s Dryden Pulp Mill; • Josephine Cone Mine Project; • Aggregate pits or quarries; • The 230 kV transmission line proposed by Wataynikaneyap Power; and • The development of local infrastructure and minor road upgrades in Dryden and Wabigoon Of the list of Projects identified in the original information request, the following projects were not included in the cumulative effects assessment (Section 7 of the revised EIS) for the reasons given below (all sections referenced refer to the revised EIS): • Proposed 1-5 MW power generation facility: This activity is not proposed as part of the Goliath Gold Project, although it is an option considered in the alternatives assessment (Section 2). Per Section 3 of the revised EIS, power for the Project will be provided from the existing 115 kV HydroOne transmission line that cross the Project site, adjacent to the processing plant. This generation facility has been included in the discussions of reasonably foreseeable projects provided in Section 7.2.2 for completeness, and to address the requirement set out in this information request where its exclusion from the cumulative effects assessment has been rationalized. • Energy East Pipeline: TransCanada's Energy East Pipeline terminated by TransCanada Corporation in the fall of 2017. It has been included in the discussions of reasonably foreseeable projects provided in Section 7.2.2 for completeness, and to address the requirement set out in this information request where its exclusion from the cumulative effects assessment has been rationalized. B. As described in Section 7.2.1 of the revised EIS, the cumulative effects assessments used the present day conditions for describing existing conditions, which inherently includes the effects of ongoing harvesting activities in the region (fishing, hunting and trapping). This is consistent with the guidance set out in the operational policy statement (CEAA, 2015) and the technical guidance from the Agency (CEAA, 2014), that the use of the present day conditions is an appropriate means for capturing the cumulative effect from past activities. C. A map showing the existing, certain and reasonably foreseeable physical activities identified used in the cumulative effects assessment has been provided as Figure 7.2.2-1 in the revised EIS. The figure shows the relative locations of the existing and reasonably foreseeable project tot eh Goliath Gold Project. It should be noted that neither the "proposed 1-5 MW power generation facility" nor the "Energy East Pipeline" are shown in Figure 7.2.2-1 as these are no longer reasonably foreseeable projects, as discussed in the response to part A.

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253	CE(1)-03	CEA Agency	EIS Sections 3.4, 7.2.3	Section 8.1	**Summary of Comment / Rationale:** The proponent indicated that the underground mining resource is not well defined, and there may be a larger resource body that will not be confirmed until mine operations have been underway. Given that the waste rock and tailings are potentially acid generating (PAG) and the limited space presently available to the proponent for its management, increases in the volumes of these materials beyond the capacity of the mine waste management plans that have been proposed could lead to adverse water quality impacts. According to the Agency's draft cumulative effects technical guidance (http://www.ceaa-acee.gc.ca/Content/B/8/2/B82352FF-95F5-45F4-B7E2-B4ED27D809CB/Cumulative_Environmental_Effects-Technical_Guidance-Dec2014-eng.pdf), "a future physical activity would be considered reasonably foreseeable and should be included in the cumulative effects assessment if… the completion of the project would facilitate or enable the future development and the economic feasibility of the project is contingent upon the future development." It would appear that the additional mining of the larger resource body and exploration activities fall under these criteria and would need to be included in the cumulative effects assessment.
					Information Request / Comment: A. Identify the measures that could be put in place to ensure mining of the additional larger resource body will not lead to cumulative impacts to water quality given that these materials are PAG. B. Provide a revised cumulative effect assessment that includes an analysis of the potential environmental effects of the Project in combination with the addition mining activities for the larger resource body and related exploration activities.
					Response: The current resource defines mineralized rock in the "Measured", "Indicated" and "Inferred" categories as defined as part of the National Instrument (NI) 43-101 process. This is a regulatory framework of the Ontario Securities Commission that must be strictly adhered to. There is no reasonable or justifiable method to estimate future gold resources for this Project. As set out in the Technical Guidance for Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012 (CEAA, 2014), a cumulative effects assessment of a project "…must include future physical activities that are certain and should generally include

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					physical activities that are reasonably foreseeable." At this time, future resources would neither be certain, nor would they be reasonably foreseeable under NI 43-101. In the event that a future resource is identified of the site, it would not be able to be developed without having to go through its own appropriate environmental assessment process. Such a process would require that the proponent demonstrate that no significant adverse effects would occur, including cumulative effects with the current project.
254	CE(1)-04	CEA Agency	EIS Sections 7.0, 7.3	Section 12.1.2	**Summary of Comment / Rationale:** Data collection and/or generation are important components of a cumulative environmental effects assessment. The conclusions of the cumulative effects assessment in section 7.3 (EIS) are not based on quantitative analysis, which makes it difficult for reviewers of the EIS to replicate.
					Information Request / Comment: A. Provide quantitative data and analysis to substantiate the conclusions of the assessment of cumulative effects in combination with other past, present and reasonably foreseeable projects and activities in the study areas. If no quantitative data is available provide a rationale clearly explaining the reasons why the data is not readily available and, provide a qualitative assessment to substantiate the conclusions.
					Revised Response: Section 7 Cumulative Effects of the revised EIS (April 2018) has been revised substantially to reflect a number of comments received as part of the Round 1 Information Request Process. Please refer to Section 7 of the revised EIS for full details. Details pertinent to this specific IR have been included for reference in order to achieve completeness. As part of the process for revising the EIS, the evaluation of cumulative effects was updated to address specific issues identified in the Round 1 information requests, and to follow the recommended process set out in the operation policy statement for evaluating cumulative effects (CEAA, 2014). Section 7.2 identifies the past, present and reasonably foreseeable future projects that have now been included in the cumulative effects assessment, the location of which are illustrated on Figure 7.2.2-1 of the revised EIS. This list of projects includes all of the projects set out in TMI_252-CE(1)-02, with the following exceptions and reasoning: • Proposed 1 to 5 MW power generation facility: This was never a project, rather it was an alternative being considered to supply power to the Goliath Gold Project. As described in Section 3.12 of the revised EIS, power for the Project will be provided from the 115 kV

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					HydroOne transmission line that runs through the Project, adjacent to the processing plant. • Energy East Pipeline: TransCanada's Energy East Pipeline was a proposed 4,500 km pipeline, which would have run through northern Ontario along the existing natural gas pipeline corridor. This project was terminated by TransCanada Corporation in the fall of 2017. A cumulative effects scoping exercise was completed as set out in process set out in the operation policy statement for evaluating cumulative effects (CEAA, 2014). The scoping focused on those valued components (VCs) for which residual adverse effects were identified (Section 7.3.1). For each of the VCs with residual adverse effects, the spatial boundaries (Section 7.3.2) and temporal boundaries (Section 7.3.3) for potential cumulative effects were identified. The spatial boundaries for potential cumulative effects are illustrated in Figures 7.3.2-1 through 7.3.2-6. For each of the VC with predicted residual effects, the identified present and reasonably foreseeable future projects were screened to determine whether their effects would overlap both spatially and temporally with those of the Project. Consistent with the guidance set out in the operational policy statement (CEAA, 2015) and the technical guidance from the Agency (CEAA, 2014), the cumulative effect from past activities in the area were captured with the use of the present day conditions in the analysis. All of the VCs for which there were residual adverse effects identified, and one or more of the present and reasonably foreseeable future projects were identified as having effects that would overlap both spatially and temporally with those of the Project were brought forward for additional analysis in Section 7.4.2 of the revised EIS for either quantitative (e.g., wildlife and wildlife habitat VC where there was sufficient information for a GIS analysis) or qualitative assessment of potential cumulative effects. In accordance with Section 13.1 of the EIS Guidelines for the Goliath Gold Project, an evaluation of significance of the residual effects of the Project, including cumulative effects, was completed, and the results presented in Section 8 of the revised EIS. Those cases where there were quantifiable cumulative effects, they were identified highlighted clearly (e.g., Section 8.12, wildlife and wildlife habitat, 8.12.1 Residual and Adverse Effects Advanced to Significance Assessment, 8.12.2 Description of Significance, 8.12.1.7 Determination of Significance).
255	CE(1)-05	CEA Agency	Appendix GG section 3.3.4 EIS, Sections 4.3.2.3, 6.4.1.12	Section 12.1.2	**<u>Summary of Comment / Rationale:</u>** The response to information request AM(1)-04 is relevant to determining cumulative effects of a potential dam breach on subsistence, commercial, and recreational fisheries that already have fish consumption advisories with respect to mercury.
					<u>Information Request / Comment:</u>

