Tabatha LeBlanc
Environmental Manager
Stillwater Canada Inc.
90 Peninsula Road
P.O. Box 1508
Marathon, ON P0T 2E0

November 26, 2012

Subject: **Marathon Platinum Group Metals and Copper Mine Project EIS – Decision on Sufficiency of Environmental impact Statement**

Dear Ms. LeBlanc:

As you are aware, the public comment and review period on the Environmental Impact Statement (EIS) for the proposed Marathon Platinum Group Metals and Copper Mine project (the Project) ended on October 26, 2012. During the public comment and review period, the Panel received approximately 500 information requests from government agencies, Aboriginal groups, non-governmental organizations and the public. The Marathon Joint Review Panel (the Panel) has completed its review of the EIS submitted by Stillwater Canada Inc. (SCI), as well as of the comments received.

In accordance with Sections 3.3 and 3.4 of the Panel's Terms of Reference, the Panel is required, within thirty days of the completion of the public review and comment period, to determine if sufficient information has been provided by SCI to proceed to a public hearing.

Sufficiency Determination
Taking into consideration its own review of the EIS and the comments and information requests received during the public review and comment period, the Panel has determined that the EIS is deficient, and does not contain sufficient information to proceed to the public hearing at this time.

In order to ensure that it has information which adequately responds to the EIS Guidelines, the Panel has determined that SCI must provide additional information as requested in the attached deficiency statement. This document contains the Panel's first set of information requests on the EIS, and focusses on the following issues:

- Purpose and Need
- Project Description
- Project Scoping
- Alternatives to the Project
- Alternative Means of Carrying out the Project
- Alternatives to Mine Waste Disposal
- Transportation of Concentrate
- Transmission Line
- Public Consultation
- Methodology
- Geology and Geochemistry
- Atmospheric Environment
- Acoustic Environment
- Water Quality
- Fish and Fish Habitat
- Terrain and Soils
- Vegetation
- Socio-Economics
- Aboriginal Considerations
- Accidents and Malfunctions
- Effects of the Environment on the Project
- Cumulative Effects Assessment
- Follow-up and Monitoring Programs
- Decommissioning and Closure Planning

Additional information requests will be issued to SCI in the near future, and will focus on the following issues:

- Hydrology
- Wildlife

Throughout the attached information requests, the Panel requests that SCI justify a number of statements, assumptions, approaches, and methodologies used in the EIS. In responding to such requests for justification, the Panel requires SCI to document how uncertainty was addressed for these issues. This information will assist the Panel in considering the extent of the application of the precautionary principle to the Project, as required by section 2.2 of its Terms of Reference.

When responding to the information requests, the Panel requests that SCI provide detailed references for any information being referred to in the Main Report or Supporting Information Documents (i.e. SID #, section, page).

The Panel requests that SCI provide the additional information described in the deficiency statement as soon as possible. As per section 48(b) of the *Canadian Environmental Assessment Act, 2012*, the issuance of the deficiency statement has stopped the regulatory clock; it will restart once SCI provides responses to all the information requests. Once the additional information has been received, the Panel will determine if a public comment and review period is necessary.

Other Issues

Aboriginal Consultation

The Panel received several comments regarding the adequacy of the Aboriginal Consultation activities conducted for the Project to date. While it is not within the Panel's mandate to determine the adequacy of Aboriginal Consultation, it would like to encourage SCI, and other participants, to review the comments received. The comments are available on the Canadian Environmental Assessment Registry Internet Site for the Project, which can be accessed at http://www.ceaa-acee.gc.ca/050/details-eng.cfm?evaluation=54755.

Quality of Mapping

The Panel also notes that many participants reported concerns with the readability of the mapping provided in the EIS. Many requests were received for SCI to provide maps and/or figures from the EIS at higher resolutions or different scales. While the Panel appreciates the difficulties that may have been encountered in trying to read some of the maps provided in the EIS, it is not persuaded to ask for new maps at this time. However, the Panel notes that much clearer and easily readable maps will be necessary for effective discussion at the public hearing.

If you have any questions regarding this deficiency statement, please contact Colette Spagnuolo or Marie LeGrow, the Panel Co-Managers, via email at MarathonMine.Review@ceaa-acee.gc.ca.

Sincerely,

<original signed by>

Louis LaPierre
Panel Chair

c.c. Terry Ackerman, Stillwater Mining Company
Bruce Gilbert, Stillwater Mining Company

DEFICIENCY STATEMENT

regarding the
Environmental Impact Statement for the proposed
Marathon Platinum Group Metals and Copper Mine Project

Issued to
Stillwater Canada Inc.

Information Requests – Group#1
from the
Marathon Joint Review Panel

November 26, 2012

Table of Contents

Abbreviations

AAQC	Ambient Air Quality Criteria
ANFO	Ammonium Nitrate Fuel Oil
ARD	Acid Rock Drainage
CAC	Criteria Air Contaminants
CEA Agency	Canadian Environmental Assessment Agency
CEAR	Canadian Environmental Assessment Registry
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COPC	Contaminants of Potential Concern
CRINO	Citizens for Responsible Industry in Northwestern Ontario
Cu	Copper
dB	Decibels
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EC	Environment Canada
EIS	Environmental Impact Statement
GHG	Greenhouse Gases
ha	Hectares
HC	Health Canada
JRPA	Joint Review Panel Agreement
JSL	Jurisdictional Screening Level
LSA	Local Study Area
m	Metres
MNO	Métis Nation of Ontario
MNR	Ministry of Natural Resources (Ontario)
MOE	Ministry of the Environment (Ontario)
MRSA	Mine Rock Storage Area
MTC&S	Ministry of Tourism, Culture and Sport (Ontario)
MAA	Multiple Accounts Assessment
NAAQO	National Ambient Air Quality Objectives
non-PAG	Non Potentially Acid Generating
NO_x	Nitrogen Oxides
NP	Neutralization Potential
NPC	Noise Pollution Control
NRCan	Natural Resources Canada
OPRFN	Ojibways of the Pic River First Nation
PAG	Potentially Acid Generating
PGM	Platinum Group Metal
PM10	Inhalable particulate matter with a diameter <10 microns
PM2.5	Respirable particulate matter with a diameter <2.5 microns
PMFN	Pic Mobert First Nation
PPFN	Pays Plat First Nation
PSMF	Process Solids Management Facility
RSA	Regional Study Area

RSMIN	Red Sky Métis Independent Nation
S	Sulphur
SCI	Stillwater Canada Inc.
SID	Supporting Information Document
SO_2	Sulphur Dioxide
SSA	Site Study Area
ToR	Terms of Reference for the Joint Review Panel
TSP	Total Suspended Particulates
TUS	Traditional Use Study
VEC	Valued Ecosystem Component

List of Comments Received and Canadian Environmental Assessment Agency Registry Document Reference Numbers

CEAR Doc #	Name of Organization / Individual	Date
332	Great Lakes United and Lake Superior Binational Forum	October 28, 2012
309	Pays Plat and Pic Mobert First Nations	October 26, 2012
317	Ontario Coalition of Aboriginal People	October 26, 2012
322 316	Métis Nation of Ontario	November 2, 2012 October 26, 2012
315	Northwatch	October 26, 2012
314	Natural Resources Canada	October 26, 2012
313	Red Sky Métis Independent Nation	October 26, 2012
312	Environment North	October 26, 2012
311	MiningWatch Canada	October 26, 2012
310	Ontario Ministry of Tourism, Culture and Sport	October 26, 2012
307	Ontario Ministry of Transportation	October 26, 2012
306	Ontario Ministry of the Environment	October 26, 2012
305	Ontario Nature	October 26, 2012
304	Citizens for Responsible Industry in Northwestern Ontario	October 26, 2012
303	Environment Canada	October 26, 2012
302	Ontario Ministry of Natural Resources	October 26, 2012
296	North Shore Steelhead Association	October 26, 2012
301	Ojibways of the Pic River First Nation	October 26, 2012
308	Bonnie Couchie	October 25, 2012
300	Town of Marathon	October 25, 2012
298	Citizens for Responsible Industry in Northwestern Ontario	October 25, 2012
299	Parks Canada	October 25, 2012
318 297	Ontario Ministry of Northern Development and Mines (to Stillwater Canada Inc.)	October 25, 2012
294	Transport Canada	October 24, 2012
292	Ontario Ministry of Municipal Affairs and Housing	October 24, 2012
291	Marathon Chamber of Commerce	October 23, 2012
290	Fisheries and Oceans Canada	October 23, 2012
285	Aboriginal Affairs and Northern Development Canada	October 18, 2012
293	Ontario Ministry of Northern Development and Mines	October 15, 2012
284	Health Canada	October 12, 2012

1 Purpose and Need

1.1 Do Nothing Alternative

References:

EIS Guidelines	- Section 2.2.1, p. 11 (PDF 16) - Section 2.4.2, p. 24 (PDF 29)
EIS Main Report	- Section 1.4.1, p. 1.24-1.33 (PDF 93-102) - Section 3.1.2, p. 3.1-3.2 (PDF 175-176) - Section 3.1.5, p. 3.3 (PDF 177)

Contributing IRs:
MOE-EA-9
MNR-EA-17
MiningWatch

Rationale:
The Canadian Environmental Assessment Agency (CEA Agency) provides guidance regarding how to address the 'need for' and 'alternatives to' a project.

The Environmental Impact Statement (EIS) Guidelines require the 'do nothing' alternative to be discussed as one of the alternatives to the Project. CEA Agency guidance indicates that the alternatives to a project should be established in relation to the Project need and purpose, and from the perspective of Stillwater Canada Inc. (SCI). The current discussion of the 'do nothing' alternative to the Project provided in section 3.1.5 of the EIS does not place the analysis in the context of the need for the Project (as discussed in section 1.4.1). This is important to help understand why the 'do nothing' alternative would not address the purpose as proposed by SCI.

Further, the EIS presents conflicting information regarding the need for the Project. Section 1.4.1.1.2 states that there could be a net deficit of platinum group metals (PGMs) on the world market in the near future, and that recycling increases are insufficient to bridge the market imbalance. However, section 3.1.2 states that SCI increased the volume of recycled ounces fed to its smelter by 21.9%, and that with the purchase of new equipment, SCI is "well positioned to expand its PGM recycle handling and re-processing volumes." Section 3.1.3.also states that SCI has identified two (2) new developments and potential expansion projects along the J-M Reef in Montana. This information is not integrated into the discussion provided in section 1.4.1 on the need for the Project.

Similarly with respect to copper, section 1.4.1.1.3 states that global growth in copper demand is also projected to outstrip supply. However, section 1.4.1.1.3 in the EIS also states that "by 2013, increased production and lower growth in demand are expected to yield a nearly balanced market."

Information Request:
Provide a discussion of how the 'do nothing' alternative does or does not fulfill the purpose of and need for the Project. Specifically, in tabular format, provide information on the market demand for PGM and copper (Cu) as compared against the available supply, including recycling efforts, over the projected lifespan of the Project, in order to better understand whether the purpose of and need for the Project could be met under the 'do nothing' alternative.

2 Project Description

2.1 Project Setting - Local Watersheds

References:

EIS Guidelines	- Section 2.2.2, p. 11 (PDF 16)
EIS Main Report	- Section 1.4.2.3.2, p. 1.49 (PDF 118)
	- Section 6.2.3.2, p. 6.42 (PDF 548)

Contributing IRs:
MOE-EA-5

Rationale:
Section 1.4.2.3.2 states that there are a total of six (6) subwatersheds that drain to the Project site; four to the Pic River and two to Lake Superior directly. The corresponding map (Figure 1.4-10) illustrates seven watersheds. However, section 6.2.3.2 states that there are a total of eight (8) watersheds that drain the Project site; six to the Pic River and two to Lake Superior.

Information Request:
Clarify the number and identity of the watersheds and subwatersheds that apply to this Project.

2.2 Project Setting - Mining Claims

References:

EIS Guidelines	- Section 2.2.2, p. 11 (PDF 16)
EIS Main Report	- Section 1.4.2.2, p. 1.38 (PDF 107)

Contributing IRs:
MNR-EA-5

Rationale:
The references made to bringing claims to lease in the EIS appear to refer to the incorrect claim numbers (i.e. 4204208 and 4204207 should read 4204027 and 4204028).

Information Request:
Provide a correct description of lands for which leases have been applied for.

2.3 Insufficient Project Design Details

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17)
	- Section 2.7.2.3. p. 52 (PDF 57)
	- Section 2.6.1.5, p. 36 (PDF 41)
EIS Main Report	- Section 1.4.3, p. 1.55 (PDF 124)
	- Section 3.2.2.1, p. 3.1 (PDF 185)
SID#7	- Section 2, p. 2.2 (PDF 27)
SID#11	- Section 3.1.6, p. 13 (PDF 21)

Contributing IRs:
MNR-EA-8
MNR-D-1
DFO-2
MNR-A-22

Rationale:
The EIS Guidelines state that the EIS shall describe the Project as it is planned to proceed, including project phases and activities. The Guidelines also state that the EIS will contain sufficient detail to be able to identify major mine components or structures which are likely to have a high failure consequence during construction, operation, closure and post-closure. With respect to access roads, the EIS Guidelines also require the results of fish and fish habitat surveys along proposed new roads and an evaluation of the effect of any new road access on wildlife mortality risk and movement patterns, where a concern exists. The EIS states that access roads have been considered for the process solids management facility (PSMF) options and will be further developed during detailed design. Access routes may require stream crossings and bridges and culverts at the crossings.

The EIS only includes general statements regarding mine components and structures. While it is understood that detailed designs for the mine infrastructure will follow the environmental assessment (EA), conceptual level design and development information is required in sufficient detail to assess the potential for environmental effects with confidence. For instance, it is unclear whether or to what degree material from the aggregate pit operated by SCI at the south end of the mine access road will be used for mine construction. Further, various water crossings and some road construction works are proposed in or near water bodies (e.g., Stream 1). However, there is insufficient information about proposed infrastructure works or undertakings in or near water bodies to assess whether the designs and/or methods of construction could cause serious harm to fish.

Information Request:
Provide conceptual design information for the mine infrastructure at a level of detail such that potential environmental effects can be assessed. Specifically, for all pertinent phases, provide the conceptual design information for the following project infrastructure:

- pipelines, including locations, length and purpose;
- drainage and diversion ditches, including locations;
- roads, and associated water crossings (culverts and bridges); and
- water storage facilities, such as emergency catch basins, proposed along the new pipeline route from the PSMF to its final discharge point at Hare Lake and from the mine rock storage area (MRSA) to Pic River

Identify the valued ecosystem components (VECs) along the new access roads/pipelines (from the PSMF and the MRSA) and assess the potential environmental effects along these linear features, including potential impacts to fish and fish habitat in the streams. Assess the potential effects to VECs, including sensitive areas, for any roads that will be located immediately adjacent to water bodies and for access route/pipelines. Identify any required mitigation measures and update the overall assessment of significance.

Provide an explanation of whether the currently held aggregate pit will be used as a source of aggregate for the Project and if so what volume of aggregate is anticipated to be used.

2.4 Employee Accommodation Complex

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17)
EIS Summary Document	- Section 1.4.3.7, p. 1.87 (PDF 156)
	- Section 1.4.3.7.2. p. 1.88 (PDF 157)

Contributing IRs:
MOE-EA-3
DFO-4

Rationale:
While the employee accommodation complex is referenced as part of the general Project layout, there is little information about the location, or any relevant assessments of potential effects, such as the assessment that confirmed there is no need for upgrades to water and sewer services in the Town of Marathon.

Information Request:
Provide the location of the employee accommodation complex and provide additional information on the assessment of potential effects that led to the conclusion that no further work related to this project component is required.

3 Project Scoping

3.1 Site Study Area

References:

EIS Guidelines	- Section 2.3.5, p. 21 (PDF 26) - Section 2.7.2.3.2, p. 55 (PDF 60) - Section 2.7.2.6, p. 61 (PDF 66)
EIS Main Report	- Section 2.4, p. 2.7 (PDF 168) - Section 6.2.5.1, p. 6.71 (PDF 577) - Table 1.4-5, p. 1.61 (PDF 130)

Contributing IRs:
MNR-T-14

Rationale:
The EIS Guidelines state that the EIS shall provide a justification and rationale for all boundaries and scales chosen. SCI defines the site study area (SSA) as the "direct footprint of the Project". However, some Project infrastructure is located outside of the boundaries of the SSA; therefore, this delineation and definition could be misleading. For example, Figure M shows three overburden stockpiles that are not included within the SSA boundary. The SSA should encompass the entire Project footprint.

Information Request:
Provide a revised SSA that includes the proposed pipeline route, the discharge (diffuser) to Hare Lake and Pic River and the overburden stockpiles.

3.2 Local Study Areas

References:

EIS Guidelines	- Section 2.3.5, p. 21 (PDF 26)
EIS Main Report	- Section 2.4, p. 2.7 (PDF 168) - Figure 2.4-2, p. 2.10 (PDF 171)

Contributing IRs:
MiningWatch
MNR-EA-16

Rationale:
The EIS defines the spatial boundary for the assessment of potential effects on the atmospheric and acoustic environments as the mine claim boundaries. However, the spatial boundary for both the atmospheric and acoustic effects should be determined by the extent of potential effects with an adequate buffer for the uncertainty of those effects, not by an arbitrary boundary.

Similarly, the full downstream watershed of the Pic River and adjacent areas of Lake Superior should be included in the boundary for the local study area (LSA) for aquatic effects, as it is likely that migratory fish species would easily cover this range and that water quality impacts on these areas could be experienced from a release of contaminants.

The LSA for the terrestrial environment is also not clear. The text indicates that it is represented by a 5km radius around the perimeter of the Project site. Figure 2.4-2 shows the LSA for the terrestrial environment to be 5km from the centre point of the Project site. It is not clear how

5km was determined to be an appropriate distance. It is not clear how the 5km was applied in determining potential effects to the terrestrial environment. Supporting documents #24 and #25 do not use a 5km radius but appear to use the property boundary as a local study boundary; the property boundaries depicted in each of these supporting documents is different and this is not explained. It is important to understand study methods used in order to understand potential effects, for comparison purposes and for future monitoring.

Information Request:

Provide a revised spatial boundary for the LSA for atmospheric and acoustic effects based on the extent of potential effects with an adequate buffer. Evaluate the predicted effects and conclusions based on the revised LSA and outline any changes to the assessment.

Provide a justification for the selection of the spatial boundaries for the aquatic and terrestrial effects:

- for the aquatic effects, justify why the existing spatial boundary is sufficient to examine the water quality impacts on these areas that could be impacted from a release of contaminants; and
- for the terrestrial environment, provide a rationale for the scale used.

3.3 Temporal Boundaries

References:

EIS Guidelines	- Section 2.3.6, p. 23 (PDF 28)
EIS Main Report	- Section 2.5, p. 2.12 (PDF 173)

Contributing IRs:

MiningWatch

Rationale:

The EIS Guidelines state the “hazardous lifetime” of contaminants should be identified as the temporal boundary for the post-closure phase of the Project. Therefore, an estimate of the duration of key monitoring and maintenance activities should be provided.

Information Request:

Provide a revised temporal boundary for monitoring and maintenance activities based on the projected “hazardous lifetime” of contaminants.

4 Project Alternatives

4.1 Alternatives to the Project

References:

EIS Guidelines	- Section 2.2.1, p. 11 (PDF 16)
	- Section 2.3.2, p. 19 (PDF 24)
	- Section 2.4.2, p. 24 (PDF 29)
EIS Main Report	- Section 3.0, p. 3.1 (PDF 175)

Contributing IRs:
MOE-9
MNR-EA-17
MiningWatch-4

Rationale:
As required by section 2.4.2 of the EIS Guidelines, the EIS must include an evaluation of the environmental effects of alternatives to the Project, and discuss the advantages and disadvantages of each of the alternatives. Further, the EIS Guidelines require that for each identified 'alternative to' the Project, the EIS shall explain how SCI developed the criteria to identify the major environmental, social and cultural, economic and technical costs and benefits of those alternatives to, and how the preferred alternative was identified based on the relative consideration of these environmental factors.

Information Request:
Provide a systematic evaluation of alternatives to the Project by identifying the criteria used to identify the major environmental, social and cultural, economic and technical costs and benefits of those alternatives. Explain how the preferred alternative was identified based on the relative consideration of the environmental, social and cultural, economic and technical benefits and costs.

4.2 Alternative Means of Carrying out the Project

4.2.1 Processing of Concentrate

References:

EIS Guidelines	- Section 2.4, p. 24 (PDF 29)
	- Section 2.4.3, p. 24 (PDF 29)
EIS Main Report	- Section 3.0, p. 3.1 (PDF 175)
SID#31	- throughout

Rationale:
It is unclear in the EIS where the concentrate from the Project will be processed. For example, SID #31 employs a base case in which mine concentrate is shipped via rail from Marathon to either Montreal or Vancouver for offshore processing.