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					A. Revise the cumulative effects assessment to include consideration of how the tailings storage facility failure could affect the existing fish consumption advisory. B. Describe contingency and emergency response procedures for the potential effects noted above in the improbable event of a catastrophic failure of the tailings storage facility.
					Response: The potential effects, both immediately and in the longer-term, associated with a failure of the tailings storage facility (TSF) are detailed in the response to AM(1)-04 (TMI_246). A failure of the TSF represents a potential effect of the Project, and therefore, not a cumulative effect. However, the cumulative effects assessment needs to consider how the predicted effects of the Project, including the effects resulting from a TSF failure, could combine with the effects of other past, present and future projects. Based on the feedback from the Canadian Environmental Assessment Agency (the Agency) and other technical reviewers provided in IR Round 1 questions related to the approach used in the EIS for organizing and presenting the relevant information regarding the potential effects of the Project, including cumulative effects, Treasury Metals has prepared a revised EIS. The revised EIS is organized in a manner that corresponds with the requirements described in the EIS Guidelines, and specifically addresses issues identified in the IR Round 1 relating to the evaluation of cumulative effects. The revised EIS follows the process recommended in the operation policy statement for evaluating cumulative effects (CEAA, 2014).
256	CE(1)-06	CEA Agency	Appendix GG	Section 7.1.2	**Summary of Comment / Rationale:** The cumulative effects assessment also needs to assess the potential effects from accidents and malfunctions of the project in combination with other physical activities that have been or will be carried out; including, but not limited to, the following projects: Treasury Metals Inc. exploration program, Highway 17, Canadian Pacific rail line, forestry operations by Dryden Forest Management Company, Domtar Corp.'s Dryden Pulp Mill, proposed 1-5 MW power generation facility, Energy East pipeline, Josephine Cone Mine Project, aggregate pits or quarries, the 230kV transmission line proposed by Wataynikaneyap Power and the development of local infrastructure and minor road upgrades in Dryden and Wabigoon.
					Information Request / Comment: A. Provide a map that clearly defines the spatial boundaries that encompass the potential effects from accidents and malfunctions of the project in combination with other physical activities that have been or will be carried out, including the additional projects listed in CE(1)-02. B. Provide a revised cumulative effect assessment that includes an analysis of the potential environmental effects from accidents and malfunctions of the project in combination with other

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					physical activities or projects that have been or will be carried out, including the additional projects listed in CE(1)-02.
					Revised Response: As described in the Operational Policy Statement and technical guidance which were provided by the Agency regarding cumulative effects assessments, the environmental effects of accidents and malfunctions must be considered in the assessment of cumulative effects if they are likely to result from the Project. Additionally, the issue scoping stage of the cumulative effects assessment allows the practitioner to focus on those Project activities that were predicted to result in residual adverse effects. As part of the EIS, Treasury Metals conducted a failure modes and effects analysis, to determine what accidents were likely to occur and what the consequences could be from these accidents. The results are presented in Section 4 of the EIS and Appendix HH to the EIS. The analysis identified 137 plausible failure modes that could affect the environment. However, only 13 were identified as likely, expected or almost certain to occur during the Project. The 13 identified accidents and malfunctions that are likely to occur, are all associated with minor spills and leaks within the operations area. As described in Section 3.16.1, one of the refinements to the Project since the filing of the original EIS is the commitment to construct a perimeter ditch around the operations area during the site preparation and construction phase. The perimeter ditch will capture all runoff from the operations area and direct it to the water management system, where it will be re-used in the process. Excess water not required in the process will be treated to meet the Provincial Water Quality Objectives for the protection of aquatic life prior to being discharged into Blackwater Creek. Therefore, there would be no residual adverse effects to surface waters, and thus fisheries, associated with the 13 accidents and malfunctions identified as being likely to occur. As described in Section 12.13 of the revised EIS, Treasury Metals will develop and implement an emergency and spill response management plan. A requirement of the plan will be to isolate, then clean-up any spills that occur at the Project on a regular basis and as identified. This will ensure that there will be no residual adverse effects to soils associated with the 13 accidents and malfunctions that were identified as being likely to occur. Since there were no identified residual effects with the 13 accidents and malfunctions identified as being likely to occur, there is no requirement for them to be explicitly discussed as part of the cumulative effects assessment.
257	CE(1)-07	CEA Agency	EIS Table 7.3.2	Sections 9.1.3, 10.1.3	**Summary of Comment / Rationale:** The potential cumulative effects listed under Aboriginal People in Table 7.3.2 (EIS, page 7-20) are not clearly described. For example, in the “Potential Effect” column “fishing” is listed without any detail to describe what the impact to fishing is (e.g. reduced fish numbers, less access to fishing

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					locations, contaminated fish). Additional detail is needed to describe how the potential effects of fishing, hunting and trapping, gathering of country foods, and water quality and health effects will impact Aboriginal peoples.
					Information Request / Comment: A. Provide detail in Table 7.3.2 to describe the potential cumulative effects of water quality and health effects, gathering of country foods, hunting and trapping, and fishing.
					Revised Response: As part of the process to revised the EIS, the following valued components (VCs) were used for describing the effects of the Project on Aboriginal peoples: • Health effects • Gathering of plant material • Hunting and trapping • Fishing • Cultural and spiritual • Socio-economic effects The evaluation of Project effects on Aboriginal peoples provided in Section 6.21 of the revised EIS identified residual adverse effects for the above VCs, which were then carried forward for the consideration of cumulative effects. In revising the EIS, the evaluation of cumulative effects was also updated to address specific issues identified in the Round 1 information requests, and to follow the recommended process set out in the operation policy statement for evaluating cumulative effects (CEAA, 2014). The same VCs used for evaluating the effects of the Project were used in the revised cumulative effects assessment. Accordingly, the cumulative effects assessment included the following steps. • Only those VCs for which residual adverse effects were identified were carried forward for consideration in the cumulative effects assessment (Section 7.3.1). • The spatial boundaries for the cumulative effects were established with consideration for the Project effects (Section 7.3.2). The spatial boundaries for cumulative effects on Aboriginal peoples varied by the VC, as described in 7.3.2-1 and illustrated ion Figure 7.3.2-6.