The Ontario Mining Act, section 91, states that all Ontario ores or minerals must be treated and refined in Canada (although an application may be made to the Government of Ontario for an exemption to this requirement).

Information Request:

Clarify whether SCI plans to request an exemption from Ontario Mining Act s. 21, and whether any Ontario communities are under consideration for processing Marathon Mine concentrate.

4.2.2 Rationale for Eliminating Alternatives

References:

EIS Guidelines	- Section 2.3.2, p. 19 (PDF 24)
	- Section 2.4.3, p. 24 (PDF 29)
EIS Main Report	- Section 3.0, p. 3.1 (PDF 175)

Contributing IRs:

MOE-EA-11
MNR-EA-18

Rationale:

The EIS Guidelines require that SCI identify any options that were determined not to be technically and economically feasible and to provide a rationale as to why they were determined not to be feasible. However, it is not clear if only two site access road options were identified or if other options were considered (for example, a road from Hwy 17 to the PSMF) and determined to be not technically or economically viable.

Information Request:

Provide more information to substantiate the conclusions made on the preferred site access road alternatives, such as whether other site access road options were considered and if so, what were these options and why were they determined to be not technically or economically feasible.

4.2.3 Analysis of Alternative Means

References:

Panel Terms of Reference	- Section 2.2, p. 12
EIS Guidelines	- Section 2.3.2, p. 19 (PDF 24)
	- Section 2.4.3, p. 24 (PDF 29)
	- Section 2.4.1, p. 24 (PDF 29)
EIS Main Report	- Section 3.2, p. 3.4 (PDF 178)

Contributing IRs:

MOE-EA-10

Rationale:

Section 3.2 of the Main EIS Report lists the alternative means of carrying out the Project for the following project components:

- site access road;
- electrical power supply;
- aggregate and rock fill supply;
- mining method;
- concentrate transport from the mine site to a remote processing facility;
- solid non-hazardous waste disposal;
- reclamation of the MRSA;
- reclamation of the PSMF; and
- siting of mine infrastructure.

However, the methodology presented in Section 3.2 of the EIS Main Report to assess the alternative means of carrying out these components of the Project does not describe in sufficient detail how criteria are used to identify alternative means as unacceptable, how net effects are considered, and how these criteria are combined to identify the preferred alternatives.

Sufficient rationale must be provided to enable the Panel to understand how the preferred alternatives were chosen for these components of the Project.

The Panel notes that alternatives for the MRSA and PSMF are addressed in Section 3.3 of the EIS Main Report, where information from SID #11 is cited although not well integrated. However, the lack of any references in the narrative of Section 3.2 of the EIS Main Report to related information in the SIDs for the nine (9) other project components listed above has proven very unhelpful.

Information Request:

For each of the project components listed above:

- identify those options that were considered but determined not to be technically and economically feasible and provide a rationale as to why they were determined not to be feasible.
- provide an explanation of whether and how net effects were considered when assigning the ratings;
- provide a full explanation of how the criteria ratings in Table 3.2-1 were subsequently weighted and combined to determine the overall ratings; and
- justify when an "unacceptable" rating for an evaluation criterion would not render the overall rating of the alternative unacceptable.

In your response, provide specific references to existing information contained in the SIDs that relates to the information requested.

Sufficient detail should be provided for the Panel to understand how the conclusions were reached.

4.2.4 Road Access and Discharge Pipeline Options

References:

EIS Guidelines	- Section 2.4.3, p. 24 (PDF 29)
	- Section 2.4.3.1, p. 25 (PDF 30)
EIS Main Report	- Section 3.2.2.1, p. 3.11 (PDF 185)
SID #6	- Section 4.2, p. 4.2 (PDF 87)
	- Section 4.2.2, p. 4.6 (PDF 91)

Contributing IRs:

MNR-EA-19
PMFN/PPFN-21

Rationale:

The EIS Guidelines require the EIS to identify and describe alternative means to carry out the various components of the Project. If there is more than one alternative means that is technically and economically feasible, the EIS Guidelines require SCI to describe the

environmental effects of each alternative means. Further, those alternative means that were considered but determined not to be technically and economically feasible should be identified and the rationale as to why they were determined not to be feasible documented.

The evaluation of alternatives considers two site access road alternatives; the continued use of Camp 19 Road and the construction of a new road. The EIS states that the costs associated with the two alternatives are equal and concludes that the new road option is preferred for biophysical reasons. However, it is not clear how the risk associated with using the existing road was determined to be more detrimental than the new corridor, given the larger footprint that will result from constructing a new road. Additionally, the alternate means assessment does not consider the impact of an additional corridor in a previously undisturbed area, or on resource use such as trapping.

The EIS did not include an evaluation of alternative locations for the discharge of effluent from the PSMF. The EIS states that "Options for locating the majority of the infrastructure for the project is dictated by the location of the open pit, the PSMF and MRSA, as well as geographic and environmental sensitivity constraints. No significantly different alternatives were considered."

Information Request:

Discuss how resource use and resource users were considered in the assessment of site access road alternatives. Explain why the risk of losing a vehicle into the Pic River was deemed to be a greater biophysical impact than the larger footprint and associated increase in disturbed area associated with construction of a new road.

Provide additional information to support the statement that both access options will have similar costs.

Provide a discussion of alternative locations for the discharge of effluent from the PSMF and justify the use of Hare Lake for direct discharge of effluent. Comment on any consideration given to the need for structures such as a constructed retention pond prior to discharge into Hare Lake. .

4.3 Alternatives to Mine Waste Disposal

4.3.1 Options Assessed in Mine Waste Disposal Alternatives Assessment

References:

EIS Guidelines	- Section 2.4.3.1, p. 25 (PDF 30)
SID#11	- Section 5, p. 30 (PDF 38)
SID#7	- Table 2.1, p. 2.2 (PDF 27)

Rationale:

SCI has identified eight possible options for waste rock disposal, and conducted a detailed assessment, including a multiple accounts assessment (MAA), on four of these options. However, none of the options assessed in the MAA reflect the SCI's actual proposal for waste rock disposal. In particular, none of the options in the MAA differentiate between potential acid generating (PAG) and non-PAG waste rock, and none of the options assessed include the segregation of PAG waste rock from non-PAG waste rock for management purposes.

Consequently, the results of the assessment of these options in the MAA, particularly for many of the environmental indicators, are questionable, as segregating the PAG waste rock changes the potential environmental impacts associated with waste rock disposal.

In addition, the proposed temporary stockpile for PAG waste rock located between satellite pits 2 and 3 would impact a natural, fish-frequented water body (Stream 2) (see Supporting Document 7, Table 2.1). Therefore, this portion of Stream 2 would need to be added to Schedule 2 of the MMER prior to allowing the establishment of a temporary stockpile at this location.

Information Request:

Provide a revised assessment of alternatives for the disposal of waste rock, taking into account segregation of PAG waste rock (Type 2 mine rock). In revising the assessment, ensure that one of the alternatives assessed is consistent with what is actually being proposed for waste rock disposal (i.e., segregate PAG from non-PAG, with non-PAG (Type 1 mine rock) east of the open pit and PAG waste rock (Type 2 mine rock) in temporary stockpiles west of the pit followed by permanent disposal in the mined-out pits).

The revised assessment of alternatives for waste rock disposal should also include options for the location of the temporary stockpiles for PAG waste rock, since one of the proposed stockpiles would impact a fish-frequented water body.

4.3.2 Methodology for Multiple Accounts Analyses

References:

EIS Guidelines	- Section 2.4.3.1, p. 25 (PDF 30)
SID#11	- Sections 4.5, p. 27 (PDF 35)
	- Section 5.4, p. 31 (PDF 39)

Rationale:

SID #11 states that in the MAAs conducted for both the process solids and waste rock disposal alternatives "the weightings and relative importance [of indicators] were defined based on review with SCI and Project stakeholders." However, no further information regarding how the weightings were developed is provided. A full description of the methodology used to determine the weightings is needed in order for the MAA to be transparent and reproducible.

Information Request:

Explain how the weightings for the indicators, sub-accounts and accounts used in the multiple accounts analysis for PSMF and MRSA options were determined. Discuss how the consultation process was used to develop the weightings.

4.3.3 Cost Estimates for Alternatives to Mine Waste Disposal

References:

EIS Guidelines	- Section 2.4.3.1, p. 25 (PDF 30)
SID#11	- Table 4.5, (PDF 53)
	- Table 4.6, (PDF 54-56)
	- Table 4.9, (PDF 59)
	- Table 5.4, (PDF 69)

Contributing IRs:

EC-32

Rationale:
The EIS Guidelines require the economic component of the mine waste alternatives assessment to consider the full costs of each alternative throughout the mine life cycle, including long term maintenance and monitoring requirements, as well as costs associated with the legislated requirement for a compensation plan to offset fish habitat loss. Environment Canada's "Guidelines for the Assessment of Alternatives for Mine Waste Disposal" also require information on all costs associated with each alternative assessed in detail through the multiple accounts analysis. Costs include capital costs for construction, operating costs, closure and reclamation costs, costs for long-term monitoring and maintenance post-closure and costs associated with implementation of the fish habitat compensation plan.

The costing information provided in SID #11, Tables 4.5, 4.6 and 4.9 does not include cost information regarding fish habitat compensation. The rationale for some predicted costs particularly those for monitoring and maintenance, need to be provided. Similarly, the costing information provided in SID #11, Table 5.4 for waste rock disposal does not include actual cost information on the alternatives. Quantitative information on the estimated capital, operating and closure costs of each alternative needs to be provided.

Given that water treatment of PSMF effluent and runoff from MRSA may be required to protect the receiving environment, an estimation of the costs associated with construction and operation the proposed treatment facilities during the life of the Project should be included in the alternatives assessment. Further, the economic feasibility of the Project if water treatment is required in the long term should be discussed.

Information Request:
Provide cost estimates for the following components of the preferred mine waste disposal options (i.e. Combined Storage Area PSMF and Option 4 MRSA):

- construction and maintenance of the components of fish habitat compensation plan; and
- the construction, operation and long-term maintenance and monitoring of the water treatment facilities.

4.3.4 Slope Stability of Open Pits

References:

EIS Guidelines	- Section 2.2.3.1, p. 15 (PDF 20)
	- Section 2.2.3.2, p. 15 (PDF 20)
	- Section 2.7.6, p. 70 (PDF 75)
EIS Main Report	- Section 1.4.3, p. 1.55 (PDF 124)
	- Section 6.3.2.16, p. 6.163 (PDF 669)

CEAR Doc # 326 "Recommendations for Open Pit Rock Slope Design Marathon PGM-Cu Project." Golder (2007)

Contributing IRs:
NRCan-18

Rationale:
SCI is proposing five (5) open pits, consisting of one primary pit and four satellite pits. In the EIS, SCI indicated that the environmental impact assessment was based on "extensive investigation directed at pit slope design" by Golder (2007). However, Golder (2007) only investigated the primary pit and one satellite pit and indicates that the design was based on

geotechnical drilling information targeted specifically on two open pit sites, and explicitly indicates that other pits were not considered.

Information Request:

Explain the discrepancy between the level of investigations regarding pit slope design described in the EIS and the supplemental document (Golder 2007).

Provide information about the investigation and design of the three satellite pits that were not included in Golder 2007.

4.3.5 Grouting and Groundwater Quality

References:

EIS Guidelines	- Section 2.4.3.1, p. 25 (PDF 30)
	- Section 2.7.2.3.1, p. 52 (PDF 57)
EIS Main Report	- Section 6.1.1.2, p. 6.9 (PDF 515)
SID#11	- Section 3.1.5, p. 12 (PDF 20)
SID#15	- throughout

Rationale:

The groundwater model has been conducted assuming two different base case scenarios: without grouting under the PSMF dams, and with grouting under the dams. The model shows that grouting results in significant reductions in seepage from the PSMF. However, it is not apparent in either the SID #11 or SID #15 if grouting is the preferred approach.

After the end of mine operations and reclamation work associated with the permanent disposal of PAG waste rock in the mined out open pits, the pits will be allowed to fill with water. Once filled, there is a potential for groundwater to flow from the pits and discharge into nearby water bodies, including the Pic River. If there is groundwater flow from the pits to nearby water bodies, and that water is of poor quality, then this could lead to impacts on water quality in the post-closure period. While SID #15 predicts that the flooded main pit would become a groundwater discharge area, more information is needed to substantiate this prediction.

Information Request:

Identify the preferred approach for mitigating seepage through faults or fractures in the PSMF.

If the preferred approach has not yet been identified, discuss the basis on which the preferred approach will be identified and discuss how the risk of seepage will be assessed. Confirm if the necessary data to determine the preferred approach is available, and if so, include the data in the response.

Provide additional information on the predicted direction, pathway(s) and rates of groundwater flow out of the flooded pits, taking into account the presence of an east-west trending fault that cuts through the pit and extends into the Pic River valley. Also provide information on the predicted timeframe for any groundwater originating from the open pits to reach the Pic River, Bamoos Lake and any other potentially affected water bodies.

5 Transportation of Concentrate

5.1 Assessment of Alternatives

References:

EIS Guidelines	- Section 2.4.3, p. 24 (PDF 29)
EIS Main Report	- Section 3.2.2.4, p. 3.21 (PDF 195)

Contributing IRs:
MOE-EA-11
MNR–EA-22
PRFN-8
Great Lakes United / Lake Superior Binational Forum

Rationale:
The EIS does not identify a preferred approach for transporting concentrate from the proposed project, and indicates that the final decision on the preferred approach will be made in the future.

The scope of the Project which the Panel is mandated to assess includes the establishment, construction and/or modification and use of transportation infrastructure including access roads, highways and/or rail lines to support the above-mentioned activities and the transport of final mine concentrate(s).

The EIS currently only address the potential environmental effects of the potential rail load-out facility on some VEC (i.e. air quality, noise, and to a limited extent, traffic) as a result of the proposed rail load-out facility.

Information Request:
Given that a decision has not yet been made on whether concentrate will be transported from the proposed mine by truck or by rail, provide a complete assessment of the potential environmental effects of both alternative means of transporting concentrate and of alternative locations for the rail load-out facility.

Include in the assessment a discussion of the potential effects to the Ojibways of the Pic River First Nation (OPRFN) community resulting from increased rail traffic which could restrict access to the community along Hwy 627.

5.2 Air Emissions at Rail Load-out Facility

References:

EIS Guidelines	- Section 2.7.2.1, p. 50 (PDF 55)
SID#16	- Section 5.2.12, p. 44 (PDF 55)
	- Section 6.6, p. 63 (PDF 74)
	- Appendix B, p. 49 (PDF 262)

Contributing IRs:
MOE-AE-7

Rationale:
The information contained in SID #16 is not clear regarding the mitigation that is proposed to control air emissions at the concentrate load-out facility, should this option be advanced as the

preferred alternative means of transporting concentrate. Specifically, SID #16 does not clearly identify the location of baghouses and does not indicate whether the baghouses are intended to serve only the storage bins or the entire concentrate storage building.

Further, emissions from the baghouses were estimated using USEPA document AP-42 emission factors and a control efficiency of 99% for the baghouses. However, other baghouses inside the mine area used a more conservative total suspended particulate (TSP) outlet loading of 20 mg/m^3.

Information Request:
Provide clarification regarding the activities at the rail load-out facility that will be mitigated through the use of baghouses and the effectiveness of the baghouses to capture the fugitive TSP emissions generated during truck to hopper unloading and bins to rail cars loading. Also, provide further information to verify the stated TSP control efficiency.

5.3 Highly Impulsive Noise Sources at Rail Load-out Facility

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
SID#17	- Section 2.3.1.2, p. 14 (PDF 25)
	- Section 3.3.1, p. 22 (PDF 33)
	- Section 4.3.1, p. 25 (PDF 36)

International Standards Organization (ISO) (2003). ISO 1996-1:2003 Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures.

Contributing IRs:
HC-25

Rationale:
ISO 1996 identifies metal to metal contact, such as rail-yard shunting operations, as highly impulsive noise sources. The sound level contribution of audible noises from these devices/sources is adjusted by +12 decibel (dB) when determining percent highly annoyed. However, an assessment of impulsive noise is missing from the EIS, such as impulsive noise from shunting at the Rail Load-out Facility options.

Information Request:
Provide confirmation as to whether there would be any shunting activity at the Rail Load-out Facility, and, if so, provide the approximate contribution of shunting to the annoyance noise level at the relevant noise sensitive receptors in terms of the sound level during daytime (Ld) nighttime (Ln).

5.4 Cumulative Impacts

References:

EIS Guidelines:	- Section 2.3.2, p. 19 (PDF 24)
	- Section 2.7.1.4, p. 47 (PDF 52)
EIS Main Report:	- Section 6.6.1.4.2, p. 6.207 (PDF 713)
	- Figure 1.4-12, p. 1.59 (PDF 128)

Contributing IRs:
MOE-EA-20
Great Lakes United / Lake Superior Binational Forum

Rationale:
The Peninsula Harbour Sediment Remediation Project is included in the EIS as an existing project to be considered in the cumulative effects assessment. In the summary of the potential effects of the Project that may overlap with existing activities, SCI concludes that no potential overlap is expected with the Peninsula Harbour Sediment Remediation Project. However, the discussion regarding the potential overlap between the proposed project and the Peninsula Harbour Sediment Remediation Project does not discuss the potential interaction between the one of the proposed locations of the concentrate rail load-out facility at Peninsula Harbour (see Figure 1.4-12).

Information Request:
Revise the cumulative effects assessment to include a discussion of the potential effects of the proposed concentrate rail load-out facility at Peninsula Harbour in combination with the Peninsula Harbour Sediment Remediation Project at Jellicoe Cove.

6 Transmission Line

6.1 Description of Power Supply and Distribution

References:

EIS Guidelines	- Section 2.2.3, p. 13 (PDF 18) - Section 2.2.3.5, p. 18 (PDF 23)
EIS Main Report	- Section 1.4.3.1, p. 1.55 (PDF 124) - Section 1.4.3.4.11, p. 1.82 (PDF 151) - Figure 1.4-12, p. 1.59 (PDF 128)

Contributing IRs:
MOE-EA-7

Rationale:
The information provided in the EIS regarding the transmission line through the textual description and mapping are at a very high level. Further, there are discrepancies in the information provided in the EIS regarding whether the corridor for the transmission line is existing or would need to be created. Additionally, there is no discussion on the location of the corridor. Further, the EIS does not include information on the timeline of when the transmission line would become operational or a discussion of whether the grid has capacity to support the electricity needs of the mine.

While the EIS indicates that a transformer station will be required, no information is provided regarding its location or how this component will fit in to the construction and operation schedule.

Information Request:
Provide a more detailed description of the transmission line, including a map delineating the location of the proposed transmission line corridor, and if known, the location of the transmission line.

Provide an assessment of the effect of the additional energy demand on the reliability of the power supply to the area.

6.2 Assessment of Alternatives

References:

EIS Guidelines	- Section 2.4.3, p. 24 (PDF 29)
EIS Main Report	- Table 3.2-1, p. 3.5 (PDF 179) - Section 3.2.2, p. 3.11 (PDF 185)

Contributing IRs:
PMFN/PPFN-13
MOE-EA-12

Rationale:
Despite being listed as an aspect of the Project that was considered within the alternative means assessment and being included in Table 3.2-1, there is no discussion of the alternative means of supplying electrical power to the Project included in section 3.2.2.

Information Request:

Provide an assessment of the alternative means of providing electrical power to the Project, and explain how the conclusions in Table 3.2-1 were reached. The assessment should include a consideration of whether the new east-west power line planned to Wawa will affect power supply to the Project in any way.

6.3 Impact of Transmission Line Noise

References:

EIS Guidelines	- Section 2.6.1.3, p. 32 (PDF 37)
	- Section 2.7.2.2, p. 52 (PDF 57)
SID #17	- Appendix C, Operations Equipment Data (PDF 76-86)

Contributing IRs:

MOE-Noise-12

Rationale:

Table “Appendix C, Operations Equipment Data, Open Pit Operations/Insignificant Sources” in SID #17 discusses the issue of noise from a new electrical transmission line for the site. The EIS states that “Generally, during dry conditions, corona noise levels are between 40 and 50 dBA to the edge of right of way (10 m). Under wet conditions, corona noise levels may increase to between 50 and 60 dBA. Considering the natural attenuation and other sources on the mine site, the noise emitted from the transmission line is negligible."

The EIS does not provide the distance from the transmission line to Points of Reception. The stated corona noise level 50 dBA from the transmission line would exceed the 45 dBA guidelines limit at nighttime for a nearby Point of Reception. Therefore, the claim that this source is “negligible” should be supported.

Information Request:

Justify the statement in the EIS that transmission line noise would be negligible, including the distances of Points of Reception from the transmission line.