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					• The temporal boundaries for cumulative effects were described in Section 7.3.3) for potential cumulative effects were identified. • For each of the VC with predicted residual effects, the identified present and reasonably foreseeable future projects were screened to determine whether their effects would overlap both spatially and temporally with those of the Project. The screening for the Aboriginal VCs is presented in Section 7.4.1 and summarized in Table 7.4.1-15. Consistent with the guidance set out in the operational policy statement (CEAA, 2015) and the technical guidance from the Agency (CEAA, 2014), the cumulative effect from past activities in the area were captured with the use of the present day conditions in the analysis. For those Aboriginal peoples VCs for which there were residual adverse effects identified (Section 6.21), and one or more of the present and reasonably foreseeable future projects were identified as having effects that would overlap both spatially and temporally with those of the Project (Table 7.4.1-15), these were passed forward for analysis in Section 7.4.2.16 of the revised EIS. Specifically, Section 7.4.2.16 provides an analysis of the cumulative effects of the Project, along with the effects from present and reasonably foreseeable Projects on the following: • Health effects related to Aboriginal peoples; • Gathering of plant material related to Aboriginal peoples; • Hunting and trapping related to Aboriginal peoples; and • Fishing related to Aboriginal peoples. The effects of the Project on water quality on Aboriginal peoples was captured as a component of the health effects, gathering of plant materials (i.e., wild rice), and fishing VCs used for describing the Project and cumulative effects on Aboriginal peoples.
258	EE(1)-01	CEA Agency	EIS Section 4.4.1	Section 7.1.3	**<u>Summary of Comment / Rationale:</u>** Section 4.4.1 (EIS) discusses the environmental impact of extreme floods on the tailings storage facility but does not assess the potential impact from extreme floods on the seepage collection system including the ditches around the infrastructure, the collection and polishing ponds, the Blackwater Creek Tributary 2 realignment and the Tree Nursery Road culvert on the project site. Section 7.1.3 of the EIS Guidelines states: “The EIS will take into account how local conditions and natural hazards, such as severe and/or extreme weather conditions and external events (e.g., flooding, ice jams, landslides, avalanches, erosion, subsidence, fire, outflow conditions and seismic events) could adversely affect the project and how this in turn could result in impacts to the environment.” and “The EIS will provide details of a number of planning, design and construction strategies intended to minimize the potential environmental effects of the environment on the project”.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Information Request / Comment: A. Assess the effects of extreme flood events (5-year vs. 100-year vs. 1000-year flood) on the seepage collection system including the ditches around the infrastructure, the collection and polishing ponds, the Blackwater Creek Tributary 2 realignment and the Tree Nursery Road culvert on the project site and how this in turn could result in impacts to the environment. B. Provide details on a number of planning, design and construction strategies intended to minimize the potential effects from extreme flood events on the seepage collection system including the ditches around the infrastructure, the collection and polishing ponds, the Blackwater Creek Tributary 2 realignment and the Tree Nursery Road culvert on the project site.
					Response: A. Treasury Metals is committed to implementation of environmental protection measures as part of the mining operations at the Project. As part of that commitment, mitigation measures were identified to contain and mitigate potential environmental effects. The mitigation includes use of seepage collection ditches as part of the tailings storage facility (TSF). Treasury Metals, as part of on-going engineering refinements has included a mine dewatering pond, surface water runoff collection ponds and also a perimeter site containment ditch/berm system to provide additional contingency containment of mine contact water to prevent unintended releases to Blackwater Creek. Design of the seepage collection ditch, holding ponds and perimeter site containment system will be advanced to the detailed level of design that will include site investigation data that is planned for completion in the near future. All ditches and ponds will be designed to accommodate the Environmental Design Storm (EDS) for the site and will be submitted for Provincial Approval with Plans and Specifications. All containment or holding ponds, including the TSF, will be designed with contingency containment that will include allowance for the EDS. A comprehensive water balance analysis will be completed as part of detailed design that will be used to assess average, 1:20 year wet and dry precipitation conditions. The assessment will be used to ensure that all facilities can be operated within the prescribed pond limits. B. The following Planning, Design and Construction Strategies will be applied to the Project to minimize the potential effects from extreme flood events on the seepage collection system, <u>Planning</u>: • Include a site perimeter ditch/berm to provide additional containment and prevent the release of mine contact water to the environment in the unlikely event that the seepage collection ditches are breached. Ditches will be designed to accommodate the Environmental Design Storm (EDS) for the site.

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					• Use excavated material from the ditch construction to construct a containment berm, on the downstream site of the seepage collection ditch, to provide additional containment during high flows resulting from significant storm events. • Runoff can be routed to the open pit for containment if the capacity of the seepage collection ditches is exceeded. • Complete detailed site investigations to collect site data for use in the design of the ditches and also for construction planning. • Site surveys along ditch alignments to provide accurate field data for use in the design. • Collect field information on the culvert at Tree Nursery Road. • Preparation of a site Operations, Maintenance and Surveillance Manual after completion of detailed engineering for use during operations. Design: • All diches will be designed to accommodate peak flows resulting from the EDS. The EDS will use station data for the area to accurately identify significant storm rainfall events. • Include freeboard allowances for all ditches. • Include contingency storage to accommodate the volume of water generated from the EDS in all holding ponds. The EDS allowance will be included in additional to allowances for the operating pond • Complete detailed water balance analysis for all containment facilities. • Include riprap erosion protection to prevent scour and damage to diches. • Include non-woven geotextile under riprap to aid in prevention of scour. • Check capacity of culvert on Tree Nursery Road and design upgrade/improvement, as required. Construction: • Prepare design drawings with technical specifications for use during construction. • Provide full time construction monitoring during construction to ensure that work is being completed in accordance with the design intent and technical specifications. • Implement a construction Quality Assurance and Quality Control (QA/QC) program for testing to ensure that construction materials meet the technical specifications.
259	EE(1)-02	CEA Agency	EIS Section 4.4.2	Section 7.1.3	**Summary of Comment / Rationale:** Section 4.4.2 (EIS) states that “the transmission line remains the most vulnerable Project component to fire.” However, there is no mention of natural fires could affect the explosives storage facility and process plant.

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					Information Request / Comment: A. Provide an assessment of the risk and effects of natural fires on the explosives storage facility and process plant and how this in turn could result in impacts to the environment. B. Provide details on a number of planning, design and construction strategies intended to minimize the potential environmental effects from natural fires on the explosives storage facility and process plant. C. Describe the fire suppression system and where and how the water used for putting out fires will be collected.
					Response: A. The risk of damage from natural fires to key infrastructure such as the explosives storage facility, fuel storage facility and process plant is assessed to be low/unlikely if the key mitigation measure of maintaining adequate special separation (fire break) between the facility and natural fire hazard is implemented. Items such as oils, transformers, fuels or reagents will be stored on-site in adequately designed tanks within diked/bunded areas sized to capture 110% of the largest spill plus one hour of fire suppression water from either fixed fire suppression systems or fire hose streams. Coarse gravels will be used to surround these structures and maintain the clear fire break. B. Planning, design and construction mitigation strategies to minimize the potential impacts of environmental effects from natural fires on the explosives facility, bulk fuel storage and process plant areas include: a. Clearing sufficient vegetation surrounding these facilities during construction to create an effective fire break, eliminating any potential impact from natural fire and possible flash over. b. Maintaining these fire breaks during plant operation. c. Ensuring the process plant and mine infrastructure fire suppression system is designed and operated in accordance with the National Fire Code of Canada (NFC), the National Fire Protection Agency (NFPA) codes and relevant FM global design guidelines. d. Fuel storage spills will be contained with ignition sources unlikely. Protection within fuel storage areas will be in line with the requirement of NFPA 30. e. The explosives storage facility construction and storage will be in compliance with the requirements of NFPA 495 Explosives Materials Code.