7 Public Consultation

References:

EIS Guidelines	- Section 2.5.2, p. 28 (PDF 33)
EIS Main Report	- Section 4.6, p. 4.91 (PDF 305)

Contributing IRs:
MOE-EA-19

Rationale:
The EIS provides limited information about the issues raised by the public and stakeholder organizations and how they have been or will be addressed. For example, SCI met with various stakeholder groups (including local community groups) to discuss the Project, but little information is provided in the EIS on what issues were discussed or concerns that were raised. Without this information, there is not a clear picture of the public's views on the Project or the specific issues that SCI should consider in response to the concerns raised. While the EIS provides a summary of the issues raised by the public, it does not identify how or if these issues will be addressed or what responses were provided to the concerns that were raised.

Similarly, while there is a detailed listing of the meetings with government agencies, a summary of the issues discussed should be included to allow the public to understand what issues were raised and discussed.

Information Request:
Provide a table listing all stakeholders, including government agencies, consulted as part of the public consultation program, a description of the issues/concerns raised by the stakeholder and ways in which SCI has responded to these specific issues/concerns or how they have been addressed or will be addressed in planning the Project.

8 Methodology

8.1 Methodology for Significance Determination

References:

EIS Guidelines	- Section 2.7.1.5, p. 48 (PDF 53)
EIS Main Report	- Section 6.1.3, p. 6.14 (PDF 520)
	- Table 6.1-4, p. 6.15 (PDF 521)
	- Section 6.2.11.11, p. 6.136 (PDF 642)

Contributing IRs:
MOE EA-15
MNR-EA-24
Ontario Nature

Rationale:
In Table 6.1-4, it appears that, regardless of the significance of the residual effects for each of the assessment factors (magnitude; spatial extent; duration; frequency; reversibility; ecological/societal value), the overall significance for each residual effect is always "Not Significant". For example, the VECs surface water quantity, forest cover, and provincially and regionally rare vegetation species, all contain at least one "high" effects rating criteria for residual effects and yet each are determined to have "No Significant Effect".

Without a clear explanation of the method used to reach conclusions, it is not evident how the final conclusions were made.

Information Request:
Explain how the six assessment factors were combined and weighted to determine the overall significance for each VEC. Sufficient detail should be provided for the Panel to understand how the conclusions were reached for each VEC.

8.2 Aboriginal Health as a VEC

References:

EIS Guidelines	- Section 2.7.1.5, p. 48 (PDF 53)
	- Section 2.6.4.2, p. 42 (PDF 47)
	- Section 2.7.3.5, p. 68 (PDF 73)
EIS Main Report	- Section 6.2.11.3, p. 6.132 (PDF 638)
	- Section 5.11.3, p. 5.169 (PDF 494)
	- Section 6.2.11, p. 6.131 (PDF 637)

Contributing IRs:
HC-2

Rationale:
Section 2.6.4.2 of the EIS Guidelines calls for "a discussion on Aboriginal people's health-related traditional activities" and states: "The Proponent shall provide a description of traditional dietary habits and dependence on country foods and harvesting for other purposes, including harvesting of plants for medicinal purposes. Information on current consumption of country foods and its quality by food type, amounts consumed, and parts consumed (whole body as opposed to a specific organ) by Aboriginal people and groups shall be provided, where

available." Further, while the EIS Guidelines specify that human health should be examined as a VEC when assessing the effects of the Project on the social and economic environment, the discussion of human health included in the EIS does not discuss the effects of the Project on the health of Aboriginal people.

While section 6.2.11 discusses many of the factors that can influence Aboriginal health, such as country foods and the preponderance of traditional dietary habits, the analysis in the EIS does not tie these factors together to assess the overall potential effect of the Project on the health of Aboriginal people.

In addition, the baseline information in the EIS regarding Aboriginal health is taken from the Ontario Ministry of Health and Long Term Care Health Status Report of Aboriginal People in Ontario. Therefore, there is no site specific baseline data regarding Aboriginal health, or any discussion demonstrating how the data that was used is representative of local Aboriginal communities.

Information Request:

Using the information available, provide a more thorough discussion on the effects of the Project on Aboriginal people's health, and explain how the information provided meets the requirements of section 2.6.4.2 of the EIS Guidelines.

9 Geology and Geochemistry

9.1 Bedrock Geology

9.1.1 Framing the Geological Context of the Site

References:

EIS Guidelines	- Section 2.6.1.1, p. 30 (PDF 35)
EIS Main Report	- Section 5.1.2, p. 5.1 (PDF 326)
	- Figures 5.1-3, p. 5.5 (PDF 330)

Contributing IRs:
NRCan-14

Rationale:
The background geological and other relevant information is not adequately documented. Additional details are needed to adequately frame the geological context of the site for the EA. For example, no structure lineaments are presented in Figure 5.1-3, however, EcoMetrix 2012, Dahl et al. (2002), and Walker et al. (1993) indicate several structural features, notably a large regional fault has been observed in the vicinity of the proposed mine pit and this may have a significant impact to the other components of the EA, notably groundwater flow.

Information Request:
Provide the structure lineaments on Figure 5.1-3 and qualify the Archean footwall in the legend.

9.1.2 Structural Characterization of Rock Formations

References:

EIS Guidelines	- Section 2.6.1.1, p. 30 (PDF 35)
EIS Main Report	- Section 5.1.2, p. 5.1 (PDF 326)

Contributing IRs:
NRCan-17

Rationale:
Structural considerations including structural fabric and structural relationships are not adequately documented in the EIS. This is significant as it might have considerable impact on the evaluation of other aspects of the EA such as groundwater flow.

Information Request:
Provide an appropriate structural characterization of the rock formations impacted by the Project.

9.2 Nomenclature for Non-PAG Material

References:

EIS Guidelines	- N/A
SID#5	- Acronyms & Abbreviations, p. vii (PDF 10)

Contributing IRs:
NRCan-20

Rationale:
According to the EIS, Type 1 materials are defined as containing less than 0.3% total sulphur (S) and referred to as non-acid generating (NAG). Type 2 materials contain more than 0.3% total S and are designated as PAG. However, there is a discrepancy regarding the use of nomenclature for the Type 2 material.

In SID #5, the acronym NAG is defined as "net acid generation" as the acronym non-PAG has been defined as "non-potentially acid generating". However, the same document further uses NAG and PAG terminology as "non-acid generating" and "potentially acid generating" (p. 1-4), respectively, which is consistent with the definitions for Type 1 and Type 2 material. However, the document later refers to the NAG test as the above defined acronym in Net Acid Generation test and supernatant (p. 1-11).

Information Request:
Clarify the nomenclature used for "Net Acid Generation" which has been abbreviated to NAG, and "non-Potentially Acid Generating", which has been inconsistently abbreviated to "non-PAG" and "NAG"

9.3 Acid Rock Drainage/Meal Leaching Test Programs

9.3.1 Updating Process Solid Test Program Results

References:

EIS Guidelines	- Section 2.6.1.1, p. 31 (PDF 36)
SID# 5	- Section 5.1.5.3.2, p.1-11 (PDF 22)

Contributing IRs:
MOE-GW-6

Rationale:
EIS Guidelines require predictions of acid rock drainage (ARD) and metal leaching potential of all materials to be created or disturbed. The EIS notes that "metallurgical testing and process refinements were completed in 2011 to improve the efficiency of the extracting economy of minerals from the ore…and now includes the production of two process streams. About 85% of the process solids will consist of a low sulphur material with less than 0.1% S. About 15% of the process solids will have higher sulphur content with about 7% S…. A test program was initiated for the 2011 process solids to confirm that the materials behave similar to the 2008 materials and tests were in progress as of the publication date of this report."[i.e. July 2012]

Information Request:
Provide the results of the 2011 process solids test program and related conclusions. Also, discuss whether the results confirm findings of previous studies, and if not, discuss the implications of the differences.

9.3.2 Kinetic Humidity Cell Test

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17)
	- Section 2.4.3.1, p. 25 (PDF 30)
	- Section 2.7.1.2, p. 44 (PDF 49)
SID#5	- Section 1.5.1.3, p. 1.7 (PDF 18)
	- Section 1.5.3.2, p. 1.11 (PDF 22)

Contributing IRs:
PMFN/PPFN-3

Rationale:
An estimated 15% of process solids will be 'high sulphur' and will be stored in a separate cell in the PSMF until one of the satellite pits is mined out, after which, high sulphur process solids will be disposed of in the satellite pit(s). Section 1.5.3.2 of SID #5 states "The one combined process solids (tailings) sample consisted of a rougher and cleaner process solids combined as a by-product from the processing of the average grade ore. The combined process solids sample was the only process solids sample subjected to kinetic testing, as well as X-ray diffraction (XRD) analysis, whole rock analysis, bulk metal analysis, decant water analysis, and short-term leach tests."

It appears that the only kinetic humidity cell testing carried out for tailings was on a combined rougher and cleaner tailings sample generated in 2008 from processing of 'average ore', when in reality, the 'cleaner' high-sulphide tailings will be stored separately where any neutralisation potential contribution from the 'rougher' tailings will be absent (it is noted that the 2008 sample contained higher sulphur concentrations than predicted).

Prior to implementation of progressive or final closure activities, the storage of high-sulphur 'cleaner' tailings will occur under conditions that promote sulphide oxidation (i.e. exposure to water and air); whereas the subsequent testing carried out in 2011 on 'cleaner' tailings only comprised sub-aqueous column tests designed to replicate actual closure conditions. Consequently, additional investigation into the risk of ARD/metal leaching from high-sulphide 'cleaner' tailings is required with respect to the longer-term risk of seepage migration from the PSMF. The Panel notes that it received comments that this investigation is legally required in order to meet the requirements of the mine rehabilitation code of Ontario (O.Reg. 240/00).

Information Request:
Justify the testing methodology that was used and indicate SCI's level of statistical confidence in the results, and discuss the implications on the results of the assessment from only using 1 humidity cell test.

Explain how the testing that has been completed to date relates to the level of testing required to meet the requirements of the mine rehabilitation code of Ontario (O. Reg. 240/00).

9.3.3 Methodology for Humidity Cell Tests

References:

EIS Guidelines	- Section 2.7.2.3.2, p. 57 (PDF 62)
SID#5	- Section 1.5.1.3, p. 1.7 (PDF 18)

Contributing IRs:
NRCan-23

Rationale:
The EIS outlines the procedure that was used for the humidity cell tests, stating the tests were conducted using HDPE funnels where the test solids were placed on Nitex screens between two sheets of filter paper to retain the solids. Each week, distilled water was poured over the process solids and allowed to gravity drain into dedicated sample collection flasks. After sampling, the funnels were lightly covered with cellophane films to prevent excessive evaporation and left undisturbed until the next sampling session.

The humidity cell tests were conducted using non-standard cells and test methods instead of following the standard procedure of three-day cycles of moist and dry air circulation though the test materials followed by DI water rinse on the seventh day. The non-standard methods used for the humidity cell tests have the potential for appreciable moisture retention and poor air circulation, thereby limiting oxygen availability to the test materials. This may impact the oxidation characteristics of test materials, specifically those of fine fractions, leading to the experimental artefact of low reactivity of the test solids.

Information Request:

Justify the humidity cell testing methodology employed and comment on how results may differ statistically from employing standard methodologies.

9.4 Acid Base Accounting

9.4.1 Neutralization Potential Predictions

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17) - Section 2.4.3.1, p. 25 (PDF 30) - Section 2.6.1.1, p. 30(PDF 35) - Section 2.7.1.2, p. 44 (PDF 49) - Section 2.7.2.3, p. 52 (PDF 57)
SID#5	- Section 3.1.1, p. 3.1 (PDF 27) - Section 4.1.1, p. 4.1 (PDF 36) & throughout

Contributing IRs:

PMFN/PPFN-4
NRCan-24
CRINO

Rationale:

The EIS does not provide confirmation of the method of neutralization potential (NP) determination (i.e. Sobek or modified Sobek) that was used to measure neutralization potential. Further, the rationale for using total NP in the NPR classification scheme rather than carbonate NP_{Carb} is not clear, as NP_{Carb} includes both carbonate and silicate minerals buffering capacity.

Although silicate mineral dissolution does provide acid consumption capabilities, in most cases it is effective only at low pH conditions of 4 or less where many of the metals such as Cu, Ni and Zn are already mobilized. As the carbonate NP_{Carb} is only about 35% of the total NP available, the non-PAG / PAG boundary of total sulphur content of 0.3% would shift towards low total sulphur values requiring adjustment to the estimated Type 1 and Type 2 materials quantities for the various mine waste components produced at the Marathon site.

Information Request:

Clarify the acid-base accounting methodology used to measure neutralization potential.

Justify the use of total NP in the NPR classification and discuss the implications of using total NP rather than NP_{Carb} on the results.

9.4.2 Geochemical Assessment

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17)
	- Section 2.4.3.1, p. 25 (PDF 30)
	- Section 2.7.1.2, p. 44 (PDF 49)
SID#5	- Section 4.1.1, p. 4.1 (PDF 36)
	- Section 4.4, p. 4.15 (PDF 50)
SID#18	- Section 3.6, p.44 (PDF 50)

Contributing IRs:
PMFN/PPFN-5
CRINO

Rationale:
SID #5 does not provide a rationale for concluding geochemical variability amongst the five principal waste rock units present in total waste rock production in terms of waste rock lithology abundance and spatial distribution within the pit envelopes. Further, it is not clear if the waste rock samples selected by Golder in 2007 fell from within the updated 2010 pit envelopes, or if the degree of ARD / metal leaching risk varies within each of the five open pits.

Section 4.1.1 of SID #5 states "The geometric mean (or geomean) values for chemical data are used to represent central tendency values throughout this report because chemical concentrations in water and rock tend to have log-normal distributions that are best represented by the geomean value. " The heterogeneous spatial distribution of low and high sulphide waste rock in a waste rock pile can result in net acidic drainage even though geomean ABA data indicate non-PAG conditions. As a result, it is possible that an over-emphasis was placed on using geomean values to assess the risk of acid generation.

Section 4.1.1 of SID #5 also states that on average, carbonate NP (NP_{Carb}) represents only 35% of total NP. However, given the low percentage of readily reactive NP provided by carbonate mineral dissolution, more discussion on the relative availability of NP including an assessment of the relative reactivity of non-carbonate mineral NP would be appropriate.

Section 4.4 of SID #5 refers to the Price (1997) sulphur cut-off value of 0.3% (wt.) S for predicting the risk of ARD. However, Price refers to sulphide-S, as opposed to S. The use of this suggested cut-off value may be inappropriate as it is outdated and has been deleted from the MEND, 2009 guidelines, which effectively replace the Price (1997) guidelines in Ontario.

As a result of the use of the Price (1997) criteria for interpreting NPR values from ABA testing as opposed to MEND, 2009 criteria, there is a discrepancy between SID #5 and SID #18, as the Draft Conceptual Closure Plan (SID #18) refers to the MEND, 2009 NPR criteria (p.44, 2nd paragraph).

Information Request:
Justify the conclusion that the approximate 350 waste rock samples submitted for ABA testing is sufficient to characterize variability within the waste rock.

Confirm that the waste rock samples selected by Golder in 2007 fell from within the updated 2010 pit envelopes.

Justify the use of geomean values to assess the risk of acid generation from waste rock piles.

As necessary, update the assessment using the MEND 2009 guidelines, and explain how the use of MEND, 2009 NPR criteria rather than Price (1997) has changed the results.

9.5 Type 1 and Type 2 Materials Quantities

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17)
	- Section 2.6.1.1, p. 30 (PDF 35)
	- Section 2.7.2.3, p. 52 (PDF 57)
EIS Main Report	- Section 1.4.3, p. 1.55 (PDF 124)
	- Section 5.1.5.2.1, p. 5.13 (PDF 338)
SID#5	- Section 1.4, p. 1.4 (PDF 15)
SID#18	-Section 3.7.1, p. 46 (PDF 53)

Contributing IRs:
NRCan-21
EC-3
EC-4

Rationale:
Discrepancies exist in the EIS regarding the amount of Type 2 (PAG) waste rock that would be produced. In some sections, the EIS (e.g., p. 1.56) states that 20 million tonnes (MT) of PAG waste rock would be produced, which is equivalent to approximately 7%. In other places, it is estimated that 85-90%of all waste rock (288 MT) would be non-PAG, equivalent to 28.8 to 43.2 MT of PAG waste rock.

The report further describes that approximately 20 Mt of the PAG mine rock would be temporarily deposited and managed adjacent to the mined out open pits for relocation back to the open pits upon cessation of mining. However, the amount and management plan for the remaining PAG mine rock is not described in the EIS documents, leading to uncertainty regarding the actual amounts of non-PAG / PAG materials that would be produced at the site and how it would be managed. For instance, SID #11 indicates that the MRSA has an estimated storage volume of 137 Mm^3, 17% less than the total estimated amount of amount of mine rock to be produced.

Similar discrepancies have been noted regarding the volumes of Type 1 process solids. On p. 1.56, the EIS states that an estimated 85 to 90% of the total amount of process solids produced will be Type 1. However, on p. 5.13, different percentages of 90-95% are provided.

Similarly, the quantity of Type 1, non-PAG process solids is also stated to be about 85-90% of the total 61 Mt of process solids that would be produced at the site. Of these, approximately 6-9 Mt of process solids would be Type 2 (PAG) process solids, which would be deposited and managed underwater in both the PSMF and mined out open pits. The relative distribution of the non-PAG / PAG process solids is, however, dependent on the sulphide removal efficiency of the mill flotation circuits, feed material concentrations and any process upset conditions.

It is necessary to understand the proportion, volume, and type of each waste stream to be stored in order verify the predicted water quality and seepage quality from these facilities.

Information Request:

Provide a more precise estimate of the non-PAG/PAG materials that would be produced and their relative distribution in the designated waste management areas at the site, with a consistent use of Mt or Mm^3.

For mine work, clarify the amount of Type 2 mine rock (PAG waste rock) expected to be produced, expressed:

- as a percentage of the total amount of mine rock expected to be produced; and
- as the total mass of Type 2 mine rock expected to be produced in millions of tonnes.

For process solids, clarify the amounts of Type 1 and Type 2 process solids expected to be produced, expressed:

- as percentages of the total amount of process solids expected to be produced; and
- as the total masses of process solids expected to be produced in millions of tonnes.

Explain how management plans for non-PAG and PAG process solids and mine rock reflect uncertainty associated with the total volumes of these wastes, including the size of the MRSA and PSMF the related predictions of water and seepage quality.

9.6 Separation of Ore and Type 1 and 2 Mine Rock

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17) - Section 2.6.1.1, p. 30 (PDF 35) - Section 2.7.2.3, p. 52 (PDF 57)
EIS Main Report	- Section 6.2.3, p. 6.42 (PDF 548)

Contributing IRs:

NRCan-22
RSMIN-2

Rationale:

While the identification and separation of ore based on mine geology and petrography may be apparent, Type 1 and 2 mine rock separation based on total sulphur content would require laboratory analysis (which would be difficult to accomplish in the field) and may take some time. For example, section 6 of the EIS Main Report states that in the upset conditions, more than 10% of the Type 2 (PAG) mine rock may end up in the MRSA.

Information Request:

Describe how ore and Type 1 (non-PAG) and Type 2 (PAG) mine rock will be sorted during operations (following blasting in the pit) in order to minimize acid generation in the MRSA and for other uses of the non-PAG waste rock.

Identify the mitigation measures that would be employed in the MRSA if unplanned quantities of PAG waste occur.

9.7 Geological Cross Sections of PSMF and MRSA and Separation of Process Solids

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17) - Section 2.6.1.1, p. 30 (PDF 35) - Section 2.7.2.3, p. 52 (PDF 57)

Contributing IRs:
NRCan-26
EC-11

Rationale:
The Proponent has not provided any geological cross sections through the PSMF or the MRSA. Such cross sections, which cover one or more transects across the facility, as opposed to a schematic cross section through the embankments, are very useful for understanding the bedrock and overburden geology and the topography under the waste disposal facility. Such cross sections may also illustrate proposed seepage and surface drainage control and collection measures, including collection ditches and seepage collection ponds.

Type 2-PAG process solids are planned to be initially deposited in the PSMF below the anticipated water table in the basin and maintained under saturated conditions during operations and post closure phases to prevent their oxidation and, hence, acid generation. However, it is unclear how the disposal of the two types of process solid streams (Type 1 and 2) would be arranged to achieve the intended disposal scheme.

Also, SCI has not adequately explained how the water table in the PSMF basin would be maintained during and after closure to ensure complete saturation of Type 2 process solids in such a way that allows for seasonal water table fluctuations and the impact of climate change, if any.