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					f. The bulk fuel and explosive storage facilities will be classified as Hazardous areas with potential ignition sources being designed out of these areas, i.e. only intrinsically safe equipment/instrumentation will be installed, etc. g. Onsite fire suppression equipment will be provided to support trained responders in extinguishing and/or ensuring exposure protection from natural fires. Site hydrants will ensure that cooling water can be applied if threated by external fire source. h. Ensuring operations and construction personnel are adequately trained in responding to site natural fires. The fire water main will be an underground buried HDPE pipe installed at a depth lower than the frost depth. For piping and risers exposed to extreme cold conditions, adequate freeze protection measures such as heat tracing, insulation or stainless steel wrapping will be used. C. The plant fire suppression system equipment will include: a. Fire hydrants installed in accordance with the requirements of NFPA 24 and 14 b. Fire hose reels c. Automatic fire sprinkler systems used in enclosed conveyor galleries and for hydraulic power packs (as required) d. Portable fire extinguisher e. To ensure that there is the very early warning of a fire event and to ensure an emergency response intervention keeps a fire to its incipient stages (thus keeping fire water use as low as possible), a system of Fire Detection and alarm will be provided as follows: f. Local fire detections systems including smoke detectors, heat detectors and manual pull stations g. Fire alarm and emergency warning system to a manned control centre which will ensure response to the alarm of fire h. VESDA smoke detection systems for substations i. The following collection strategies will be implemented to collect water used to put out fires: j. Fire water used within the process plant will be collected and contained within concrete bunds within the plant area. Fire water can then be treated locally prior to disposal. k. Fire water used from hydrants and external sources outside of the plant will be directed to the site collection/sediment ponds used for storing site groundwater run-off. Water will be managed according to the site-wide water management plan and will ultimately report to the minewater pond, where it can be sampled and treated (if contaminated from a fire event) before it is either pumped back into the process plant or discharged into Blackwater Creek (NOTE: Water discharged into Blackwater Creek will meet Provincial Water Quality Objectives (PWQO)).

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					I. For plant hazardous areas, i.e. oil filled transformers and the fuel storage area, etc., infrastructure will be located within a diked/bunded area which will be sized to capture 110% of the largest spill plus one hour of fire suppression water from either fixed fire suppression systems or fire hose streams. The contained water/fuel bund can then be treated, collected and disposed according to the specific area spills management plan.
260	EE(1)-03	CEA Agency	EIS Section 4.4.3	Section 7.1.3	**Summary of Comment / Rationale:** Section 4.4.3 (EIS) states: "The TSF dam will be designed to withstand the maximum earthquake in accordance with the latest version (2007) of the Canadian Dam Association Dam Safety Guidelines, the Ministry of Natural Resources and Forestry Best Management Practices (2011) and the Provincial Lakes and Rivers Improvement Act." However, there is no mention of how earthquakes could affect the ore, overburden and waste rock stockpiles and the open pit.
					Information Request / Comment: A. Provide an assessment of the risk and effect of earthquakes on the ore, overburden and waste rock stockpiles and the open pit, using local seismic stability data, and how this in turn could result in impacts to the environment. B. Provide details on a number of planning, design and construction strategies intended to minimize the potential environmental effects from earthquakes on the ore, overburden and waste rock stockpiles and the open pit.
					Response: A. The risk of earthquakes on the ore, overburden and waste rock stockpiles is low as the site is located within an area of Low Relative Hazard based on the Seismic Hazard Map from the Geological Survey of Canada (EIS Appendix D, Figure 2.3). Seismic data for the site is available from the National Building Code (NBCC) Seismic Hazard Calculation that provides return period ground acceleration values. Since completion of the EIS, seismic data for the site was updated in 2015. This latest site data will be used to design stable slopes for the waste rock, overburden and ore stockpiles. The effects of earthquakes on overburden, ore and waste rock stockpiles result from the potential for liquefaction resulting in a loss of strength and displacement of the foundation soils resulting in a loss of support for loads that may be present such as a material stockpile. Loss of support and soil movement can the result in a situation where a stockpile will move resulting in decreased stability of the stockpile slopes. The effects on the environment may result in mobilization of stockpile material (ore and overburden) into the perimeter runoff and seepage collection ditch system or alternatively damage to the runoff and seepage collection system adjacent to the stockpiles. These effects are anticipated to have a very low potential for occurrence as well as low environmental

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					impact as the site will have a perimeter containment system, consisting of a ditch/berm, which would provide secondary containment if material from the stockpiles was mobilized and was not captured or contained by the individual stockpile collection system. Site investigation data collected from the stockpile foundations will be used to design stable slopes for all stockpiles. The stability design will be completed for static and pseudo-static conditions, similar to the design for the tailings storage facility (TSF) embankments. Design under seismic conditions will utilize the available data from the NBCC as an input parameter to design stable slopes for the stockpiles. Assessment for potential liquefaction will be based on the results of the site investigation and assessment of the foundation soils to identify if the soils have liquefaction potential. Designing stable slopes under seismic loadings will minimize the potential environmental effects from the occurrence of an earthquake. B. The following provides the planning, design and construction strategies for minimizing the potential environmental effects of an earthquake on the ore, overburden and waste rock stockpiles Planning: • Include a site perimeter ditch/berm to provide additional containment and prevent the release of fine material from stockpiles that may become mobilized in the event of loss of containment caused by an earthquake. • Complete detailed site investigations to collect geotechnical site data for use in the design. • Collect most recent seismic data from NRCAN for the site for use in design • Review stability when seismic data for the site is updated in future Design: • Design all stockpiles to have stable slopes under seismic conditions utilizing the most recent site data available. • Assess the liquefaction potential of foundation soils. Where soils are found to not be suitable include as part of the design effort identification of option to remove and replace soils that are potentially liquefiable. Construction: • Prepare design drawings with technical specifications for use during construction. • Provide full time monitoring during construction to ensure that work is being completed in accordance with the design intent and technical specifications. • Implement a construction Quality Assurance and Quality Control (QA/QC) program for testing to ensure that construction materials meet the technical specifications.
261	EE(1)-04	CEA Agency		Section 7.1.3	**Summary of Comment / Rationale:**

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			EIS Sections 3.7, 4.4.4		Section 4.4.4 (EIS) states: "Project components and infrastructure are being designed as per best engineering practices to ensure safe operation. Personnel will be trained to take emergency measures as part of the emergency and spill response plan in the unlikely event a tornado or other wind event occurs at the Project site." It is not clear which project components and infrastructure were considered. In addition, section 3.7 (EIS) states that a water cover over the tailings beach is proposed to be maintained to minimize potential acid generation of the tailings solids during operations. Wave run-up and wave overtopping the dam embankments may result from high wind or tornado events.
					Information Request / Comment: A. Identify the project components and infrastructure that may be affected by tornadoes or high-wind events. Assess the effect of tornadoes and high-wind events on these project components and infrastructure and how this in turn could result in impacts to the environment. B. Assess the effect of tornadoes and high-wind events on the water cover in the tailings storage facility during operations and the environmental effects from potential wave run-up and overtopping. C. Provide details on a number of planning, design and construction strategies intended to minimize the potential environmental effects from tornadoes and high-wind events on project components and infrastructure, including the water cover in the tailings storage facility during operations.
					Response: A. Critical plant and mine infrastructure which may be affected by high wind or tornado events are the explosives, reagent and bulk fuel storage facilities. However, these facilities will be designed in accordance with the Ontario Building Code. Therefore, they would not be susceptible to high winds and tornadoes that could otherwise result in damage to the building and possible rupture and spills of the materials they are designed to safely store. Critical components of the tailings storage facility (TSF) that may be affected by high winds or tornado events consists of the upstream embankment and low-permeable zone as well as the embankment crest. Wave action resulting from wind can result in erosion of low-permeable fill materials (i.e., clay) or loss of protection zones covering low-permeable engineered liners (i.e. HDPE). This can potentially lead to reduced containment capacity and increased seepage potential for low

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					permeable fill materials and also exposure to potential sun degradation to low permeable engineered liners. This can impact the environment by potentially having increased seepage potential from the facility of supernatant water. Wave action can also result in overtopping of the embankments and damage to the embankment crest. The damage to the embankment crest can result in erosion damage that can lead to a loss of containment or instability of embankment. This can impact the environment by having loss of containment of tailings solids or supernatant water. The TSF design basis will address the protection of erodible materials during extreme wave run-up events. B. The effects of tornadoes and high-wind events on the water cover during operations will consist of generating waves within the facility. Other effects can potentially consist of increased evaporation rate from the pond. The potential effects on the TSF structure from wave run-up and overtopping were identified with Part A, above. The perimeter runoff and seepage collection ditch that encompasses the entire TSF will contain any water that overtops the dam crest due to wave run-up. The ditch will be a low-permeability structure to provide effective containment in accordance with the requirements of the Metal Mining Effluent Regulations and will prevent an effect to the environment. The perimeter runoff and seepage collection ditch is described in Section 3.8 of the revised EIS. Water that overtops the spillway due to wave run-up will report to the open pit via the low-permeable swale that is described in Figure 3.0-1A of the revised EIS. This TSF water will be consolidated with mine water and pumped to the minewater pond where it will be contained, thereby preventing an effect to the environment as a result of this overtopping. During the operational phase of the Project while the pit is actively dewatered there will be a net flow of groundwater into the pit and there is no potential for the TSF water to migrate out of the pit. There is a risk reduction associated with overtopping from wave run-up that is based on operations of the TSF. Containment for tailings solids, operational and stormwater management is established with the perimeter embankment and the established crest elevation. The elevation of the crest is raised at strategic times over the life of the facility to accommodate the required storage capacity. The tailings surface elevation increases with the tailings deposition and the tailings rate of rise is established based on the design throughput of the plant. The risk of overtopping from wave run-up is significantly reduced during initial periods of tailings deposition for each embankment stage as significant elevation difference is present between the embankment crest level and the tailings beach level. The engineering design for wave run-up to establish the required crest height is based on the highest tailings beach surface for each stage. C. For all process plant and mine infrastructure component design, the design wind loads will be determined in accordance with the Ontario Building Code (based on the Canadian National Building Code) Section 4.1.7. The design wind load is calculated by:

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					a. The reference velocity pressure (q) is based on a probability of being exceeded in any one year of 1-in-50, and the reference velocity pressure design factor used for the Project will be specified in the building code for the Dryden site location. b. The ultimate load combination for a limit state design applies a 1.4 factor to the calculated wind load. c. An Importance Factor (Iw) is applied and is 1.0 for Normal Importance Category structures, or 1.15 for High Importance Category structures (i.e., storage facilities containing toxic, explosive or other hazardous substances). The site wind velocity pressure data is determined from wind load data recordings at nearby weather stations and is reported in the building code. Plant and mine infrastructure structures will be designed, checked and signed-off by licenced professional engineers (P.Eng.) who are certified and in good standing with Professional Engineers Ontario (PEO). Items such as oils, transformers, fuels or reagents will be stored on-site within diked/bunded areas sized to capture 110% of the largest spill plus one hour of fire suppression water from either fixed fire suppression systems or fire hose streams. The TSF detailed design will include suitable freeboard for containment of operational, stormwater and freeboard. Design for freeboard is completed in accordance with the Lakes and Rivers Improvement Act for Provincial approval by the Ontario Ministry of Natural Resources and Forestry (MNRF). Freeboard is determined for each embankment stage to ensure that overtopping from wave run-up is prevented. Determination of required freeboard utilizes computations of wind-generate wave height, set-up and run-up that incorporate a selection of reasonable combined occurrences of reservoir level, wind velocity, wind direction and wind duration based on site specific studies. Planning, design and construction strategies to minimise potential environmental effects from tornadoes and high wind effects on the TSF are summarized below: Planning • Include protective covers over low-permeable zones for protection and to prevent erosion. • Utilize non-woven geotextile in embankment construction to provide additional protection against erosion of protection layers to low-permeable zones. • Use riprap erosion protection layer on upstream slope of embankment to add additional protection from wave action for the embankment fill that includes the low-permeable zone.

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					• Apply freeboard to contain wave run-up for each TSF embankment stage to prevent overtopping and protect the crest and dam. Design • Protective cover zones for low-permeable zones to properly filter graded and assigned sufficient thickness for protection. • Non-woven geotextile design to be completed for wave action condition and also properly filter graded to prevent loss of cover material to maintain protection of low-permeable zone. • Rip rap gradation designed to withstand the design wave for the site to prevent embankment erosion • Freeboard design to be completed in accordance with the LRIA and the MNRF Best Management Practices to prevent wave run-up from overtopping the dam. Minimum freeboard design to be assigned under worst case conditions consisting of maximum tailings beach level. Freeboard allowance to be assigned for each TSF embankment stage. Construction • Preparation of Construction Drawings and Technical Specifications sealed by a Professional Engineer in Ontario and submitted for MNRF approval under the LRIA. • Construction monitoring to be completed by a qualified engineer to ensure that the construction product meets the requirements of the Construction Drawings and Technical Specifications to ensure the dam embankment and protection achieves the design intent. • Implementation of a Quality Assurance and Quality Control Program (QA/QC) to ensure that the embankment zones and engineered products used for construction meet the requirements of the Construction Drawing and Technical Specifications.
262	EE(1)-05	CEA Agency	EIS Section 4	Section 7.1.3	**Summary of Comment / Rationale:** Section 4 (EIS) does not describe the effects of drought on the Project. It is not clear whether drought conditions could impact the tree nursery ponds which in turn may impact the amount of water required for mine processing. Drought conditions may also have an impact on ability to release treated effluent into Blackwater Creek.
					Information Request / Comment: A. Assess the effect of drought conditions on water availability for mine processing and the ability to discharge treated effluent into Blackwater Creek and how this in turn could result in impacts to