Information Request:
Provide east-west and north-south geological cross sections (planar and sectional views) through the proposed PSMF and the proposed MRSA. Features that these cross sections should illustrate include:

- bedrock topography;
- major lineaments
- anticipated water table elevations in the PSMF during operation and at closure
- stratigraphy and topography of surficial geology units such as glacial tills;
- cross sections through the tailings or waste rock to be disposed of within these facilities;
- cross sections through the tailings embankments; and
- features associated with the control and collection of surface drainage and seepage.

Discuss the impact of water table fluctuation and climate change in the long-term management of saturated conditions in the Type 2 disposal area.

Explain the methods that would be used to identify and separate PAG and non-PAG process solids during operations.

9.8 Loading Rates for Type 1 Mine Rock in MRSA

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17)
	- Section 2.6.1.1, p. 30 (PDF 35)
	- Section 2.7.2.3, p. 52 (PDF 57)
SID#5	- Section 3.2, p. 3.5 (PDF 31)
	- Section 4.3, p. 4.8 (PDF 43)

Contributing IRs:
NRCan-25
CRINO

Rationale:
Temperature Effects
The laboratory humidity cell test results were corrected for both ambient temperature of the mine rock pile at field conditions and its particle size distribution. A temperature correction factor of ~ 0.17, based on the Arrhenius equation, was applied to the lab humidity test results, obtained at ~ 20 °C, to the ambient field temperature conditions of ~ 5 °C for the mine rock pile. However, the sulphide oxidation process itself is exothermic, releasing heat to the media. Many of the sulphide containing waste rock piles are known to produce significant amounts of heat raising their internal temperatures to as high as 80 °C.

Grain Size Distribution
The laboratory humidity cell test results were further corrected by a factor of ~ 0.01 to account for the relative proportion of very fine silt and clay fractions which, were deemed as the only reactive components of the mine rock deposited in the MRSA.

Information Request:
Justify the use of the temperature correction factor applied to the laboratory humidity cell test results and correct the humidity cell test results to account for the exothermic release of heat.

Justify the assumption that only very fine fractions of the waste materials contribute to contaminants of potential concern (COPC) loadings in the long-term and assess potential effects under the assumption that over the long term, an average load rate must be obtained for the entire particle size distribution of the mine rock in the MRSA

Discuss implications of the temperature correction factor and the grain size distribution assumption in relation to representative long-term COPCs loading rates and seepage quality including impacts of any non-PAG / PAG boundary redistribution to mine rock classification and long term drainage/seepage water quality management requirements, if any.

9.9 Management of Type 2 Rock

References:

EIS Guidelines	- Section 2.7.2.3.1, p. 54 (PDF 59) - Section 2.8.1, p. 73 (PDF 78) - Section 2.8.2, p. 73 (PDF 78)
EIS Main Report	- Section 6.1.1.2, p. 6.9 (PDF 515)
SID#5	- Section 4.4.1, p. 4.16 (PDF 51)

Contributing IRs:
MOE-GW-2

Rationale:
The EIS Guidelines require an assessment of all potential impacts which could result from the handling and disposal of waste rock generated at the mine, and identification of appropriate mitigation measures. However, the EIS does not clearly identify and assess the impacts associated with the Type 2 waste rock, and mitigation measures are not sufficiently discussed.

The geochemistry assessment indicates that there is likely to be an initial release of sulphate and metals from the Type 2 rock when it is initially submerged in water, an effect that is likely to be increased if the rock has been left exposed to the air for a period of time. It is understood that when initially excavated, Type 2 waste rock will be stored on site in locations that are exposed to the air, and that the Type 2 waste rock will remain this way until such time that the satellite pits have been completed. Once the satellite pits have been mined out, the Type 2 rock (as well as some Type 2 tailings) will be moved into the bottom of these pits, which will then be flooded to submerge the Type 2 materials. Based on the geochemistry report, this submergence will result in the release of sulphate and metals. This release has not been adequately discussed or quantified.

The timing of the flooding of the pits is another area of potential concern. The bottoms of the satellite pits are located well above the bottom of the main pit, and if there is an under drain effect, the satellite pits will not flood until the main pit floods. Consequently, the Type 2 material may lie un-submerged for a longer period, which could result in a greater release of metals and sulphate and resultant acid generation prior to the material being submerged.

Information Request:

Provide more detail on how the Type 2 waste rock will be managed between the time of excavation and its eventual submergence. In particular, include:

- a discussion of the potential impacts and estimates of the release of metals upon submergence of the Type 2 waste rock;
- an estimate of the time period required for water levels in the pit to cover the waste rock;
- estimates of contaminant release from the Type 2 waste rock, and identification of the impact to potential receivers;
- potential mitigation and/or contingency measures for the possible release of metals from Type 2 rock upon submergence; and
- alternate measures to handle Type 2 rock during operations and prior to submergence.

9.10 Metal Leaching

9.10.1 Metal Leaching from non-PAG Waste Rock

References:

EIS Guidelines	- Section 2.6.1.1, p. 30, (PDF 35)
	- Section 2.7.2.3.2, p. 55 (PDF 60)
	- Section 2.7.1, p. 43 (PDF 48)
EIS Main Report	- Section 5.1.5.2, p. 5.12 (PDF 337)
SID#5	- Section 4.1, p. 4.1 (PDF 36)
SID#6	- Section 2.1.1, p. 2.2 (PDF 23)

Contributing IRs:

EC-6
MOE-SW-15
CRINO

Rationale:

In SID # 5, SCI describes the work undertaken to characterize the potential for ARD and metal leaching from the waste rock. However, characterizing the waste material for ARD potential alone is not sufficient as some metal, metalloids and non-metals such as nickel, arsenic and selenium, respectively, can be soluble at a neutral pH. Therefore, even in the absence of ARD

these substances can be released. For example, experience at a former mine site (i.e. Inmet Winston Lake) included the removal of >3000 loads of rock that was used for construction which was determined after mine closure to be a significant source of ARD.

SCI has characterized the metal leaching potential of waste rock by conducting humidity cell tests. However, the tests were done on whole samples of rock from the areas within the proposed open pit that would become waste rock. No distinction was made between PAG and non-PAG waste rock. Therefore, based on the results of this characterization work, it is not possible to differentiate between the metal leaching potential of either of these rock types.

SCI is proposing to segregate PAG waste rock from non-PAG waste rock, and manage the two streams of rock separately. However, given the way the metal leaching characterization work was done, it is not possible to accurately predict the metal leaching potential of the non-PAG waste rock that would be deposited in the MRSA. As a result, it is not possible to accurately predict the quality of water that would come in contact with the non-PAG waste rock via surface drainage and seepage.

Information Request:

Justify the geochemical characteristics of the waste rock (PAG and non-PAG) undertaken to date, especially in terms of potential for leaching of metals from non-PAG mine rock. Identify specific risks associated with potential errors in metal leaching prediction (such as the risks associated with the widespread use of Type 1 waste rock for construction purpose) and if necessary, identify additional mitigation that may be necessary.

9.10.2 Metal Leaching from Pit Walls

References:

EIS Guidelines	- Section 2.7.1, p. 43 (PDF 48)
SID#6	- Section 2.1.1, p. 2.2 (PDF 23)

Contributing IRs:

MOE-SW-14

Rationale:

SCI predicts that metal loadings from the various pits will not significantly affect water chemistry, and states that water chemistry will be similar to background conditions in the long term. However, experience at other sites (e.g. Steeprock, Mattabi Mine) has demonstrated that once exposed, the pit walls can contribute significant metals to the water, making it necessary to treat the pit water prior to discharge to the environment.

Information Request:

Justify the assumption that the pit walls will not impair water quality over time and provide a contingency plan that identifies remedial options in the event that effects that were not predicted occur.

9.11 Mitigating Acid Rock Drainage

9.11.1 Mitigating ARD from PAG Waste Rock

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17)
EIS Main Report	- Section 5.1.5.2.2, p. 5.15 (PDF 340)
SID#11	- Section 3.2.2, p. 14 (PDF 22)

Contributing IRs:
EC-5

Rationale:
Initially, Type 2 (PAG) waste rock will be managed in temporary stockpiles located west of the open pits. This PAG waste rock would then be moved into mined-out open pits for permanent disposal.

Supporting Document 11 (p. 14) states that "PAG mine rock will be managed on surface during mine operations in temporary stockpiles with drainage directed into the open pits. This method of storage will maintain the PAG rock in a saturated state to prevent oxidation and potential acid generation". However, it is not clear how the saturated state will be maintained in this configuration within the temporary stockpiles.

If the PAG waste rock is not maintained in a saturated state, ARD and metal leaching may occur, potentially leading to contamination of surface and ground waters. It is important that SCI clarify the mitigation measures that would be implemented to prevent or control ARD from the PAG waste rock in the temporary stockpiles.

Further, once the PAG rock is placed in the mined out open pits, plans for the prevention and control of ARD from the PAG waste rock are unclear. According to the EIS (p. 5.15), PAG waste rock in the mined out open pits would be "covered with water and/or Type 1 process solids [non-PAG tailings] to prevent potential acid generation". The "and/or" in this statement is confusing and of concern because covering PAG waste rock with only a single layer of non-PAG tailings is not considered to be an effective method to prevent acid generation.

Information Request:
Clarify the measures that will be implemented to prevent or control ARD from the PAG waste rock (Type 2 mine rock). In particular:

- specify what measures would be implemented to prevent or control ARD from PAG waste rock in the temporary stockpiles;
- clarify whether the PAG waste rock will be under a permanent water cover once the flooding of the open pits is complete, and if so, indicate how long it will take until the PAG waste rock is completely covered; and
- if some PAG waste rock will not be under a permanent water cover, describe what other measures will be implemented to prevent or control ARD from that waste rock.

9.11.2 Mitigating ARD from PAG Process Solids

References:

EIS Guidelines	- Section 2.7.2.3.2, p. 56 (PDF 61)
SID#11	- Section 3.1.2, p. 11 (PDF 19)
	- Section 4.4.4, p. 26 (PDF 34)

Contributing IRs:
EC-7

Rationale:
Section 3.1.2 of SID #11 states that ARD from PAG process solids will be prevented or controlled by maintaining the water cover at least 3 m in depth. However, section 4.4.4 of SID #11 states there will be PAG tailings in both cells of the PSMF. PAG process solids in Cell 2 of the PSMF would be encapsulated with non-PAG process solids.

It is clear that SCI intends to maintain a permanent water cover in Cell 1 of the PSMF in order to prevent ARD from the PAG process solids. However, SCI's plans are less clear with respect to Cell 2.

Information Request:
Clarify whether all PAG (Type 2) process solids would be under a permanent water cover in both Cells 1 and 2 of the PSMF. If PAG process solids in Cell 2 will not be under a permanent water cover, then describe what other measures will be implemented to prevent ARD from the PAG process solids.

10 Atmospheric Environment

10.1 Greenhouse Gases

References:

EIS Guidelines:	- Section 2.7.2.1, p. 43 (PDF 48)
EIS Main Report	- Section 6.2.1.1.5, p. 6.32 (PDF 538)

Contributing IRs:
MiningWatch
PMFN/PPFN-40

Rationale:
The EIS focuses on the predicted greenhouse gas (GHG) emissions as a percentage of total annual provincial and federal GHG emissions. However, there is no context given as to the percentage contribution of GHG emissions from the Ontario or Canadian mining industry as a whole. A comparison of emissions with other mining operations or other industrial facilities of a similar scale would allow for a comparative evaluation of the relative impact of the Project.

Information Request:
Provide a comparison of the predicted GHG emissions for the Project against GHG emissions for other projects of similar scale.

10.2 Emissions and Modeling of Combustion Products (SO_2, NO_x and CO_2)

References:

EIS Guidelines	- Section 2.7, p. 43 (PDF 48)
EIS Main Report	- Section 6.2.1.3.1, p. 6.37 (PDF 543)

Contributing IRs:
PMFN/PPFN-41
HC-19

Rationale:
The EIS states that emissions of Criteria Air Contaminants (CAC) from on-site vehicles, heavy equipment and the diesel generator will be minimized through the "preferential use" of low sulphur fuels, implementation of anti-idling policies, and through the purchase and maintenance of newer vehicles. However, it is unclear if these measures were assumed during the modelling of combustion pollutants. If they were assumed during the modeling, the identified mitigation measures will not serve to reduce emissions levels, which are currently predicted to exceed the applicable guidelines for nitrogen oxides (NO_x) and carbon dioxide (CO_2), and are approaching the applicable guideline for sulphur dioxide (SO_2). Additionally, it is not clear how low-S fuel will be used preferentially (i.e. when low-S fuel will be used and when it will not be).

Information Request:
Confirm whether low-S or regular diesel was used to model SO_2 emission rates, and if the other mitigation measures were assumed in the modelling of combustion pollutants. If low-S diesel was not used to model SO_2 emissions, new modelling should be carried out using the appropriate type of diesel and the revised results compared against the applicable standards.

Confirm the conditions under which the use of low-S diesel fuel will be used and when it would not be preferential to use low-S diesel.

10.3 Ambient Light

References:

EIS Guidelines	- Section 2.7.2.1, p. 50 (PDF 55)
EIS Main Report	- Section 6.2.1.1.6, p. 6.35 (PDF 541)
SID #16	- Section 1.5, p. 8 (PDF 19)

Rationale:

Ambient light is discussed under the assessment of air quality effects. The SSA for air quality is described differently in the EIS Main Report than in SID #16. The SSA in the EIS Main Report is restricted to the direct project footprint, and therefore does not include the cottages on Hare Lake or at May's Gifts. However, the SSA used in SID #16 includes the mine claims area, which encompasses the cottages on Hare Lake and the residence of May's Gifts.

The assessment of ambient light is only addressed in the main report. Section 6.2.1.1.6 states that light will not be visible from the Town of Marathon as there is no direct line of sight, but that some light may be visible from Highway 17. However, there is no discussion of the potential effects of ambient light on the cottages on Hare Lake or the residence at May's Gifts.

Information Request:

Provide an assessment of the effects of ambient light on the cottages on Hare Lake and on May's Gifts, identify mitigation measures, and determine the significance of any residual effects.

10.4 Mitigation for Mobile Sources of Emissions

References:

EIS Guidelines	- Section 2.7.1.2, p. 44 (PDF 49)
	- Section 2.7.2.1, p. 50 (PDF 55)
SID #16	- Section 3.1, p. 13 (PDF 24)
	- Section 3.2, p. 14 (PDF 25)
	- Section 3.3, p. 15 (PDF 26)
	- Section 6.6, p. 63 (PDF 74)

Contributing IRs:

EC-37

Rationale:

Details on the implementation procedures for mitigation measures for mobile sources of air quality emissions are necessary to allow for a better understanding of how effective these measures will be in reducing adverse environmental effects.

Currently, SID #16 indicates that mitigation measures to reduce air quality emissions during various phases of the Project will include:

- coverage of trucks hauling concentrate or other fine materials,
- application of dust suppressants and regular wetting of roads,
- use of water sprays to control emissions from mobile crushing operations, and
- manual wetting to mitigate fugitive emissions from storage pile surfaces and the process solids management facility.

While these measures appear to be reasonable, their effectiveness is dependent upon how they are applied.

The information that is provided on these mitigation measures does not include the benchmarks/ thresholds that will be monitored to determine when mitigation should be implemented to reduce air emissions, how air emissions will be monitored, and how adaptive management will be implemented to ensure a timely response to exceedances. As these potential effects would be apparent from the start of the Project, it is necessary to provide sufficient information during the EA to ensure that the effects can be mitigated.

Information Request:

Provide details on the procedures to be used to determine the implementation of mitigation measures for air quality emissions from mobile sources under an adaptive management approach, including specifics on the following:

- how air emissions will be measured/monitored, assessed and reported;
- the conditions/thresholds that will trigger application of mitigation measures;
- the methodology for implementing mitigation; and,
- scheduling and frequency of standard application of mitigation measures.

10.5 Sampling Methodology (PM10)

References:

EIS Guidelines	- Section 1.3.1, p. 6 (PDF 11) - Section 2.7.2.1, p. 50 (PDF 55)
SID#12	- Section 3.4, p. 12-13 (PDF 21-22) - Table 5.1-1, p. 26 (PDF 35)
SID#16	- Section 5.1.3, p. 36 (PDF 47) - Section 6.0, p. 47 (PDF 58)

Contributing IRs:

EC-39
MiningWatch
MOE-AQA-4

Rationale

The dust fall collectors for baseline conditions do not appear to be located downwind of the site given the prevailing winds described in the EIS and the rationale for the selection of baseline sampling locations for PM10 is not provided in Section 3.4.1 of SID #12. Additionally, it is unclear why the Pic River was selected as a location for background air quality sampling for NO_x, but was not used as a receptor location for modelling predictions of concentrations of pollutants for different phases of the Project.

Further, it is unclear how the methodology that was used to sample PM10 compares to the methodology described in the Ministry of the Environment (MOE) document “Operations Manual for Air Quality Monitoring in Ontario” (Manual). SID #12 states that the PM10 sampling equipment was sited to meet the requirements of the Manual and that “to the extent possible, sampling equipment was placed in locations where the distance between the nearest obstacle and the sampling equipment was at least twice the height of the obstacle…”

Information Request:

Explain the rationale for the selection of the PM10 baseline monitoring station locations (Pic River, North of May’s Gifts and Hare Lake), including a discussion of whether prevailing winds and temperature inversions were considered in selecting the baseline monitoring station locations.

Explain why the Pic River baseline monitoring sampling station location was not used as a receptor location for modelling concentrations of pollutants for different phases of the Project.

Justify the use of the chosen methodology to sample for PM10 and discuss the potential differences obtained from using the selected methodology versus what would be obtained by using the methodology described in the MOE document "Operations Manual for Air Quality Monitoring in Ontario". Discuss the implications of any differences to the results of the effects assessment.

10.6 Selection of Sensitive Receptors

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
EIS Main Report	- Section 6.2.1.1, p. 6.24 (PDF 530)
SID#16	- Section 5.1.3, p. 36 (PDF 47)

Contributing IRs:
HC- 4
EC-39

Rationale:
The EIS describes four (4) human receptor locations that were used in the assessment of potential air quality effects, and describes these locations as "sensitive receptors", including the residence at May's Gifts, two cottages located on Hare Lake and the Church. However, the description regarding why these locations are representative or why they were chosen is not provided. For instance, while the Town of Marathon is only 10 km from the Project site, it was not selected as a sensitive receptor for the assessment of potential effects and no rationale for its exclusion is provided.

Generally, receptors should be chosen to represent residents of communities in the area, as well as recreational users (e.g. camping, hunting and fishing). Information should be provided on the number of people at each receptor point and the duration and frequency of their presence. Also missing is an indication of sensitive sub-populations residing in nearby communities, including the proportion of children and elderly, and those affected by diseases which may make them more vulnerable to pollution.

Further, section 3.4.2 of SID #12 states "sampling locations were strategically selected to evaluate dustfall near identified sensitive receptors or areas that would be affected by dustfall once the Project site is developed." These locations included the Pic River. However, the Pic River is not listed in section 5.1.3 of SID #16 as a sensitive receptor.

Information Request:
Explain how sensitive receptors for the air quality assessment were defined, how they were selected and why they would be an appropriate substitute/representative for the residents of the Town of Marathon. In the explanation, include the distance from each receptor to the Project site, information on the number of people at each receptor point, and the duration and frequency of their presence.

Conduct an air quality assessment for all sensitive receptors that were excluded from the assessment (including the Pic River and Town of Marathon, if they should have been considered sensitive receptors for air quality impacts), including potential effects on sensitive sub-populations.

10.7 Meteorological Data Set

References:

EIS Guidelines	- Section 2.6.1.2, p. 32 (PDF 37)
EIS Main Report	- Section 5.2, p. 5.35 (PDF 360)
SID#12	- Section 3.2, p. 11 (PDF 20)
	- Section 4.0, p. 15-24 (PDF 24-33)

Contributing IRs:
EC-41
MiningWatch

Rationale:
The Panel understands that available data for local and regional meteorology and climate spans different time periods. This is evident in the EIS Main Report and in Section 3.2 and Section 4.0 of SID #12.

Information Request

Given that long-term records are desirable but not available, provide a table showing which data sets are available for the Project area for each weather element. Provide a discussion on how the available data were integrated into the models and discuss the implications of the use of the short, unmatched time periods to the accuracy of the characterization of the baseline environment and the modelling results. Discuss how this may affect the conclusions on the potential environmental effects.

10.8 Modelling

10.8.1 Modelling Maximum Air Emissions

References:

EIS Guidelines	- Section 2.7.2.1, p. 50 (PDF 55)
SID#16	- Section 3.3.1, p. 16 (PDF 27)
	- Section 6.3, p. 53 (PDF 64)

Contributing IRs:
EC-43
HC-3

Rationale:
SID #16 indicates that the air quality modelling that was carried out for the operations phase of the Project (Phase 3) was based on operational years 3, 6 and 11, and CAC concentrations were predicted and presented for these years. However, there is concern that these years are not expected to produce the maximum amount of air emissions.

Based on information provided in section 3.3.1 of SID #16, it appears that maximum activities will take place between operational years 7-8, as this is when all five open pits will be extracted. If this is the case, years 7-8 would be the worst case scenario in terms of air emissions. Modelling predicted air emissions using time frames that are not expected to produce the maximum expected emissions will underestimate pollutant loads, and could affect the accuracy of the air assessment. Pollutant loads could also be underestimated due to influences from meteorological phenomenon such as temperature inversions.

Information Request:

Provide a rationale for the selection of operational years 3, 6 and 11 for air quality modelling purposes and confirm the years in which operations are expected to produce maximum air emissions.

If years 3, 6 and 11 are not expected to produce maximum air emissions, provide the CAC concentrations for those years during Phase 3 (Operations) when maximum air emissions are expected.

Conduct an analysis of the effects of temperature inversions on the air quality modelling results.

10.8.2 Air Dispersion Modelling

References:

EIS Guidelines	- Section 2.7.2.1, p. 50 (PDF 55)
SID#16	- Section 5.3.1.4, p. 45 (PDF 56)
	- Appendix G (PDF 786-790)

Contributing IRs:
MOE-AM-2

Rationale:
Section 5.3.1.4 of SID #16 does not describe how dispersion factors were calculated, and were subsequently used to calculate emission thresholds to determine if modelling is required for individual compounds.

Information Request:

Describe how the dispersion factors were calculated.

10.8.3 Deposition Parameters

References:

EIS Guidelines	- Section 2.7.2.1, p. 50 (PDF 55)
SID#16	- Table 6.1.1-1, p. 47 (PDF 58)
	- Table 6.2.1-1, p. 50 (PDF 61)
	- Table 6.3.1-1, p. 54 (PDF 65)
	- Table 6.5-1, p.61 (PDF 72)

Contributing IRs:
MOE-AM-3

Rationale:
Modelled dustfall results are presented in section 6 of SID #16. However there is no description of the deposition parameters used. While the model input file for TSP/dustfall has particle size distributions and densities for all TSP sources, the origin of the data was not mentioned in the report. There are a wide range of particle densities listed in the model input file and particle densities can substantially affect deposition rates.

Information Request:

Provide the values of the deposition parameters used to estimate the particle size distributions and densities for the various TSP sources.

10.9 Number of Samples

References:

EIS Guidelines	- Section 2.6.1.2, p. 32 (PDF 37) - Section 2.7.2.1, p. 50 (PDF 55)
EIS Main Report	- Section 5.2.2.3, p. 5.41 (PDF 366)

Contributing IRs:
MOE-AQA-1

Rationale:
SCI selected ambient air quality monitoring as one of the main means to develop the air quality baseline. However, as outlined in section 5.2.2.3 of the EIS, sampling only occurred from July through November, 2011. Additionally, for dustfall, only 3 samples were collected at each sampling location. It is unclear if this number of samples is adequate to provide the baseline air quality for the Project area and the EIS does not provide a justification to support the use of this relatively short period of time for sampling. Considering the length of time that the site will be active and temporal variations in air quality, justification should be provided as to why this short period of time is adequate to develop the air quality baseline.

Information Request:
Provide a justification explaining why 5 months of sampling in a single year and the number of collected samples is adequate data to develop an air quality baseline for the proposed project. Discuss the implications of the sample size used for statistical validity of the air quality assessment.

10.10 Metals in Air

10.10.1 Methodology for Measuring Metals in Air

References:

EIS Guidelines	- Section 2.6.1.2, p. 32 (PDF 37) - Section 2.7.2.1, p. 50 (PDF 55)
EIS Main Report	- Section 5.2.2.3, p. 5.42 (PDF 367)

Contributing IRs:
MOE-AQA-2

Rationale:
Section 5.2.2.3 of the EIS states that “metals concentrations in dustfall for the Project site were either non-detectable or below estimated regional background concentrations except for copper, nickel and zinc which were higher than regional background concentrations”. However, the Province of Ontario does not collect or assess metals in dustfall. Therefore, it is not known what “regional background concentrations” data SCI is referring to. Additionally, the Province of Ontario does not advocate the use of dustfall as an acceptable or recognized method of quantitatively determining concentrations of metals in air.

Additionally, historical metals data were not assessed and compared to the variety of metals requirements maintained by the Ontario Ministry of the Environment. As a result, the requirement from the EIS Guidelines to compare baseline air quality data with applicable federal, provincial, municipal or other legislative requirements, standards, guidelines or objectives has not been met. Metals in air concentrations were not determined during air quality

monitoring nor were historical metals data from the region assessed. Since SCI will be operating a mine site producing metals, this evaluation is important. Metals concentrations in air have been omitted from the air quality baseline – since the proposed facility is mining metals, this omission is significant.

Information Request:

Justify the use of dustfall as an appropriate method of measuring or quantitatively determining concentrations of metals in air. Discuss the implications of using dustfall to determine metal concentrations in air rather than the methodology advocated by the Ontario Ministry of the Environment.

In tabular format, compare the metals concentration in air data for the Project site that has been collected against the applicable federal, provincial, municipal or other legislative requirements, standards, guidelines or objectives.

10.10.2 Baseline Data for Metals in Air

References:

EIS Guidelines	- Section 2.7.2.1, p. 50 (PDF 55)
SID#16	- Appendix B (PDF 211): sample calculations for various TSP emission sources with metal contaminants

Contributing IR:
MOE-AE-4

Rationale:
Metal emissions from various sources such as open pits, site roads and material drop operations were provided and are based on metal concentration in the material handled. However, data on the material metal concentrations and sample calculations could not be located in the EIS documents for verification. This information is required to verify metal emission rates presented in the EIS.

Information Request:

Provide the data on metal concentrations in various materials/sources such as site roads, ore, concentrates etc. that were used for speciating metal emissions along with the associated sample calculations.

10.10.3 Airborne Metals

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
SID#16	- Section 6.1.2, p. 48 (PDF 59)

Contributing IRs:
HC-14

Rationale:
The impacts of predicted airborne metal concentrations, for those metals without Ambient Air Quality Criteria (AAQC) or Jurisdictional Screening Level (JSL) guidelines for comparison,

including Bismuth, Chromium, and Manganese, were not assessed as per the EIS Guidelines.

Information Request:
Describe how the potential effects of predicted airborne metals were assessed for metals and how the significance of these effects were determined without the availability of AAQC or JSL guidelines for comparison (e.g. Bismuth, Chromium and Manganese).

10.11 Total Suspended Particulate – Silt Content Value

References:

EIS Guidelines	- Section 2.7.2.1, p. 50 (PDF 55)
SID #16	- Appendix B, p. 52 (PDF 265)

Contributing IRs:
MOE-AE-1
MOE- AE-3

Rationale:
Dust emission rates are directly proportional to the silt content and variations in silt contents could substantially change emission rates. Appendix B of SID #18 indicates that uncontrolled TSP, PM10 and PM2.5 emissions resulting from the use of haul trucks and support vehicles on unpaved roads were calculated from the emission factor expressed in USEPA AP-42, section 13.2.2. However, the silt content value of 2% used for estimating TSP emissions from site roads is lower than the typical range of silt content provided in the USEPA document AP-42 (Table 13.2.2-1), which includes silt content values ranging from 2.4 to 16%, with a mean value of 10%.

Additionally, the silt loading value used for calculation of TSP emissions appears to be low. Silt loading of 0.05 g/m^2 appears to have been derived from USEPA document AP-42 (Table 13.2.1-2), for high volume roads. However, the criteria used to define the roads in question (R6 and R6A) as high volume is not provided.

Information Request:
Justify the use of 2% silt content for the road dust emission estimation and discuss the difference in the results that would be obtained from using 10% and the implications of this difference.

10.12 Total Suspended Particulate – Moisture Content

References:

EIS Guidelines	- Section 2.7.2.1, p. 50 (PDF 55)
SID#16	- Appendix B, p. 9 (PDF 222)
	- Appendix B, p. 11-12 (PDF 224-225)
	- Appendix B, p. 21 (PDF 234)
	- Drawing 6, Process Flow Diagram (PDF 90)
SID#31	- Table 18.6, p. 133 (PDF 127)

Contributing IRs:
MOE-AE-6

Rationale:
A material moisture content of 4% is used in Appendix B of SID #16 for estimating TSP emissions from material handling and drop operations (such as that associated with use of the excavator and material unloading). However, Table 18.6 of SID #31 lists the ore moisture content as 3%. Variations in moisture content values can significantly affect TSP/PM10 emission rates from the equipment/process.

Additionally, sample calculations in section 4.1 of Appendix B of SID #16 use the material throughput of 384 tonnes/hour for the Mobile Primary Crusher for the TSP emission estimation. However, the Primary Crusher capacity is listed as 650 T/hour in section 5.4 of SID #16 and in the process flow diagram (Drawing 6). TSP emission estimates from the crushers is directly related to the crusher capacity and control efficiency.

Information Request:
Clarify the actual moisture content in the material handled, and confirm the correct throughput capacity of the mobile primary crusher.

If the moisture content of the ore is lower than 4% used in modelling and/or the crusher capacity is greater than 384 MT, reassess the predicted TSP / PM10 emission rates for the site using the updated moisture content value and/or crusher capacity.

10.13 Selection of Contaminants of Potential Concern (COPC)

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
EIS Main Report	- Section 6.1.1.2.1, p. 6.9 (PDF 515)
SID#16	- Section 5.3.1.4, p. 45-46 (PDF 56-57)

Contributing IRs:
HC-8
MOE-AM-2

Rationale:
Section 6.1.1.2.1 of the EIS Main Report states that eight (8) COPCs were considered for the assessment of potential effects from releases to air. However, a rationale for their selection is not provided. While SID #16 contains information on how contaminants were screened out, it is unclear how the COPCs were initially chosen. There is also a discrepancy regarding the number of COPCs assessed; for instance while eight (8) COPCs are discussed in the main report, SID #16 reports on twenty-one (21) contaminants that were screened in for the modeling of Phase 3, Year 3.

Information Request:
Provide a rationale for the selection of the COPCs considered in the assessment of potential effects as a result of releases to air.

10.14 Selection of Reference Communities for Baseline Data

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
EIS Main Report	- Section 5.2.2.3, p. 5.41 (PDF 366)

Contributing IRs:
HC-9
MiningWatch

Rationale:
Baseline air quality at the Project site was based on air quality data for Thunder Bay and Sault Ste. Marie for TSP, PM2.5, NO_x, SO_2 and carbon monoxide (CO). It is stated that "estimated values are considered to be conservative for the Marathon Project site since both Thunder Bay and Sault Ste. Marie are communities much larger than Marathon and ambient contaminant concentrations would be expected to be higher in the larger centres" (p. 5.43). However, in section 6.2 (Assessment of Effects) these baseline levels from Thunder Bay and Sault Ste. Marie were compared with the predicted project emissions of PM2.5, SO_2, NO_2 and CO. Given that Thunder Bay and Sault Ste. Marie are urban and industrial, the Marathon site would be expected to have much better baseline air quality.

Further, it is not clear if the baseline concentrations from Thunder Bay and Sault Ste. Marie have been added to project emission concentrations. If they have not been added together, then the results obtained from the modelling would not be considered conservative. Comparing predicted project emissions alone to baseline concentrations based on these cities could diminish the apparent change in air quality, potentially resulting in less conservative estimated impacts.

Information Request:
Provide additional justification regarding the use of air quality baseline data from Thunder Bay and Sault Ste. Marie as representative of the Project area. Discuss how the use of baseline estimates for a rural area would have affected the results of the air quality effects assessment. Clarify whether baseline concentrations were added to predicted project emission concentrations of PM2.5, SO_2, NO_2 and CO.

10.15 Incomplete Sentence

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
SID#12	- Section 5.0, p. 25 (PDF 34)

Contributing IR:
HC-10

Rationale:
The end of the sentence in the last paragraph of SID #12, section 5.0 is missing; the sentence reads: "Data from more developed municipalities, such as Thunder Bay and Sault Ste. Marie, are".

Information Request:
Provide the text to complete the last sentence of section 5.0, in the last paragraph before section 5.1 (Particulate Matter) of SID # 12.

10.16 Use of Appropriate Standards for PM2.5 Assessment

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
EIS Main Report	- Section 6.2.1, p. 6.25 (PDF 531)
	- Table 6.2-2, p. 6.27 (PDF 533)
	- Table 6.2-3, p. 6.30 (PDF 536)

Contributing IRs:
HC-11

Rationale:
Section 6.2.1.1.2 of the EIS Main Report refers to National Ambient Air Quality Objectives (NAAQO) for PM10 and PM2.5. However, NAAQOs do not exist for these substances. The national Canada-wide Standard should have been used for PM2.5 (30 µg/m^3). There is currently no Canada-wide Standard or NAAQO for PM10.

Information Request:
Provide a comparison of the predicted emission rates for PM2.5 against the Canada-wide Standard, and reassess the conclusions reached regarding the potential effects of PM2.5.

10.17 Use of Appropriate Standards for NO_x Assessment

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
EIS Main Report	- Section 6.2.1.3, p. 6.36 (PDF 542)
SID#16	- throughout

Contributing IRs:
HC-12
HC-18

Rationale:
In comparing predicted NO_2 concentrations to existing guidelines and standards, the maximum tolerable level (1000 µg/m^3) for NO_2 was used for the 1 hour NO_2 NAAQO. Based on the use of this guideline, the EIS concludes that "NO_x concentrations throughout mine life are predicted to remain below federal reference criteria"; "no exceedances of federal maximum tolerable criteria were predicted"; and "in terms of cumulative effects, concentrations of all CACs were within the range of NAAQO criteria..."

Environment Canada publications indicate that it is inappropriate to use the maximum tolerable level in this context (see: http://www.ec.gc.ca/rnspa-naps/default.asp?lang=En&n=24441DC4-1). Therefore, the maximum acceptable level (400 µg/m^3), which is equivalent to the Ontario AAQC, should have been used.

Using the maximum acceptable 1 hour NAAQO (400 µg/m^3) for NO_2, the modelling results indicate that the standard would be exceeded at the property boundary and Peninsula Road for all years of mine life.

Further, despite the fact that NO_x is predicted to exceed standards in certain locations throughout the life of the mine, the mitigation measures discussed in section 6.2.1.3 do not touch on NO_x/NO_2. SCI should discuss how potential NO_x exceedances will be mitigated.

Information Request:

Provide a revised assessment of potential effects of NO_2 and NO_x using the maximum acceptable 1 hour NAAQO rather than the maximum tolerable level. Discuss the measures that will be implemented to mitigate for the potential effects stemming from the exceedance of the air quality objective.

10.18 Duration of Predicted Exceedances for NO_x and PM10

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
SID#16	- Section 6.1, p. 47-48 (PDF 58-59)
	- Section 6.2, p. 51 (PDF 62)
	- Section 6.3, p. 55 (PDF 66)

Contributing IRs:

HC-17

Rationale:

In discussing the exceedances of NO_x and PM10, SID #16 indicates that the predicted concentrations are transient in nature and of short duration. However, no data are presented on the frequency and duration of exceedances to support this statement.

Information Request:

Provide evidence to support the statement that exceedances of PM10 and NO_x are transient in nature and of short duration.

10.19 Benzene, Acrolein, Napthalene and CO_2 Assessment

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
SID#16	- Section 6.3.3, p. 59 (PDF 70)

Contributing IRs:

HC-16

Rationale:

Table 6.3.3-1 does not include health reference criteria for benzene, acrolein, naphthalene and CO_2 for comparison with predicted concentrations.

Information Request:

Provide a comparison of the appropriate health reference criteria for predicted concentrations of benzene, acrolein, naphthalene and CO_2, as per Ontario O.Reg. 419/05, AAQC, and JSL guidelines. Identify if there are any exceedances and if necessary, identify appropriate mitigation measures.

11 Acoustic Environment

11.1 Effects of Noise on Wildlife

References:

EIS Guidelines	- Section 2.7.2.2, p. 52 (PDF 57)
EIS Main Report	- Section 6.2.7, p. 6.80 (PDF 586)
	- Section 6.2.11, p. 6.131 (PDF 637)

Contributing IRs:
RSMIN-9

Rationale:
The EIS Guidelines require a discussion of the impacts of noise on potential wildlife receptors. However, the impacts of noise were not identified or evaluated and no measures were identified to mitigate the potential effects of noise on wildlife. The discussion should provide a description of the percent distribution of both the high level and low-level noise frequencies which will be produced, as certain wildlife receptors (i.e. beaver within their huts, mink and denning foxes) are sensitive to noise disturbance during birth and weaning of their young. The EIS should provide a discussion on how noise generated at the mine site could impact wildlife receptors.

Information Request:
Using the peak sound pressure measurements (LCpk), provide an assessment of the potential impact (startle effects) of noise on wildlife receptors and identify appropriate mitigation measures. Provide a breakdown of the low frequencies and high frequencies noise events which will be generated by the Project.

11.2 Air Blast Assessment

References:

EIS Guidelines	- Section 2.7.2.2, p. 52 (PDF 57)
SID#17	- Section 5.0, p. 30 (PDF 40)

Contributing IRs:
Town of Marathon-3

Rationale:
SID #17 states that predicted air blast results for downwind wind speed of 4km/hour or less are lower than the Noise Pollution Control (NPC) 119 cautionary air blast limit of 120 dB. Predicted air blast results for wind speeds of 20 km/hour or greater exceed the NPC cautionary limit. Section 5.0 states that blasting will not be done when offsite buildings are considered to be under a “strong” downwind propagation. However, it is not clear what specific wind speed will be considered “strong”, thereby triggering a temporary suspension of blasting.

Information Request:
Clarify the specific wind speed that is considered “strong”, and would trigger a temporary suspension of blasting.

11.3 Measuring Baseline Sound Levels

References:

EIS Guidelines	- Section 2.6.1.3, p. 32 (PDF 37)
	- Section 2.7.3.5, p. 68 (PDF 73)
EIS Main Report	- Table 6.2-5, p. 6.40 (PDF 546)
SID#13	- Executive Summary (p ii), (PDF 3)
	- Section 3.0, p. 15 (PDF 23)
	- Section 4.0, p. 17 (PDF 25)
	- Section 5, p. 21 (PDF 29)
SID#17	- Section 2.2.1, p. 10 (PDF 21)
	- Section 4.1, p. 24 (PDF 35)
	- Section 4.2.1-4.2.2, p. 25 (PDF 36)
	- Tables 1 to 5, (PDF 44-48)

CEAR Doc #235 "Ontario Ministry of Environment to True Grit Consulting Ltd., on behalf of Stillwater Canada Inc. - Email Questions and Responses on Issues Related to Noise Assessment" (PDF 5)

Contributing IRs:
HC-20
MOE-Noise-5

Rationale:
Remote rural locations such as some of the Points of Reception can sometimes be measured with overnight background sound levels well below 40 dBA (A-weighted decibels), with values of 25 dBA occurring. However, the EIS shows minimum measured sound levels at several locations of 40.0 dBA.

Existing baseline sound levels were measured using Integrating Quest NoisePro DL and Quest Q-300 Logging Dosimeters. In its comments to the Panel, the MOE reports that the meters that were used for these measurements are not recommended by their manufacturer for levels lower than 40.0 dB and that the meters used are not designed for this sort of measurement. The operating manual for one of the meters states that the noise floor (generated within the meter itself) is "approximately 35 dBA", and that the minimum sound level with which the meter should be used is 40 dBA.

According to detailed measurement logs (CEAR Doc #235), a number of measurements were made with a 40.0 dB "Threshold" setting engaged in the meter. Non-zero thresholds are intended for measurements of occupational (close-up worker exposure) noise, and not for environmental (distant community exposure) measurements; the effects of this error upon the indicated reading can vary among meters.

The possible systemic error in the measurement of existing background noise at remote receptors in the baseline Noise Report, arising from equipment limitations, can lead to inappropriate noise criteria being established and predicted impacts being minimized.

As a result of the potential issue with the instrumentation that was used, it is not clear what the internal background noise of the device is, or if the background noise reported in the raw data is attributable to the instrumentation or natural conditions on site. If the internal background noise of the instrumentation is too high, the measured baseline noise at the North Hare Lake and South Hare Lake cottages could be inflated, which could modify the predicted effect (which is based on an average population in a quiet rural area based on a percent highly annoyed

criterion). Therefore, the measured baseline noise at these sites may be less than 40 dBA, which is the value used in the conclusion.

Information Request:
Justify the use of the dosimeters that were utilized to measure baseline sound levels in light of comments received.

Assuming the baseline data remains appropriate, subtract the internal background noise of the recording device to obtain the measured baseline noise, and where necessary, revise modelling results and associated conclusions.