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					the environment. Explain the actions to be executed. If alternative water sources will be considered, describe the proposed alternatives.
					Response: No drawdown of the Tree Nursery Ponds is proposed. Sources of process water include the two (2) tributaries of Thunder Lake (maximum of 5% of flow) that supply the Tree Nursery Ponds, Blackwater Creek (maximum of 5% of flow), the runoff collection ponds surrounding the mine site, the minewater pond and the tailings storage facility (TSF). This is described in Section 3.8 of the revised EIS. As described in Section 3.8, the strategy to source adequate process water during a design dry year and an average hydrologic year are presented. During the design dry year, the following contingencies may have to be implemented. • Water in the runoff collection ponds may have to be filtered to remove TSS using the pre-treatment system for the reverse osmosis ("RO") treatment system. • Mine water may have to be treated using the RO system prior to use in the mill process. • TSF water may have to be treated using the RO system prior to use in the mill process. The above noted measures to recycle water from the mine site for use as process water will minimize effluent discharge. As described in Section 3.8 of the revised EIS, effluent during operations will meet Provincial Water Quality Objectives (PWQO). Therefore, water in the receiving stream (Blackwater Creek) is not required to assimilate (dilute) effluent so that creek water complies with PWQO. The lack of water in the receiver during a drought condition would not constrain effluent discharge, in the event effluent discharge is required during a drought condition.
263	EE(1)-06	CEA Agency	EIS Section 4.4.5	Section 7.1.3	**Summary of Comment / Rationale:** Section 4.4.5 (EIS) states that "various climate change assessments have been developed for northern Ontario. These statements predict an increase in temperature, stable to increasing precipitation, more episodic precipitation and an increased risk of natural fires." Also "due to the short nature of the Project and historical and reference documentation it would therefore appear that the runoff and water regimes of the area are likely to remain close to the current levels". Section 7.1.3 of the EIS Guidelines state that "longer-term effects of climate change will also be discussed up to the projected post-closure phase of the project. This discussion will include a description of climate data used".

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					Information Request / Comment: A. Provide quantitative information from the climate change assessments developed for northern Ontario, including historical and reference documentation and climate predictions for the area, specifically for temperature and precipitation, in order to substantiate the provided predictions. Using this information, describe in more detail the potential longer-term effects of climate change on the project.
					Response: As noted in the information request, Section 7.1.3 of the EIS Guidelines state that the EIS should discuss the "longer-term effects of climate change", and this should consider effects "up to the projected post-closure phase of the project". The EIS indicates that the life of the Project will be relatively short, lasting approximately 17 years from site preparation through the post-closure phase (EIS, Section 1.4). For this reason, the EIS was correct in stating that the effects of climate change are expected to be relatively minimal during the life of the Project, up to and including the post-closure phase. In addition to the requirements set out in the EIS Guidelines, guidance for incorporating climate impacts in environmental assessments can also be found in the current federal guidance document (FPTCCCEA 2003). This guidance describes how the evaluation of climate impacts should do the following: • identify the sensitivities of the Project to variations and changes in climate parameters; and • review available information on how regional climate change may affect these parameters. *Identify Sensitivities of the Project to Climate Change* Given that the mining activities are planned to have ceased after 13 years, and the closure phase is expected to last two years, the only possible sensitivities of the Project to changing climate in the longer term will be those related to the functioning of the post-closure landscape. The key elements of the post-closure landscape for the Project (EIS, 3.14; 11) include the following: • open pit mine; • underground mine; • stockpiles; • tailings storage facility (TSF); and • site drainage and water structures. The following sections briefly describe each of the elements of the post-closure landscape, and their potential for susceptibility to longer term changes in climate.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Open Pit Mine As described in the EIS (EIS, Section 11.2), by closure the open pit mine will be comprised of three interconnected pits. The west pit and part of the central pit will be backfilled with waste rock from the development of the central and east pits. Following mining, the open pits will be prepared for closure and allowed to flood. A passive spillway will be constructed to allow the pit lake to eventually discharge into an existing ephemeral tributary of Blackwater Creek. The elevation of the spillway will be set to ensure the lake level is maintained within the overburden above the backfilled waste and bedrock. This will ensure that the waste rock and pit walls remain underwater during the post-closure phase. As both the pit walls and waste rock are currently classified as potentially acid generating (PAG), placing them under a water cover is a standard practice to prevent acid rock drainage/metal leaching (ARD/ML). The open pit mine closure is intended to leave a functioning aquatic ecosystem while providing secure storage of waste rock underwater. The water flooding the pit is expected to come from three sources: surface water runoff and precipitation, secondary treatment discharge, and groundwater. Flooding is projected to take between 5 and 9 years, depending on climatic conditions. Changes in climate in the longer term have the potential to affect the open pit mine after operations cease in the following manners: • changes in precipitation rates could affect the rate at which the open pit mine is flooded; and • changes in the long-term annual water budgets (i.e., precipitation less evapotranspiration) could affect the long-term water levels in the open pits. *Underground Mine* As described in the EIS (EIS, Section 11.3), once mining operations cease infrastructure and equipment will be removed from the underground mine, and any spills or waste will be cleaned up and removed. The upper ramp and portal will be sealed using clean, quarried rock backfill, and the area around the portal will then be backfilled, covered with soil, and vegetated. The ventilation raises will be sealed to prevent inadvertent access to the underground mine workings by humans and wildlife. The underground workings will then be allowed to flood, with groundwater levels eventually returning to pre-development levels in 20 to 30 years (EIS, Section 11.4.3). Changes in climate in the longer term have the potential to affect the underground mine following closure in the following manner: • long-term changes in precipitation and annual water budgets (i.e., precipitation less evapotranspiration) could affect the rate at which the underground mine floods. *Stockpiles* The three main stockpiles are the waste rock storage area (WSRA), the overburden stockpile and the low-grade ore (LGO) stockpile. The waste rock has been classified as PAG, therefore, the

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					closure and reclamation WSRA will include full encapsulation (EIS, Section 11.3.2) with a water-shedding cap that is tied into the up-gradient clay layer, as well as placement of soil and vegetation over the cap and disturbed areas. The waste rock storage area (WRSA) will be graded to allow runoff to shed from the surface to runoff collection ditches that will be realigned to direct runoff into the open pits. At closure the material in the overburden stockpile will be used as cover material for the TSF closure as well as other reclamation activities requiring fill (EIS, Section 11.3.3). Any material remaining in the overburden stockpile will be graded and vegetated. Finally, the LGO stockpile is expected to be depleted by the end of the underground mining operations. Any residual ore or PAG material on the LGO stockpile pad will be removed and placed in the TSF at closure, and the LGO stockpile pad will then be scarified and re-vegetated. It is not expected that any longer-term changes in climate will have a potential effect on the stockpile areas following closure. *Tailings storage facility (TSF)* At closure the water will be withdrawn from the TSF, treated and used to help fill the open pit. The tailings would then be covered with a granular layer to physically isolate the tailings. Finally, the TSF will be covered with either a low-permeability cover or a water cover of non-process water to isolate the tailings from oxygen. It is not expected that longer-term changes in climate will potentially affect on the TSF following closure. *Groundwater* During the life of mining activities, dewatering is required in order to safely mine in the open pits and underground mine. At closure, the groundwater drawdown will be at the maximum extent. Once all mining has ceased the underground works will be allowed to flood, with the groundwater elevations eventually returning to pre-development levels (EIS, Section 11.4.3). It is anticipated the drawdown effects will be fully reversed in 20 to 30 years. Changes in climate in the longer term have the potential to affect groundwater following closure in the following manner: • long-term changes in precipitation and annual water budgets (i.e., precipitation less evapotranspiration) could affect the rate of infiltration and the rate at which the underground mine floods, affecting the time to fully reverse drawdown effects. *Site Drainage and Water Structures* As described in the EIS (EIS, Section 3.8.9 and Section 11.4.3), stream channel alterations will be confined to Blackwater Creek tributaries. The 400 m, like-for-like diversion channel will remain post-closure, but the upstream portion of the tributary at the site of the TSF will no longer exist. Runoff from the reclaimed surfaces of the TSF will report to the remaining section of the tributary. The pre-development headwater wetland of beaver ponds at the open pit site will become a pit

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					lake. In general, the Project site post-closure is expected to increase the average annual flow. Anticipated flow increases are within the capacity of the existing creek channels. Changes in climate in the longer term have the potential to affect the site drainage and water structures following closure in the following manners: • changes in precipitation rates and intensities could increase peak flows beyond the capacities of the existing creek channels in Blackwater Creek (but this would also occur in the region irrespective of the Project). *Projections of Regional Changes in Climate* Although there are a multitude of sources available that describe the projections for future changes in climate in northwestern Ontario, Treasury Metals has tried to focus on those documents compiled by, or for the Ontario government. The two most heavily relied references were the climate change research reports CCRR-05 (Columbo et al, 2007) and CCRA-44 (McDermid et al, 2015). The earlier policymaker summary report (Columbo et al, 2007) made use of data from the Canadian Coupled Global Climate Model (CGCM2) forecasts for emission scenarios presented in the Fourth Assessment Report (AR4) from the Intergovernmental Panel for Climate Change (IPCC, 2007). Specifically, Columbo et al (2007) presented the climate projections associated with the A2 emission scenarios, which is one of the four socio-economic scenarios relied on in AR4 (IPCC, 2007). Although the IPCC has not stated which of these scenarios are most likely to occur, the A2 scenario most closely reflects the current global socio-economic situation. In relation to the A2 scenario, scenarios A1, B1 and B2 result in lower long-term GHG emissions over the next century. Climate projections are presented as changes from the 1971–2000 baseline period, and are provided for the 2011–2040, 2041–2070, and 2071–2100 time horizons. These projections were used to compile the projected changes in summer and winter temperature and precipitation for the region near the Project. Generally, the picture presented for future climate in the area is one of increasing temperatures in both the winter and summer periods for all of the forecast horizons. For precipitation, the summer rates are projected to increase for the 2011–2040 horizon, changing to a decrease for the 2041–2070 and 2071–2100 horizons. During the winter, future precipitation is projected to decrease for the 2011–2040 and 2041–2070 time horizons, but increasing the 2071–2100 time horizon. The results Columbo et al., 2007) presented in Table 1 suggest that the future climate for the region will continue to warm, with precipitation decreasing slightly except in the later stages of the century.

Table 1: Projections for Changes in Climate (relative to 1971 to 2000)

Period	Temperatures		Precipitation	
	Summer	Winter	Summer	Winter

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response

2011 to 2040	+1 to +2°C	+1 to +2°C	0% to +10%	-10% to 0%
2041 to 2070	+2 to +3°C	+3 to +4°C	-10% to 0%	-10% to +10%
2071 to 2100	+4 to +5°C	+5 to +6°C	-10% to 0%	0% to +20%

In the updated summary for policymakers (McDermid et al, 2015), use was made of data from the Fifth Assessment Report (AR5) from the IPCC (2013), which replaces the socio-economic emission scenarios relied on in AR4 (IPCC, 2007) with new emission scenarios, but uses four new emission scenarios that better represent climate processes used in the modelling. The updated summary considered the RCP 2.6, RCP 4.5, and RCP 8.5 emission scenarios, and shows the 2011–2040, 2041–2070, and 2071–2100 time horizons. The updated summary also relies on statistically downscaled data from Earth Systems Models rather than data from a single GCM. The data relied on by McDermid et al are described more fully by McKenney et al (2006; 2011; 2013). The results are presented numerically for the three major watersheds in Ontario (i.e., Great Lakes, Hudson Bay, and Nelson River), the most relevant one for this project being the Nelson River watershed.

The updated picture for future climate in the region (McDermid et al, 2015) is one of warming annual, summer and winter temperatures for all of the emission scenarios and forecast horizons. The annual and winter precipitation projections show increasing precipitation for all of the emission scenarios and forecast horizons. In contrast, the projections for summer precipitation show decreases for all of the emission scenarios and forecast horizons.

Table 2: Projections for Mean Changes in Climate (relative to 1971 to 2000)

Period	Scenario	Temperatures (°C)			Precipitation (mm)		
		Annual	Summer	Winter	Annual	Summer	Winter
2011 to 2040	RPC 2.6	+2.3	+2.2	+2.3	+18.1	-18.6	+21.7
	RPC 4.5	+2.2	+2.1	+2.1	+28.7	-19.1	+19.4
	RPC 8.5	+2.4	+2.3	+2.7	+32.8	-20.8	+18.8
2041 to 2070	RPC 2.6	+3.0	+2.7	+3.2	+51.8	-7.4	+24.0
	RPC 4.5	+4.0	+3.4	+4.7	+37.5	-19.8	+21.6
	RPC 8.5	+4.8	+4.6	+5.6	+54.3	-27.7	+30.6
2071 to 2100	RPC 2.6	+3.1	+2.9	+3.6	+57.5	-2.9	+21.9
	RPC 4.5	+5.0	+4.4	+5.6	+40.6	-24.1	+30.6
	RPC 8.5	+8.3	+7.8	+9.3	+64.0	-43.6	+39.7

Note: Data derived from McDermid et al, 2015.

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					Implications for Regional Changes Climate Projections for the Project The primary susceptibilities of the Project to climate change were identified to be the following: • changes in precipitation rates could affect the rate at which the open pit mine is filled; • changes in the long-term annual water budgets (i.e., precipitation less evapotranspiration) could affect the water levels in the open pits. • long-term changes in precipitation and annual water budgets (i.e., precipitation less evapotranspiration) could affect the rate at which the underground mine floods; • long-term changes in precipitation and annual water budgets (i.e., precipitation less evapotranspiration) could affect the rate of infiltration and the time to fully reverse drawdown effects from dewatering; and • changes in precipitation rates and intensities could increase peak flows beyond the capacities of the existing creek channels in Blackwater Creek. The filling of the open pit mine is predicted to take a period of nine years after the mining operations cease, which would fall within the 2011–2040 forecast horizon. Moderate increases in temperatures and increasing annual and winter precipitation for this period would suggest that climate change would not significantly alter the rate at which the open pit mine is filled. In addition, the filling of the open pit will not rely on precipitation and surface runoff only (EIS, Table 11.2.1), but will also rely on secondary treatment discharge and groundwater from wells outside of the mine zone of influence. The longer-term site water budget will be affected by projections of increasing temperatures and annual precipitation rates over the remainder of century. This suggests that water levels will remain sufficient in the open pit mine to maintain a water cover for both the pit walls and waste rock, which are currently classified as PAG. The post-closure water level is anticipated to be above the overburden / bedrock interphase. With respect to the underground mine, once the dewatering of the mine stops, it is expected to take between 20 to 30 years for the groundwater levels to recover to pre-development levels. However, the underground workings are expected to fill more quickly as they will be influenced by the filling of the open pit. This would extend into the 2041–2070, or even the 2071–2100 forecast horizons. The longer-term water budgets that could influence the rates of infiltration into the underground workings will be affected by projections of increasing temperatures and annual precipitation rates over the remainder of century. Finally, the precipitation rates for the region are projected to steadily increase through the remainder of the century. Although the model projections do not indicate whether intensities will increase, increasing precipitation is likely to increase the downstream peak flows in Blackwater Creek. To mitigate this, surface water collection ponds, diversion ditches, and seepage ponds can