11.4 Effects of Changes to the Characteristics of Sound

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
SID#17	- Section 2.2.2, p. 11-12 (PDF 22-23)
	- Section 5, p. 29-30 (PDF 40-41)

Contributing IRs:
HC-21

Rationale:
Changes to the characteristics of the sound from baseline (e.g. a change in frequency, changes in sound modulation, increased impulsiveness, or a shift in time of day in which noise is experienced) may be perceived and may cause noise to be more noticeable, even if the absolute equivalent continuous sound level (in dBA) is not substantially increased. For this reason it is advised that statements relating to perceptibility are avoided (see ANSI S12.9-2005/Part 4, clause A.1.3).

Information Request:
In tabular format, identify the potential sources of noise associated with the Project that could result in the following:

- changes in the frequency;
- changes in sound modulation;
- increased impulsiveness; and
- shifts in time of day in which noise is experienced.

Assess the effects of the changes listed above on human health and well-being. Where necessary, identify mitigation measures.

Also, where information is provided in the EIS on averaged noise levels over time, provide data on the maximum, non-averaged (instantaneous) levels and the implications of these on human health and well-being.

11.5 Ground Absorption Coefficient

References:

EIS Guidelines	- Section 2.7.3.5, p. 68 (PDF 73)
SID#17	- Section 2.3.2, p. 16 (PDF 27)

Contributing IRs:
HC-22

Rationale:
No rationale was provided in the EIS to support the use of an overall site ground absorption coefficient of 0.6 in the modelling. A coefficient that is too high can reduce the predicted sound levels at receptors.

Information Request:
Justify the use of 0.6 as a ground absorption coefficient, and provide a sensitivity analysis on the effect of noise levels using a feasible range of coefficients.

11.6 Effects of Blasting Noise on Humans

References:

EIS Guidelines	- Section 2.7.2.2, p. 52 (PDF 57)
SID#17	- Section 5, p. 29 (PDF 40)

Contributing IRs:
MOE-Noise-1
MOE-Noise-2

Rationale:
The EIS Guidelines require the identification and evaluation of impacts from noise on potential human receptors. However, the blasting noise and vibration criteria quoted in SID #17 are intended to address the issue of building damage, not human health effects, perception or annoyance. For example, SID #17 states "Vibration impact is not expected to cause structural damage to off-site buildings since the highest predicted vibration for an off-site building of 0.31 mm/s, at the Marathon airport during open pit blasting, is less than the NPC 119 limit of 10.0 mm/s."

The EA does not address the human consequences of introducing a regular schedule of blasting in or near a populated area which has historically not been subject to such activities. With regard to the threshold for human perception of vibration, vibration limits of 0.14 mm/s are suggested by both ISO Standard 2631, Annex A and CN Rail (from "CN Principal Main Line Requirements").

Information Request:
Discuss how instantaneous blast noise (startle effect) and vibration levels compare against appropriate guidelines in Canada for effects on humans. If appropriate standards/guidelines do not exist in Canada, compare against other relevant guidelines from other jurisdictions.

11.7 Use of non-Canadian Blasting Standards

References:

EIS Guidelines	- Section 2.7.2.2, p. 52 (PDF 57)
SID#17	- Executive Summary, p. iii (PDF 5)
	- Section 2.2.4, p. 12 (PDF 23)
	- Section 4.5, p. 26-27 (PDF 37-38)
	- Section 4.5.2.1, p. 28 (PDF 39)
	- Section 5, p. 29 (PDF 40)

Contributing IRs:
MOE-Noise-3

Rationale:
Blasting criteria from outside Canada are referenced with significantly higher limits than criteria from the Ministry of the Environment. This could lead to overoptimistic claims of predicted compliance. For instance, one of the criteria quoted for limits on blasting noise and vibration is from the United States Bureau of Mines, which uses numbers that are more than 5 dB higher than the highest figures given in the Ontario criterion from MOE NPC 119.

Information Request:
Update the assessment of potential effects on the acoustic environment from blasting using the Ontario criterion MOE NPC 119.

11.8 Noise from Transport of Iron Concentrate

References:

EIS Guidelines	- Section 2.7.2.2, p. 52 (PDF 57)
EIS Main Report	- Section 1.4.3.4.3, p. 1.71 (PDF 140)

Contributing IRs:
MOE-Noise-4

Rationale:
The EIS discusses the potential for the large-scale production of iron at the site. Further, section 1.4.3.4.3 of the EIS indicates that iron production on the site could cause an increase in truck traffic from 8 to 50 trucks per day. This increase could result in an increase in truck-related road noise of 8 dB or more in a given hour; however, this potential effect has not been assessed in the EIS.

Information Request:
Provide an assessment of the potential environmental effects of increased noise in the local study area, along haul routes and at the rail load-out facility due to truck-related road traffic, assuming the production of an iron concentrate. Identify additional mitigation, if necessary, and update the significance conclusions.

11.9 Sub-audible Low Frequency Sound

References:

EIS Guidelines	- Section 2.6.1.3, p. 32 (PDF 37)
SID#13	- Section 4.2, p. 18 (PDF 26)
	- Figure 7 (PDF 40)

Contributing IRs:
MOE-Noise-7

Rationale:
Figure 7 (section 4.2 of SID #13) provides a bar graph of spectral distribution (erroneously referred to as “frequency response”) of background sound at measurement location N3, which shows what appears to be a very substantial rise in sound level in the (sub-audible) 16 Hz octave. The figure and the text discuss the sub-audible low frequencies in terms of annoyance.

Information Request:
Explain the cause of excessive low frequency as expressed in Figure 7 and its implications to the assessment.

11.10 Description of Haul Route Noise Impacts

References:

EIS Guidelines	- Section 2.7.2.2, p. 52 (PDF 57)
EIS Main Report	- Section 6.2.2.2, p. 6.39 (PDF 545)

Contributing IRs:
MOE-Noise-8

Rationale:
Section 6.2.2.2 of the EIS states "An incremental change of less than 5 dB is commonly accepted as an incremental change that is imperceptible to the human ear." However, the Ministry of the Environment has stated that an increase of 1 dB would be imperceptible, and that an increase of 3 to 5 dB would be noticeable.

Information Request:
Justify the statement that an "incremental change of less than 5 dB is commonly accepted as an incremental change that is imperceptible to the human ear." Discuss if the use of the MOE ratings for sound level increase would change the conclusions in the EIS regarding the effects on humans, and result in the need for additional mitigation.

11.11 Selection of Traffic Noise Model

References:

EIS Guidelines	- Section 2.6.1.3, p. 32 (PDF 37)
EIS Main Report	- Section 5.3.1, p. 5.44 (PDF 369)

Contributing IRs:
MOE-Noise-9

Rationale:
Baseline noise levels along Highway 17 and the proposed Town of Marathon transportation routes were determined through traffic noise modelling using current relevant traffic data. The Ministry of the Environment has stated that the specific traffic noise modelling program for generating background traffic sound at the Points of Reception is not an accepted modelling method.

In SID #13 and #17, SCI recommends that sound level limits at certain locations should be increased over the exclusionary values, using modelled traffic background noise values that are in excess of the exclusionary limits. However, it is possible that the predicted effects on the acoustic environment would be different if modelling accepted in Ontario were used. The Ministry of the Environment recommends that where recommendations are made to substitute modelled traffic background sound for MOE exclusionary limits, the background sound should be recalculated using the ORNAMENT and/or STAMSON methods, and these results used in place of the current traffic noise model values for new limits.

Information Request:
Justify the selection of the traffic noise model used to establish traffic noise and assess impacts. Discuss the potential differences in the results of the traffic noise model used with the results that would be obtained using the models recommended by MOE (ORNAMENT and STAMSON) and the implications of these differences.

12 Water Quality

12.1 Hare Lake

12.1.1 Baseline Conditions in Hare Lake

References:

EIS Guidelines	- Section 2.7.1, p. 43 (PDF 48)
SID#1	- Section 2.1.2, p. 2.1 (PDF 23)
	- Section 3.5.15, p. 3.83 (PDF 113)
SID#6	- Executive Summary, p. i, (PDF 4)

Contributing IRs:
MOE-SW-1

Rationale:
Hare Lake is the primary surface water receptor for the mine's final effluent from the PSMF and therefore has the potential to be negatively impacted as a result of the Project. The supporting documentation did not clearly establish baseline conditions for water quality, sediment quality, benthic community structure, fish community health/structure or fish tissue body burdens for metals. Once the baseline is established, then the potential impacts to this water body and any necessary mitigation options need to be identified and evaluated.

Bathymetric data is an important parameter used during a water quality modelling exercise. Lake bathymetry is used to determine lake retention time and assess the spatial extent of effluent dispersion. The bathymetric information used to create the Hare Lake bottom contour map dates back to 1975 and needs to be validated.

Understanding water quality at depth is a critical factor in determining baseline water chemistry of a lake. Samples should be taken at multiple stations within the lake and should be collected at depths reflective of the epi-, meta and hypolimnion. Sampling over a series of seasons/years and at multiple stations is needed to understand spatial and temporal variability in water quality.

In addition to collecting water quality samples, temperature, conductivity and temperature profiles need to be completed concurrently in order to establish the stratification/mixing regime of Hare Lake.

Although the single profile completed provides some insight into lake water chemistry and stratification, multiple profiles are needed in order to predict plume dispersion and establish a baseline for comparison should the lake become impacted by mine effluent such that natural mixing is inhibited (i.e. risk of meromixus).

Information Request:
Provide a study plan and implementation schedule to confirm the bathymetry and understand the baseline conditions and function of Hare Lake such that potential impacts during mine life will be fully understood. The study plan should include data collection needed prior to start of mine operation so that impacts can be verified (follow up monitoring). This shall include:

- water quality sampling at depth (spatially, seasonally and inter-year) to better understand water chemistry variability; and
- concurrent temperature, conductivity and temperature profiles to establish the stratification/mixing regime of Hare Lake.

The study plan shall also include a revised modelling exercise that examines:

- the boundaries of a mixing zone;
- the effects of lake stratification and hydrology on plume dispersion;
- the effects of a non-buoyant plume and final effluent mixing within the lake;
- lake retention time and its influence on contaminant retention/release downstream; and
- the impacts of high sulphate and total dissolved solids levels in the effluent and the potential for the effluent to induce meromixus.

Provide a full discussion of the implications of using only the limited baseline data for Hare Lake to make decisions about the location of the effluent discharge and its potential impacts on water quality and the significance of the effects of the Project on Hare Lake.

12.1.2 Effluent Discharge Location in Hare Lake

References:

EIS Guidelines	- Section 2.7.2.3, p. 52 (PDF 57)
SID#6	- Section 5.1, p. 5.6 (PDF 104)

Contributing IRs:
MOE-SW-2

Rationale:
The EIS does not identify the specific locations or depth in Hare Lake for effluent discharge, nor does it consider alternatives for these in Hare Lake. Discharge locations should be evaluated based on assimilative capacity.

Information Request:
Identify the proposed location and depth of the effluent discharge in Hare Lake, if known, and discuss alternate locations and depths, including a discussion of how the choice of location and depth address the assimilative capacity of Hare Lake.

12.2 Hare Creek

12.2.1 Baseline Benthic Sampling

References:

EIS Guidelines	- Section 2.7.1, p. 43 (PDF 48)
SID#1	- Section 3.5.16, p. 3.87 (PDF 118)

Contributing IRs:
MOE-SW-6

Rationale:
Benthic community structure is a key element in determining the baseline condition of a water body and serves as an important tool to monitor potential impacts of mine drainage on water and sediment quality. Benthic surveys were carried out in the vicinity of station S11 in August 2007 and September 2011 to assess community structure.

Information Request:
For the benthic surveys conducted in Hare Creek, from Hwy 17 to the Hare Lake outlet, provide additional information on:

- flow at the time of the two benthic surveys;

- verification of sampling locations; and
- consistency of substrate type (i.e. were the same type of substrates sampled).

12.2.2 Baseline Hydrology of Hare Creek

References:

EIS Guidelines	- Section 2.7.1, p. 43 (PDF 48)
SID#6	- Section 3.3.2, p. 3.22 (PDF 60)

Contributing IRs:
MOE-SW-16
MNR-A-18

Rationale:
The EIS indicates that the stream flow rate in Hare Creek is not routinely monitored and that other nearby watersheds were used to prorate flows for the calculation of downstream impacts. Although prorating flows is an acceptable practice when no other information is available, this procedure increases the potential for error and therefore, there is a need to validate flows for this watershed. A valid hydrograph is needed to better understand flow conditions.

The flows from Cedar Creek were used to calculate flows within Hare Creek. The Cedar Creek watershed is 5X the size and is dam-regulated to ensure a minimum flow of 0.22 m^3/s downstream of the existing mines. Other watersheds such as the Whitesand River should also have been used to estimate flows within Hare Creek.

Information Request:
Provide any currently available hydrological data concerning flow rates within Hare Creek.

Justify the use of Cedar Creek flows as representative of Hare Creek and discuss the uncertainty associated with the use of Cedar Creek flow data.

12.3 Inclusion of PGMs in metals analysis

References:

EIS Guidelines	- Section 2.7.2.3.2, p. 55 (PDF 60)
SID#3	- Section 1.5, p. 1.9 (PDF 22)
SID#1	- Section 3.5.13, p. 3.79 (PDF 110)

Contributing IRs:
EC-17
MOE-SW-1

Rationale:
SCI has assessed baseline water quality for the standard ICP-MS metals suite. Given that the lithology of the Project area is host to the platinum group metals, the baseline water quality profile should also include the natural background concentrations of these metals.

An accurate profile of the baseline conditions is required to assess the effects of the potential release of platinum group metals on the aquatic environment through mining activities.

Information Request:
Justify the exclusion of the PGMs from the suite of metals assessed for baseline water quality.

12.4 Quality Assurance / Quality Control Results from Baseline Sampling

References:

EIS Guidelines	- Section 2.6.1.4.2, p. 35 (PDF 40)
SID#3	- Section 1.5, p. 1.19 (PDF 22)

Contributing IRs:
EC-15

Rationale:
The results of the quality assurance and quality control protocols that were implemented to demonstrate data integrity have not been provided in SID #3. Without this information, a level of confidence with the data cannot be determined. Without confidence in the baseline water quality data it is not possible to evaluate SCI's prediction that no significant adverse environmental effects on surface water quality are expected for any phase of the Project.

Information Request:
Provide quality assurance and quality control results associated with the baseline water quality data.

12.5 Method Detection Limits for Water Quality Parameters

References:

EIS Guidelines	- Section 2.6.1.4.2, p. 35 (PDF 40)
SID#3	- throughout

Contributing IRs:
EC-16

Rationale:
The method detection limit is not explicitly provided for each water quality parameter that was analyzed to establish baseline water quality conditions in the watersheds that could be impacted by the Project. The method detection limits are referred to in many tables (e.g., number of values below the method detection limit) and throughout the text for some parameters, but they are never stated in a complete and consolidated fashion.

Information Request:
Provide a complete and consolidated list of the method detection limits used for each water quality parameter that was measured to establish the baseline water quality.

12.6 Effects of Temperature

12.6.1 Surface Water Temperature

References:

EIS Guidelines	- Section 2.7.2.4, p. 58 (PDF 63)
	- Section 2.7.2.3.1, p. 53 (PDF 58)
EIS Main Report	- Table 6.2.8, p. 6.49 (PDF 555)
	- Table 6.2.9, p. 6.50 (PDF 556)
SID#21	- Section 5.2.1, p. 31 (PDF 41)

Contributing IRs:
MNR-A-18
MNR-A-36

Rationale:
It is likely that the temperature of the outflow from the PSMF will be warm. An increase in water temperature could have an effect on the depth of the thermocline in Hare Lake or the thermal properties of Hare Creek. However, there has been no consideration of the effects of changes in water temperature to aquatic life in those water bodies. Without mitigation, the existing inflows to Hare Lake and the Pic River will likely become warmer, and such temperature changes could impact aquatic ecosystems.

Information Request:
Identify potential changes to thermal properties of Hare Lake, Hare Creek and Pic River, together which an explanation of the methodology used to predict the potential changes. Assess the potential effects on aquatic ecosystems as a result of these changes to water temperature and provide information on appropriate measures to mitigate the potential thermal effects.

12.6.2 Coldwater Discharges

Rationale:

EIS Guidelines	- Section 2.7.2.3.1, p. 54 (PDF 59)
EIS Main Report	- Section 5.4.2.2.3, p. 5.56 (PDF 381)

Contributing IRs:
MNR-A-33
MOE-SW-13

Rationale:
The locations of coldwater discharge sites are not mapped in relation to creeks and fish habitat. The location of the discharge sites is an important factor in maintaining coldwater creeks around the Project site. The presence of resident brook trout in streams 1and 2, and in Hare Creek indicate that there is very likely coldwater discharge to these streams. Brook trout also utilize cold water discharge sites for spawning.

Information Request:
Provide any available information regarding coldwater discharges in and immediately adjacent to the SSA.

12.7 Contaminants of Potential Concern

References:

EIS Guidelines	- Section 2.7.2.3.2, p. 55 (PDF 60)
EIS Main Report	- Section 6.1.1.2.1, p. 6.9 (PDF 515)

Contributing IRs:
MiningWatch

Rationale:
The list of COPCs does not include any ore processing chemicals such as xanthates. However, xanthates and other processing chemicals may be toxic to aquatic life.

Information Request:
Identify the chemicals that will be used in the processing of ore and discuss their potential effects on the environment or human health.

Provide a table listing all COPCs for the Project and indicate how they could affect the environment (e.g. fish, water quality, benthic invertebrates) or human health.

12.8 Use of IMPACT Model

References:

EIS Guidelines	- Section 2.7, p. 43 (PDF 48)
EIS Main Report	- Section 6.1.1.2.1, p. 6.9 (PDF 515)

Contributing IRs:
PMFN/PPFN-39

Rationale:
The transport and fate of contaminants is modeled using the Ecometrix IMPACT model. The Ecometrix website states that the IMPACT model has been serving government agencies and the nuclear industry for decades and is a standard tool for radiation dose calculation and for Derived Release Limit calculation.

Information Request:
Provide additional information regarding the suitability of the use of the IMPACT model for inorganic chemistry of surface and groundwater, including examples of other similar projects where it has been used for EA purposes.

12.9 Water Treatment

12.9.1 Requirement for Water Treatment

References:

EIS Guidelines	- Section 2.4.3.1, p. 25 (PDF 30) - Section 2.7.1.2, p. 45 (PDF 50) - Section 2.7.2.3.2, p. 58 (PDF 63)
EIS Main Report	- Section 1.4.3.4.7, p. 1.79 (PDF 148) & throughout - Section 6.2.3.3.2, p. 6.51 (PDF 557)
SID#11	- Section 1.1, p. 1 (PDF 9) - Section 3.1.1.2, p. 10 (PDF 18)

Contributing IRs:
EC-1
MNR-A-29
MOE-EA-4

Rationale:
Based on the information provided in the EIS, it is unclear if the water treatment facilities are part of the design for water management or if they will only be built later if deemed necessary. In section 6.2.3.3.2 of the EIS Main Report, SCI states that it "…has committed to building water treatment plants at both the MRSA and the PSMF which will be capable of treating ammonia, if required…" Similarly, section 1.4.3.4.7 of the EIS states that effluent will be discharged to Hare Lake and Pic River following treatment, as necessary. However, it is unclear when and

how treatment of effluent from the PSMF and the MSRA will be deemed necessary, and the COPCs that would be treated by the facilities.

Information Request:

Provide information and commitments on the following:

- whether the treatment plants would be installed before mine operations and if not, the basis by which decisions would be made during operations to install the plants;
- the suite of parameters that will be monitored and their associated benchmarks to determine when the effluents will require treatment; and
- the process and frequency of monitoring for these parameters.

Describe how SCI will operationalize the decision to treat effluent that does not meet the water quality benchmarks described above.

12.10 Lake Superior Lakewide Management Plan

12.10.1 Zero Discharge Demonstration Program

References:

EIS Guidelines	- Section 2.2.2, p. 12 (PDF 17) - Section 2.7.2.3.2, p. 55 (PDF 60)
EIS Main Report	- Appendix 1: Table of Concordance (PDF 806)

Contributing IRs:

MOE-EA-14
EC-13
MiningWatch
Great Lakes United / Lake Superior Binational Forum

Rationale:

The EIS does not include a discussion of the Lake Superior Lakewide Management Plan (LaMP) or of the substances that are identified in the Zero Discharge Demonstration Program (ZDDP) under the Lake Superior LaMP. Further, there is no discussion on whether SCI anticipates discharging any of these substances. The EIS also does not include a discussion about the principle of “zero discharge” into Lake Superior or if it can be achieved as a result of the Project.

The only mention of the Lake Superior LaMP ZDDP can be found in the Table of Concordance where it has been deemed “Not applicable…” because SCI indicates none of the substances identified in the ZDDP would be discharged from the mine site.

Information Request:

Discuss how the Project relates to the Lake Superior LaMP, including how the principle of zero discharge will be met and why the substances that are identified in the ZDDP are not of concern for this project, in terms of discharging to Lake Superior.

Confirm that the water quality objectives for the Project will be consistent with the goals and objectives of the Lake Superior LaMP Zero Discharge Demonstration Program.

12.10.2 Mercury Loadings

References:

EIS Guideline	- Section 2.7.2.3.2, p. 58 (PDF 63)
SID#3	- Section 1.5, p. 1.9 (PDF 22)

Contributing IRs:
MOE-SW-3

Rationale:
The goal of the Zero Discharge Demonstration Program (ZDDP) is to achieve zero discharge/emissions of nine pollutants, including mercury, by 2020. A potential conflict arises with this lake wide objective and the proposed project, given the potential for mining activities to have either a direct or diffuse discharge to water bodies that discharge to Lake Superior.

The EIS does not clearly consider the potential for additional mercury loadings from the Project to the downstream watershed (Hare Lake, Hare Creek and subsequently, Lake Superior or the tributaries of the Pic River).

Information Request:
Provide additional information concerning the potential impact that increased sulphates may have on increasing the methylation rates and mobilization of mercury. Discuss the potential mitigation measures that could be implemented to minimize sulphates and reduce the discharge of mercury from the site, if required.

12.11 Conclusions on Effects to Surface Water Quality

References:

EIS Guidelines	- Section 2.7.1.2, p. 44 (PDF 49)
	- Section 2.7.2.3.2, p. 55 (PDF 60)
SID#6	- Section 4.2.2, p. 4.7 (PDF 91)
	- Section 5.1, p. 5.3 (PDF 101)
	- Section 5.1, p. 5.6 (PDF 104)
EIS Main Report	- Table 6.1-4, p. 6.15 (PDF 521)
	- Section 6.2.3.3.4, p. 6.55 (PDF 561)

Contributing IRs:
MOE-SW-2
MNR-A-34

Rationale:
The EIS lacks a clear rationale to substantiate the hypothesis of “no effect” to the water quality of Hare Lake once subjected to the mine effluent. This conclusion appears overly optimistic given the impacts from other mine effluents to local lakes of similar bathymetry (i.e. Lim Lake, Cleaver Lake and Mose Lake). Similarly, the findings of Environment Canada’s Environmental Effects program as summarized in the document “Second National Assessment of Environmental Effects Monitoring Data from Metal Mines Subjected to the Metal Mining Effluent regulations” (February, 2012) found definitive impacts from mine effluents on a national level. The report also noted that fish exposed to mine effluents demonstrated significantly reduced condition and relative liver size, lowered growth rate, and smaller gonad sizes. Benthic communities also showed inhibitory impacts from mine effluents, with significant reductions in both density and taxon richness and a shift to pollution tolerant species.

Information Request:

Provide clear and detailed rationale to support the conclusion of no adverse effects on surface water.

12.12 Monitoring

References:

EIS Guidelines	- Section 2.6.1.4, p. 32 (PDF 37)
EIS Main Report	- Section 7.3, p.7.12 (PDF 749)

Contributing IRs:

MiningWatch

Rationale:

Monitoring of watersheds down-wind of the site (eastern tributaries of the Pic River) would help determine if dust is introducing contaminants to those watersheds. The EIS should provide a description of areas that could serve as reference points for monitoring impacts.

Information Request:

Provide a description of how SCI intends to monitor water quality and indicate areas that would serve as reference points for monitoring impacts. Selection of reference points should include consideration of dust impacts on water quality.

12.13 Benthic sampling - Hare Creek and Stream 6

References:

EIS Guidelines	- Section 2.7.1, p. 43 (PDF 48)
	- Section 2.7.2.3.3, p. 58 (PDF 63)
	- Section 2.7.2.3, p. 52 (PDF 57)
	- Section 2.7.2.4, p. 58 (PDF 63)
EIS Main Report	- Section 5.4.4.2.1, p. 5.82 (PDF 407)
SID#1	- Section 3.5.17, p. 3.88 (PDF 119)
	- Section 3.6.9, p. 3.99 (PDF 130)
	- Section 2.2.1, p. 2.2 (PDF 24)

Contributing IRs:

MOE-SW-8
MNR-A-16
MNR-A-2

Rationale:

The benthic sampling program did not make any collections at Station S30 (near the mouth of Hare Creek) or at Station S31 (Angler Creek-Stream 6). Establishing baseline conditions at these stations would assist with tracking any potential impacts from the proposed effluent discharge.

It is important to have a clear understanding of sampling methods used and rationale in order to understand the sites chosen for benthic sampling. The EIS indicates that benthic sampling included semi-quantitative and quantitative sampling; however, it is not clear which sites were sampled with each method (e.g. the EIS indicates that quantitative sampling was used for sites receiving effluent, but a list of these sites is not provided).

Information Request:

Provide a benthic sampling plan for Hare Lake and Hare Creek, including baseline and monitoring/follow-up programs. Include a rationale for selection of sampling sites and methodology chosen, including a discussion of the importance of Stations S30 and S31.

13 Fish and Fish Habitat

13.1 Scoping - Spatial boundaries

References:

EIS Guidelines	- Section 2.3.5, p. 21 (PDF 26) - Section 2.6.1.5, p. 36 (PDF 41)
EIS Main Report	- Section 2.4, p. 2.7 (PDF 168) - Section 6.2.4.1, p. 6.65 (PDF 571)

Contributing IRs:
MNR-A-30

Rationale:
As described in the EIS Guidelines, characterization of fish habitat should be within the context of the local and regional subwatershed areas.

The Regional Study Area selected (east end of Lake Superior and the whole Pic River) is too large in terms of assessing effects on the aquatic environment and not similar to the affected water bodies in the SSA.

In describing the importance of fish habitat in the lower watersheds of streams 2 & 3, comparison is made to the whole Pic River watershed, with the statement that these streams are only 0.1% of the drainage. A comparison to Lake Superior or Pic River implies that there is relevant survey data from those water bodies that apply to this study area. As there is no rationalization of this scale and no data to support using this scale, the comparison does not appear to be justified.

Information Request:
Justify the use of the whole of the Pic River watershed as the comparison for the assessment of the effects on the aquatic environment.

13.2 Baseline Sampling

13.2.1 Methodologies Used

References:

EIS Guidelines	- Section 2.6.1.5: p. 36 (PDF 41)
SID#1	- Section 2.3.1, p. 2.7 (PDF 29) - All tables dealing with fish sampling effort (PDF 158) - Section 3.5.15, p. 3.85 (PDF 116)

Contributing IRs:
MNR-A-6
MNR-A-5
MNR-A-7
MNR-A-8
MNR-A-9
MNR-A-10
MNR-A-11
MNR-A-14

Rationale:
The description of the methodologies by which the fish communities were surveyed are inadequate to determine whether or not the protocols used were appropriate. Concerns have been raised with the methodologies used for the following survey methods:

- electrofishing;
- seining;
- nordic netting; and
- Fall Walleye Index Netting.

Appropriate site and gear selection are important factors in ensuring the defensibility, comparability, and repeatability of a fisheries assessment survey. However, there does not appear to be a consistent or logical application of gear types and effort in these surveys. Moreover, when multiple gear types are deployed on the same water body at the same time (particularly on small ponds) there is the possibility that one protocol may have interfered with the other (e.g. electrofishing while nets are deployed).

Further, SID #1 indicates that some sites were surveyed by a "visual" method alone. While a visual observation is positive proof that a fish exists at a given site, it cannot be used to determine that fish do not exist at a site, unless the stream is dry at the time of observation (and even then, there are exceptions, such as lamprey ammocetes which could be buried in the mud).

Information Request

Justify the selection of baseline sampling methodologies and discuss the implications of using the methods chosen rather than the methods identified by the Ontario Ministry of Natural Resources (MNR) in its comments to the Panel.

13.2.2 Confidence in Sampling Results

References:

EIS Guidelines	- Section 2.6.1.5, p. 36 (PDF 41)
	- Section 2.7.1, p. 43 (PDF 48)
SID#1	- Section 3.9.2, p. 3.119 (PDF 150)
	- Section 3.1.8, p. 3.9 (PDF 40)
	- Section 3.5.18, p. 3.89 (PDF 120)
	- Figure 3.32, (PDF 197)
SID#7	- Section 4.2.1, p. 4.2 (PDF 46)

Contributing IRs:
MNR-A-12

Rationale:
The mouth of Angler Creek (Stream 6) is located at Sturdee Cove, which is reported to contain spawning habitat for cold water fish species. The stream 6 watershed would be reduced by 50%, which could have an impact on fish in Sturdee Cove. However; no fish sampling was conducted in Sturdee Cove.

Lake 23 is one of the larger water bodies with a surface area of 10.46 hectares (ha) and a maximum depth of 10 metres (m). Fishing effort on August 12, 2009 did not identify any fish

present. However, given the size and depth of the lake, the presence of fish seems likely. Additional effort may be needed to establish the presence or absence of fish and define the existing fish community.

The EIS also indicates that as a result of a perched culvert at the mouth of stream 1, the stream is underutilized by fish. Stream 1 was sampled on one occasion, and brook trout, rainbow trout and Chinook salmon were observed. The fact that brook trout, rainbow trout and Chinook salmon were observed in only one survey would suggest that the mouth of stream 1 may not be underutilized.

Information Request:

Given the high degree of uncertainty in the sampling methodology and results of surveys to determine the presence or absence of fish, evidenced by comments received, discuss the level of confidence associated with the results and explain how uncertainty associated with results has been addressed. In particular, provide information relating to the following surveys:

- Lake 5 and 23 sampling at depth;
- Sturdee Cove; and
- Streams 1 & 2.

13.3 Habitat Characterization

References:

EIS Guidelines	- Section 2.7.2.4, p. 58 (PDF 63)
EIS Main Report	- Section 6.2.4, p. 6.62 (PDF 568)
SID#7	- Section 3, p. 3.1 (PDF 34)
	- Section 4, p. 4.1 (PDF 45)

Rationale:

The EIS Guidelines require SCI to identify potential effects on fish / fish habitat during all phases of the Project. The EIS Guidelines also require that the analysis of potential effects consider the habitat loss or alteration to various types of fish habitats and an analysis of potential changes in migratory fish behaviour, mortality of fish and changes to Aboriginal, commercial and/or recreational fisheries resources. However, the EIS does not include measures of productive capacity such as fish density, biomass or productivity, biomass and diversity. This information is necessary to provide a benchmark in which to compare the change in productive capacity.

Information Request:

Where available, provide a summary of the habitats that will be potentially affected by the Project, including:

- measures of productive capacity;
- estimated amounts of fish mortality;
- an overview of habitat types, including an estimation of the amount of each habitat type (i.e. lake, river, wetland, riparian zone); and
- a summary of the usage of fish habitat, including spawning, feeding, and migration corridors.

13.4 Assessment of Effects on Direct and Indirect Fish Habitat

References:

Panel Terms of Reference	- Section 1, p. 12
EIS Guidelines	- Section 2.6.1.5, p. 36 (PDF 41)
	- Section 2.7.2.4, p. 58 (PDF 63)
EIS Main Report	- Section 6.2.4.1, p. 6.65 (PDF 571)
	- Section 6.2.4.4, p. 6.70 (PDF 576)
	- Section 8, p. 8.5 (PDF 758)
SID#7	- Section 3.3.1, p. 3.5 (PDF 38)

Contributing IRs:
MNR-A-21
MNR-A-24
MNR-A-37

Rationale:
SID #7 differentiates between “direct fish habitat” and “indirect fish habitat”. Direct fish habitat is defined as fish-frequented waters, and indirect fish habitat is defined as waters were no fish are found, but a contribution to downstream areas in the watershed is provided (see footnote 1, Table 1.2). Further, section 3.3.1 of SID #7 also states that aquatic effects were evaluated in terms of the potential effects upon “fisheries and habitats which support a fishery” (p. 3.5).

SID #7 states that while the Project will affect approximately 9.3 ha of aquatic habitat (direct and indirect fish habitat), only approximately 1.8 ha affords “direct fish habitat”, and therefore, compensation is only being proposed for this amount. While section 8.0 of the EIS Main Report lists best practice mitigation measures for protecting fish and fish habitat, these measures do not appear to fully mitigate for the 7.5 ha of indirect fish habitat that will potentially be affected by the Project.

The Panel's ToR requires it to consider the effects of the Project on fish and fish habitat. The Joint Review Panel Agreement (JRPA) and Panel ToR define both "environment" and "environmental effect" broadly. Therefore, the Panel’s assessment of potential effects on this VEC is not limited to effects on “direct fish habitat” or fisheries. Further, the EIS Guidelines required SCI to “identify effects on fish and fish habitat during all phases of the project.” The Panel is required to fulfil its mandate and is not limited by definitions in other legislation.

Information Request:
Provide an assessment of potential effects on fish and fish habitat beyond established fisheries and “direct fish habitat” for all phases of the Project. This includes water bodies that could directly or indirectly support a current or potential fishery, as well as water bodies that provide food or habitat that supports fish.

Additionally, clarify how all of the potential effects of the Project on fish, including direct and indirect fish habitat, will be mitigated.

13.5 Fish Habitat Compensation Plan

13.5.1 Effects from Water Flow Changes

References:

EIS Guidelines	- Section 2.7.2.4, p. 58 (PDF 63)
EIS Main Report	- Executive Summary, (p. xv)
	- Table 6.1.4, p. 6.15 (PDF 521)
	- Table 7.3.1, p. 7.12 (PDF 749)
	- Section 6.2.4.1, p. 6.68 (PDF 574)
SID#21	- Section 5.2.1, p. 31 (PDF 41)
SID#7	- Section 3.3.1, p. 3.5 (PDF 38)

Contributing IRs:
PMFN/PPFN-11
PMFN/PPFN-18
MNR-A-19
MNR-A-24
MNR-A-35
MNR-A-37

Rationale:
The EIS Guidelines require that the potential effects and planned mitigative strategies for avoiding Harmful Alteration, Disruption and Destruction (HADDs) of fish habitat will be identified for the footprint of development, infrastructure development, dewatering activities, flow changes from water management and diversions, and compensation activities. The EIS Guidelines also require an analysis of potential changes in migratory fish behaviour resulting from project activities.

Baseline studies have shown that streams 1, 2, 3 and 6 are home to resident and migratory salmonids and have the potential to be feeding, spawning, and nursery habitats. These water bodies also contain fish and fish habitat that could support one or more life processes of fish, or could directly or indirectly support a current or potential fishery.

Information Request:
Provide a description of how the removal of parts of streams 1, 2, 3, and 6, by being incorporated into the mining infrastructure, as well as the reduction in water flows resulting from project activities, will affect the feeding, spawning, and migratory behaviours of fishes, particularly salmonids such as Brook Trout, Rainbow Trout, Steelhead Trout, and Chinook Salmon.

13.5.2 Water and Sediment Quality in Pit Lake

References:

EIS Guidelines	- Section 2.7.2.4, p. 58 (PDF 63)
SID#7	- Section 4.2.1, p. 4.2 (PDF 46)
	- Section 4.4.3, p. 4.3 (PDF 53)
SID#18	- Section 3.7, p. 46 (PDF 53)

Contributing IRs:
MNR-A-20
MiningWatch

Rationale:
The closure plan states that Type 2 mine rock will be deposited in the main pit which will subsequently be flooded to prevent potential acid generation. Prior to closure, the Type 2 mine rock will be stockpiled adjacent to the primary and satellite pits.

Conversion of Pit 5 to Pit Lake and the creation of the connecting stream may be completed during the operations phase, before the closure plan. Upon closure, water from Pit Lake will flow via Stream 1 to the Pic River.

There is a possibility that the stockpiled Type 2 mine rock and the exposed pit walls will oxidize rapidly, during the time it takes for Pit Lake to fill. This could lead to an increased acid load in Pit Lake, which would then flow through Stream 1 to the Pic River, which could have an adverse impact on this aquatic ecosystem, such as effects on sediment and benthos quality.

Information Request:
Provide more detailed information regarding how the potential for acid generation from the stockpiled Type 2 mine rock and the exposed pit walls will be managed to ensure that water and sediment quality in Pit 5, and connecting streams to Pic river, are capable of supporting fish and fish habitat.

13.5.3 Watershed associated with Pit Lake

References:

EIS Guidelines	- Section 2.7.2.4, p. 59 (PDF 64)
SID#1	- Figure 3.3, (PDF 160)
SID#7	- Section 4.2.1, p. 4.2 (PDF 46)

Rationale:
The watershed boundary does not match the discussion on the proposed fish habitat compensation strategy. Figure 3.3 of SID #1 shows Satellite Pit 5 as being located within the Stream 1 watershed. However, this is inconsistent with the proposed fish habitat compensation plan, which suggests that water from Pit Lake, which would drain into the Stream 1 watershed, would increase the amount of flow in the watershed. However, if Pit Lake is already in the Stream 1 watershed as indicated in SID #1, there would be no increase in flow.

Information Request:
Clarify the discrepancy regarding the watershed in which Pit 5 is located. If Pit 5 is located within the Stream 1 watershed, explain how the proposed fish habitat compensation plan meets its stated objective of increasing the flow into Stream 1.

13.5.4 Time Lag for Establishment of Compensation

References:

EIS Guidelines	- Section 2.7.2.4, p. 58 (PDF 63)
EIS Main Report	- Executive Summary, p. xv (PDF 17)
	- Section 6.1, p. 6.1 (PDF 507)
	- Section 6.1.1.4, p. 6.11 (PDF 517)
	- Section 6.2.4, p. 6.62 (PDF 568)
	- Section 6.2.4.1, p. 6.68 (PDF 574)
	- Table 6.1.4, p. 6.15 (PDF 521)
	- Table 7.3.1, p. 7.12 (PDF 749)

Contributing IRs:
PMFN/PPFN-11
PMFN/PPFN-19
PMFN/PPFN-34
MNR-A-35
MNR-A-38

Rationale:
The EIS Guidelines state that in developing the fish habitat compensation plan, consideration must be given to time delays between the loss of productive capacity and when replacement habitat is created and becomes functional, as well as uncertainty in whether the replacement habitat is likely to function as intended.

The EIS states that the natural surface water drainages for streams 2, 3 and 6 will be restored post-closure. Many salmonids show strong fidelity to their spawning sites, returning to their natal sites in order to spawn. The removal of these water bodies may impede spawning and therefore adversely affect population sizes. It is important to accurately portray the effects of the Project over time in order to understand potential effects, particularly on salmonids such as Brook Trout, Rainbow Trout, Steelhead Trout, and Chinook Salmon.

Information Request:
Provide more detail on how the time lag between the alteration/destruction of habitat and the completion of the Fish Habitat Compensation Plan will be addressed, such that it is capable of supporting healthy fish populations. Include information on how SCI will address effects on the various life history strategies of migratory fish.

Discuss the potential for the re-establishment of migratory patterns of fish, including salmonids, post closure and propose necessary mitigation measures and monitoring plans, as per IR 13.5.1.

13.5.5 Compensating for Coldwater Habitat

References:

EIS Guidelines	- Section 2.7.2.4, p. 58 (PDF 63)
SID#7	- Section 3.5, p. 3.10 (PDF 43)

Contributing IRs:
MNR-A-23
MNR-A-24
MNR-A-26

Rationale:
The EIS states that “although the Project will impact upon waters frequented by fish, none would be considered as supporting, or potentially supporting a fishery.” However, brook and rainbow trout, as well as Chinook salmon are highly sought fish species in the Lake Superior Basin.

The proposed Fish Habitat Compensation Plan does not consider the replacement of the coldwater fish habitat in Streams 2, 3 and 6 that will be lost as result of the Project with similar habitat. Rather, the proposed plan includes increasing the productivity of the habitat in the Stream 1 watershed (by creating a connection to Pic River and creating of a bait fishery in Pit Lake). The significance of the loss of coldwater habitats in Streams 2, 3, and 6 and potentially

in Hare Creek and Stream 1 must be considered, as the loss of coldwater nursery areas is a major concern on the north shore of Lake Superior.

Productive coldwater habitats are not complex (have few species) and have low productivity. For instance, increasing complexity (number of fish species) in the Stream 1 watershed could increase competition for available habitat and result in the loss of brook trout in the middle reach. Likewise, increasing productivity generally means increasing water temperature, which would likely result in the loss of salmonids in the lower reach.

The proposal to replace coldwater habitat along Lake Superior with baitfish habitat in Pit 5 and the goal of "…increasing net productivity and complexity of fish…" ignores coldwater fish habitat as a valued ecosystem component in this area. Coldwater habitat, notably brook trout habitat along Lake Superior is of high value and should be explored as part of the compensation strategy.