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					be converted into retention ponds (EIS, 11.4.3). This will reduce the potential effects of peak flows by slowing down the release to natural watercourses. In conclusion, the possible Project susceptibilities to climate change were identified, and evaluated considering the projections for future changes in climate for the region. Generally, the relatively short life of the Project (17 years from site preparation through post-closure) means that climate change will be a minor concern for all aspects except those related to the post-closure landscape. Specifically, changes in the longer-term water balances could affect the effectiveness of the closed site. Projections of future climate for the region suggest steady increases in precipitation and temperature over the remainder of the century. As a result, it is expected the closed site will continue to function as proposed in the EIS. There could, however, be changes in the time required to flood the underground workings of the mine, and fully reverse the effects of dewatering on groundwater, with these possibly occurring slightly faster or slower than predicted in the EIS. In either case, there would not be a change to the conclusions reached in the EIS. *References:* Colombo, S.J., D.W. McKenney, K.M. Lawrence and P.A. Gray, 2007. Climate Change Projections for Ontario: Practical Information for Policymakers and Planners. Ontario Ministry of Natural Resources. CCRR-05. FTPTCCCEA (The Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment), 2003. Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners. November. IEESC, 2012. Producing High-Resolution (25km × 25km) Probabilistic Climate Change Projections over Ontario Using UK PRECIS. Submitted to the Ontario Ministry of Environment. IPCC (Intergovernmental Panel on Climate Change), 2007. Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. IPCC, 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA McDermid, J., S. Fera and A. Hogg, 2015. Climate Change Projections for Ontario: An Updated Synthesis for Policymakers and Planners. Ontario Ministry of Natural Resources and Forestry. CCRR-44.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					McKenney, D.W., P. Papadopol, M.F. Hutchison, 2006. The development of 1901–2000 historical monthly climate models for Canada and the United States. Agric. For. Meteor. 138: 69–81. McKenney, D.W., M.F. Hutchison, P. Papadopol, K. Lawrence, J. Pedlar, K. Campbell, E. Milewska, R.F. Hopkinson, D. Price and T. Owen. 2011. Customized spatial climate models for North America. Bull. Amer. Meteor. Soc. 92: 1611–1622. McKenney, D.W., J.H. Pedlar, M.F. Hutchison, P. Papadopol, K. Lawrence, K. Campbell, E. Milewska, R.F. Hopkinson, and D.T. Price. 2013. Spatial climate models for Canada`s forestry community. For. Chron. 89: 659–663.
264	EE(1)-07	CEA Agency	EIS Section 5.9.4 EIS Summary Section 4.2.2 Appendix G Section 8.5.4.2.1.5	Sections 7.1.3, 16	**Summary of Comment / Rationale:** Section 5.9.4 (EIS) indicates that beaver dams and lodges are frequent on Blackwater Creek and Hughes Creek and their tributaries. The Project may be impacted by the potential for Blackwater Creek to be dammed by beavers and the year round increase of flow during operations. As Aboriginal groups expressed that beavers are an important species that is traditionally hunted and commercially trapped, the effects on Aboriginal peoples of managing and monitoring beavers and the removal of beaver dams for project operations need to be assessed as part of the environmental assessment. Measures to mitigate these effects need to consider views and participation of Aboriginal peoples and need to be developed in a culturally sensitive manner. The proponent should work with local trappers to achieve this.
					Information Request / Comment: A. Provide details on how beavers and beaver dams will be monitored and managed, taking into consideration the importance of beavers from an Aboriginal perspective and including any plans to engage Aboriginal peoples in the design and implementation of beaver monitoring and management.
					Revised Response: Treasury Metals recognize that there is the potential for Blackwater Creek to be dammed by beavers. Given that beaver dams could pose a concern for the safety and integrity of the operations, Treasury Metals recognizes there will be an ongoing need to monitor and manage beaver activities. Activities associated with the monitoring and management of beaver activities at the site are covered under the Wildlife Management Plan, described in Section 12.9 of the revised EIS. The plan will include provisions for the removal of nuisance beaver and associated beaver dams from the Project site. Prior to construction activities, Treasury Metals will engage with the local trapping council, Indigenous communities and the Ontario Ministry of Natural Resources and Forestry

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					(MNRF) to finalized the Wildlife Management Plan. Treasury Metals also realizes they will need to engage the local trappers' council and the Ministry of Natural Resources and Forestry (MNRF) prior to the removal of beaver within the Blackwater Creek watershed. Treasury Metals has previously engaged the local trapping council for beaver related concerns. Treasury Metals plans to engage and consult both the local trapping council, Indigenous communities and the Ontario Ministry of Natural Resources and Forestry (MNRF) to prepare and plan for beavers and wildlife encounters. The Wildlife Management Plan will serve as the basis of this engagement, and will evolve to reflect regulatory and Aboriginal perspectives in wildlife management for the Project. Based on feedback from members of Indigenous communities, and concerns raised in the Round 1 information requests, beavers have been explicitly addressed in the revised EIS by adding , beaver as an indicator for the furbearers valued component under the wildlife and wildlife habitat discipline. The reasoning for the inclusion of beaver has been set out in 6.1.3.11, and includes a recognition of beaver to Aboriginal peoples. The predicted effects of the Project on beaver are described in Section 6.12 of the revised EIS. The effects of the Project on beaver were also evaluated through the VCs and indicators identified and used for describing the effects of the Project on Aboriginal peoples presented in Section 6.21 of the revised EIS.
265	PB(1)-1	CEA Agency	Section 10	Section 15	**Summary of Comment / Rationale:** Table 10.1.1 (EIS, pages 10-1 to 10-4) lists changes to the project and their benefits. It is unclear what effects to Aboriginal peoples, the public, and the environment are potentially reduced by the changes. Also, Section 10.2 (EIS) only describes predicted economic benefits; there is no discussion on environmental or social benefits of the Project. Section 15 of the EIS Guidelines requires the proponent to summarize how the environment, Aboriginal peoples and the public benefit from the changes to the Project and describe the predicted environmental, economic and social benefits of the Project.
					Information Request / Comment: A. Describe the effects to Aboriginal peoples, the public, and the environment that are potentially reduced, which are linked to the changes in the Project since initially proposed. B. Provide details on predicted environmental and social benefits of the Project.
					Response: Section 10.1 of the EIS - Changes to Project Since Initially Proposed - describes the changes that have been made to the Project since it was initially proposed, describes the changes and describes the benefits of each change on the environment, Aboriginal peoples, and the public.

TMI #	Agency Reference #	Parties Asking Questions	Reference to EIS	Reference to EIS Guideline	Comment / Information Request / Response
					Section 10.2 of the EIS – Benefits to Canadians – identifies the economic and social benefits of the Project. Additionally, information about the economic and social benefits of the Project can be found within the Economic Factors and Social Factors sections of the revised EIS.