Information Request:

Provide a discussion on alternatives for fish habitat compensation that recognize the value of coldwater species and address the creation of coldwater habitat.

Justify why not creating like-for-like habitat (i.e. not replacing the lost coldwater habitat with similar habitat) is appropriate for the Project.

13.5.6 Feasibility of Fish Habitat Compensation Plan

References:

EIS Guidelines	- Section 2.7.2.4, p. 58 (PDF 63)
SID#7	- Section 4.5, p. 4.11 (PDF 55)

Rationale:

Section 4.5 of the Fish Habitat Compensation Plan indicates that one of the uncertainties associated with the proposed compensation plan is the "technical feasibility of the proposed compensation works".

Information Request:

Provide information regarding the long-term feasibility of the proposed compensation works. In particular, provide information regarding the long term feasibility of creating self-sustaining ecosystems in the form of the proposed new lake in Satellite Pit #5 and the new naturalized streams and ponds across the reclaimed areas of Satellite Pits #2, 3 and 4.

13.6 Risk Assessment Methodology

References:

EIS Guidelines	- Section 2.7.1.5, p. 49 (PDF 54)
	- Section 2.7.2.4, p. 58-60 (PDF 63-65)
SID#7	- Section 3.3.2, p. 3.6 (PDF 39)

Rationale:

SID #7 discusses the risk assessment process that was used to determine the level of risk that the residual effects of the Project pose to fish and fish habitat. In applying the risk assessment framework, SCI included indirect fish habitat in determining the level of risk, despite the fact that only 1.8 ha of direct fish habitat has been proposed to be compensated. Including indirect habitat in the determination of risk appears to lower the risk of the potential effects.

Information Request:

Reassess the risk of the potential effects of the Project by considering only the effects on direct (fish bearing) habitat.

13.7 Metals Concentrations in Fish

References:

EIS Guidelines	- Section 2.6.1.5, p. 36 (PDF 41)
	- Section 2.7.2.4, p. 60 (PDF 65)
SID#1	- Section 2.4.1, p. 2.8 (PDF 30)
	- Section 3.5.13, p. 78 (PDF 109)
	- Section 3.5.15, p. 3.82 (PDF 113)

Contributing IRs:
MOE SW-4

Rationale:
The EIS Guidelines require that the EIS "provide details of metal levels in fish. Using the baseline data on metal levels in fish muscle and liver in areas that may be impacted by effluent or seepage from the mine, the EIS shall evaluate changes in metal levels due to the Project." While the EIS provides baseline metal levels in fish for Hare Lake and Bamoos Lake, this information is not provided for the Pic River or Stream 6.

Whenever possible, baseline information should include the five core endpoints used in the Environmental Effects Monitoring (EEM) program to monitor the effects of mine effluents on receiving water biota: weight-at-age; relative gonad and liver weights; condition (i.e. body weight in relation to length); and age. In addition, baseline information should be such that it is repeatable and comparable for monitoring purposes.

Information Request:

Prior to the start of the public hearing, provide baseline information on metal levels in fish in Pic River and Stream 6. If this data is not available, sampling should be undertaken in appropriate locations. The baseline information should be used to assess the potential effects of the Project on metal levels in fish tissue in Pic River and Stream 6.

13.8 Implementation of Mitigation and Monitoring

References:

EIS Guidelines	- Section 2.7.2.4, p. 58 (PDF 63)
	- Section 2.8.3, p. 74 (PDF 79)
EIS Main Report	- Section 4.4, p. 4.8 (PDF 52-53)
	- Section 4.1, p. 4.4 (PDF 48)
SID#7	- Section 4.4.5, p. 4.10 (PDF 54)

Contributing IRs:
MNR-A-32

Rationale:
Section 4.4 of the Fish Habitat Compensation Plan provides an overview of the planning required to implement the compensation plan. Section 4.4.1 states that SCI will be responsible for “implementation of mitigation measures and on-site monitoring during *construction*

[emphasis added]". Similarly, Figure 4.1 of the Fish Habitat Compensation Plan shows various features of the proposed compensation strategy requiring ongoing maintenance into the future. However, outside of the construction phase, no specific commitment is made to implement the compensation plan for the other phases of the Project during which compensation work will be carried out. While the List of Commitments provided in Table 8-7 of the Main Summary Report indicates that the responsibility for implementing all commitments rests with SCI, there is a discrepancy between the table and the text in section 4.4 of the SID.

Additionally, monitoring plans appear to only address components of the compensation plan, located within the SSA. Follow-up and effects monitoring for non-FCHP components and locations have not been addressed as per the requirements of the EIS Guidelines. Monitoring of effects for all potentially affected fish and fish habitat (direct and indirect habitat) is necessary to determine the effectiveness of the measures implemented to mitigate adverse effects of the Project.

Information Request:

Clarify the follow-up and effects monitoring program that will be established for all potentially affected fish and fish habitat (direct and indirect) as well as where SCI intends to implement these monitoring programs.

Additionally, clarify the discrepancy between SID #7 and the Commitments Table regarding where the responsibility for implementing the fish habitat compensation plan rests during all phases of the Project.

14 Terrain and Soils

14.1 Surficial Geology - Soil

References:

EIS Guidelines	- Section 2.6.1.1, p. 30 (PDF 35)
	- Section 2.6.1.7, p. 36 (PDF 41)
SID#2	- Section 1.4, p. 1.5 (PDF 15)

Contributing IRs:
NRCan-10

Rationale
The background regional surficial geologic information relies upon a single citation of a synoptic national map (Fulton 1:7,000,000). However, Fulton is a national synthesis map and is not intended for characterization of a regional site. Its use to characterize the Project site may oversimplify the surficial geology and inadequately frame the site context for other aspects of the EA.

Information Request:
Revise the site specific surficial geology analysis using the maps listed below:

- Barnett, P.J., Henry, A.P. and Babuin, D. 1991. Quaternary geology of Ontario, east-central sheet, Ontario Geological Survey, Map 2555, scale 1:1,000,000.
- Bajc, A.F. and Kristjansson, F.J. 2009. Quaternary geology of the Marathon area, northern Ontario, Ontario Geological Survey, Map 2680, scale 1:50,000.
- Geddes, R.S. and Bajc, A.F. 2009. Quaternary geology of the White Lake area, northern Ontario, Ontario Geological Survey, Map 2683, scale 1:50,000.

Discuss how the analysis of the surficial geology changed as a result of the use of these maps rather than Fulton and the implications of these changes on the impact assessment.

14.2 Surficial Geology

References:

EIS Guidelines	- Section 2.2, p. 11 (PDF 16)
	- Section 2.2.3, p. 12 (PDF 17)
	- Section 2.6.1.6, p. 36 (PDF 42)
SID#2	- Section 3.2, p. 3.2 (PDF 25)

Contributing IRs:
NRCan-11

Rationale:
It is not clear if grain size values listed in the EIS are derived purely from the literature, or if laboratory analyses were conducted. Grain-size information may affect other aspects of the EIS review, for example hydrogeology.

Information Request:
Provide the results from the existing on-site laboratory analysis of grain size, if available.

If grain size data were not derived from laboratory analysis, describe the methodology used, including literature references, to derive the grain size values. Discuss any implications of using

the literature instead of on-site data on the results of the studies that used the grain size values, such as erosion or dust issues.

15 Vegetation

15.1 Rare Plants

References:

EIS Guidelines	- Section 2.6.1.7, p. 37 (PDF 42)
EIS Main Report	- Section 6.2.6.1.1, p. 6.73 (PDF 579)
	- Section 6.6.1.4.5, p. 6.212 (PDF 718)

Rationale:

Section 6.6.1.4.5 of the EIS states that a limited number of provincially and regionally rare plants will be lost within the Project footprint.

Information Request:

Provide the distribution range for the rare plants that will potentially be affected by the Project. In light of the distribution ranges, re-examine the significance of the loss of the population of the rare plants on local, regional and provincial populations of the rare plants (i.e. address the issue of whether any of the plants are at the limit of their range).

Provide a discussion on the potential cumulative effects on rare plants from this Project and reasonably foreseeable future projects in the context of the distribution ranges.

15.2 Current Use by Aboriginal Groups

References:

EIS Guidelines	- Section 2.6.1.7, p. 37 (PDF 42)
EIS Main Report	- Section 2.6.6.3, p. 6.78 (PDF 584)

Rationale:

The EIS does not appear to include information on specific plant species used for traditional purposes by Aboriginal peoples.

Information Request:

Describe the potential effects of the Project on specific plant species used for traditional purposes by Aboriginal peoples.

16 Socio-Economics

16.1 Training Opportunities

References:

EIS Guidelines	- Section 2.7.3.1, p. 63 (PDF 68)
EIS Main Report	- Section 6.2.9.1, p. 6.102 (PDF
SID#23	- Section 4.1.1.2, p. 63 (PDF 72)
	- Section 4.1.2.3, p. 63 (PDF 72)

Contributing IRs:
Town of Marathon
MiningWatch
Environment North

Rationale:
The influx potential of new residents during the construction and operational phases will result in increased educational requirements and opportunities for youth. The Project may also foster and potentially sponsor some training initiatives, leading to heightened workplace skills related to mining. However, specific training opportunities are not outlined in the EIS.

Information Request:
Provide additional information on the specific training opportunities that SCI would provide throughout all phases of the Project. In addition, provide the elements of the training plan to engage Aboriginal people and youth.

16.2 Economic Issues

References:

EIS Guidelines	- Section 2.6.2.1, p. 39 (PDF 44)
	- Section 2.2.3, p. 12 (PDF 17)
SID#2	- Section 3.2, p. 3.2 (PDF 25)
	- Section 2.7.3.1, p. 63 (PDF 68)
	- Section 2.7.3.2, p. 64 (PDF 69)
SID#22	- Section 2.2, p. 34-38 (PDF 49-53)
	- Section 2.2.5, p. 40 (PDF 55)
	- Section 3.4, p. 62 (PDF 77)
	- Section 6.2, p. 115 (PDF 130)
SID#23	- Section 4.1.1, p. 61 (PDF 70)
	- Section 4.1.3.1, p. 72 (PDF 81)
	- Section 4.2, p. 73 (PDF 82)
	- Section 4.2.1.3, p. 78 (PDF 87)

Contributing IRs:
Environment North
CRINO
MiningWatch
MNR-SE-1
MNR-SE-4
Town of Marathon-4
Bonnie Couchie

Rationale:
Labour Force Analysis
The EIS does not provide a full profile of the available labour pool. Though high level information has been provided in terms of labour force participation rates, employment / unemployment rates, occupational characteristics, and education levels, this information has not been discussed in the context of:

- the specific Project labour force requirements in each phase of the Project; and
- the degree the Project labour force requirements will be met through the local labour force (Aboriginal and non-Aboriginal).

The data used in the analysis of the available labour supply is from the 2006 census, together with purchased data from 2011. However, 2011 census data may now be available. Further, the labour force analysis does not reflect the start-up of the mill in Terrace Bay, the proposed Williams Mine Open Pit expansion, or the Ren Tech Inc. biomass plant in White River. As a result, the analysis in the EIS regarding local employment is not up to date.

Revenues
The EIS includes little analysis on how many jobs (and thus income) the Project would result in for residents of northwestern Ontario and how much of the expenditures relating to the Project would likely be made to northwestern Ontario suppliers and sources. Further, the analysis in the EIS requires a clearer distinction between the effects on the immediate local area and effects on regional centres.

Regarding predicted revenues, the extent, nature and length of stay of any expected influx of people will affect the type of development and economic diversification that may benefit the region. For instance, the EIS does not provide a basis for the assertion that 35% of the operations workforce will be from or returning to the region. Additionally, if most of the workforce is expected to commute to the mine site from communities other than the Town of Marathon, the benefits for local businesses could be less than predicted in the EIS and may also negatively impact investments.

It is understood that the Project would be subject to taxation, thus providing revenues at all levels of government. While the municipality would receive revenues, the closure phase of the Project would result in a decrease in government revenues in comparison to the previous phases. This could mean that the municipality may not be able to continue to invest in improvements/ upgrades or maintain infrastructure.

Economic Multipliers
Section 4.2 of the EIS states “In terms of choice of multipliers, they will range from 1.5 to 2.0 and will represent lower and upper bound estimates of the potential economic impact of the project” (p. 74). However, the mining economic multipliers for Ontario are lower than these estimates. Using a higher multiplier inflates the economic impacts of the Project.

Leakage Estimates
The EIS states that “Based on data provided by Stillwater, an initial expenditure leakage of 6 per cent is assumed meaning that 94 percent of initial direct and indirect expenditure is made from suppliers and sources from Canada” (p. 75). However, the leakage rate of 6% of economic impacts leaving Ontario seems low, considering the location of the Project and the likely availability of speciality equipment and services.

Information Request:

Update the demographic and labour force analysis using available new census data (2011) and reflect the recent changes to the local labour pool as a result of the start-up of the mill in Terrace Bay, the proposed Williams Mine Open Pit expansion, and the Ren Tech Inc. biomass plant in White River.

Based on this updated demographic and labour force information, provide a quantitative assessment of the Project demands on each socio-economic VEC during each phase of the Project. This assessment should discuss the transient nature of effects and the ability of the Aboriginal and non-Aboriginal communities that may be affected by the Project to accommodate these changes. This assessment should include the following for each phase of the Project:

- predictions of indirect and induced jobs expected to be created in region;
- specific labour force requirements;
- predictions of the number of employees (Aboriginal and non-Aboriginal) who would be moving into the region on a permanent or semi-permanent basis, the predicted number who may be flying in and out on rotation, the predicted number of local employees; and a rationale for the statement that 35% of the operations workforce will be from or returning to the region.
- predictions on household composition;
- forecasts of municipal and other government revenues; and
- predicted revenues expected to remain in the region.

Also, provide an assessment, in dollar terms, of the costs and benefits to the region for each phase of the Project and relative to the 'do nothing' alternative. Such an assessment needs to include costs to governments for infrastructure and services. When estimating benefits, provide a rationale for the choice of mining economic multipliers and leakage rate of economic impacts out of Ontario, and provide a sensitivity analysis using ranges of reasonable values for these factors.

16.3 Education, Community, Health and Social Services

References:

EIS Guidelines	- Section 2.6.2, p. 39 (PDF 44)
EIS Main Report	- Section 5.9, p. 5.127 (PDF 452)

Contributing IRs:

RSMIN

Rationale:

The EIS asserts that services and institutions all have additional capacity to address increased use because they are currently under-utilized. However, sufficient information on the ability of the organizations that provide these services to accommodate increased demand is not provided. Similarly, confirmation from such organizations regarding their ability to accommodate increased demands has not been provided.

Information Request:

Provide additional information to substantiate the ability of each of the service providers in the Aboriginal and non-Aboriginal communities in the LSA to respond to increased and varying demands to education, community, health and social services during the Project.

16.4 Non-hazardous Solid Waste management

References:

EIS Guidelines	- Section 2.2.3, p. 12 (PDF 17)
	- Section 2.7.3.2, p. 15 (PDF 20)
EIS Main Report	- Table 1.4-5, p. 1.61 (PDF 130)
	- Section 1.4.3.4.14, p. 1.83 (PDF 152)
SID#23	- Section 4.1.1.4, p. 64 (PDF 73)

Contributing IRs:
Town of Marathon

Rationale:
The EIS states that solid non-hazardous wastes generated during site preparation and construction will be collected in temporary collection areas and subsequently trucked off-site. The EIS also states that during operations solid non-hazardous wastes will be deposited within the landfill situated in the PSMF.

It appears that the Town of Marathon's landfill is the preferred destination for waste from the Project during site preparation and construction. However, the Panel understands that Marathon's landfill is at capacity and cannot accommodate any significant new waste streams in the near term. In addition, Marathon's landfill will only accept non-hazardous municipal waste. Therefore, an alternative disposal site for any hazardous waste generated by SCI may be needed.

Information Request:
Clarify the waste management strategy planned for solid non-hazardous waste generated during each phase of the Project. For each phase, provide an estimate of the volume of solid non-hazardous waste that will be trucked off-site and the amount that will be deposited in the PSMF.

If SCI plans to use the Marathon municipal waste disposal site, assess the potential effects on community infrastructure for the Town of Marathon, including the potential effects on the life span of the landfill. Discuss the contingency options available in the event that disposal at the Marathon landfill is not an option.

16.5 Methodology

References:

EIS Guidelines	- Section 1.2.4, p. 5 (PDF 10)
	- Section 2.2.3, p. 12 (PDF 17)
	- Section 2.6, p. 28 (PDF 33)
	- Section 2.7.1.2, p. 44 (PDF 49)
	- Section 2.7.1.4, p. 47 (PDF 52)
	- Section 2.7.1.5, p. 48 (PDF 53)
	- Section 2.8.3, p. 74 (PDF 79)
EIS Main Report	- Section 6.1.2, p. 6.14 (PDF 520)
	- Section 6.2.9.1.4, p. 6.113 (PDF 619)
SID#23	- Table 3.31, p. 57 (PDF 66)
	- Table 5.41, p. 86 (PDF 95

Contributing IRs:
CRINO

Rationale:
The EIS Guidelines require the Proponent to identify the criteria used to assign significance ratings to any predicted adverse effects and to define the terms used to describe the level of significance, and that "this method shall be transparent and reproducible".

There are inconsistencies in the rating criteria used to determine significance in the EIS. Tables 5.4.1 through 5.4.3 in SID #23 use 6 (six) rating criteria: Direction, Magnitude, Duration, Extent, Probability and Confidence level to assess socio-economic effects, while the criteria used in Table 6.1-4 in the EIS Main Report exclude Probability but include Reversibility and Societal/Ecological value.

The methodology for the assignment of the criteria ratings in Table 3.3.1 is also unclear. As stated in the EIS (SID #23, section 3.3.2) "the assignment of a rating is done based on past experience and the professional judgment of the EIS specialists involved as well as through desktop research (e.g., collection and examination of Census data), field data collection (e.g., key informant interviews) and consultation with individuals, organizations, communities and governments potentially affected by the Project." Further information and justification of the methodology is needed in order for the assignment of ratings to be transparent and reproducible.

There are also inconsistencies in the assignment of the ratings. For example, if the increase in employment and business opportunities associated with opening and operating the mine are positive and of high significance, then the parallel decrease in employment and business opportunities associated with closing the mine would be expected to be negative and of high significance. However, the EIS concludes that the impact to employment and business opportunities during mine closure would be negative and low significance.

The discussion of how mitigation was applied is also unclear. For instance, the potential for increased training opportunities for youth and Aboriginal people has been described as a beneficial social effect of the Project in the absence of mitigation. However, training opportunities are then included as a mitigation measure to offset any potential residual effect.

Finally, it is unclear how rating criteria were combined and weighted in Tables 5.4.1, 5.4.2 and 5.4.3 to determine whether or not mitigation is required and to determine the overall significance of each socio-economic VEC.

Information Request:
Provide clarification on why different rating criteria were used in the EIS Summary Document and in SID #23 with respect to determining the significance of the potential socio-economic effects of the Project.

Provide more explanation of the process (e.g. use of benchmarks, professional judgement, etc.) that was used to assign the ratings for each of the six criteria for each VEC in Tables 5.4.1 through 5.4.3. Include an explanation of how a negative and positive direction rating can be assigned for the same change in a VEC.

Explain how the six criteria were combined and weighted to determine whether or not mitigation is required, and to determine the overall significance for each VEC. Sufficient detail should be provided for the Panel to understand how the conclusions were reached for each VEC.

16.6 Physical and Cultural Heritage Resources

16.6.1 Recommendations of archaeological assessment report

References:

EIS Guidelines	- Section 2.7.4, p. 69 (PDF 74) - Section 2.7.4.1, p. 69 (PDF 74)
EIS Main Report	- Section 5.10.2, p. 5.159 (PDF 484) - Section 6.2.10, p. 6.129 (PDF 635)
SID#27	- Section 3.2, p. 8 (PDF 10)

Rationale:

The EIS Guidelines state that the EIS should reference the recommendations of the archaeological assessment report in assessing the effects of the Project on existing archaeological resources and include proposed measures to mitigate effects to archaeological resources. The archaeological assessment report includes recommendations relating to high potential archaeological sites on Hare Lake and Bamoos Lake that would require further work if potentially affected by the Project. However, these recommendations were not referenced in the EIS Main Report as required.

Information Request:

Explain whether the high potential archaeological sites identified in the archaeology report may be affected by the Project (such as through raising the water level in Hare Lake) and if necessary, identify measures to mitigate such effects.

16.6.2 Local Study Area

References:

EIS Guidelines	- Section 2.7.4, p. 69 (PDF 74) - Section 2.7.4.1, p. 69 (PDF 74)
EIS Main Report	- Section 5.10, p. 5.158 (PDF 483)

Contributing IRs

MTC&S

Rationale:

The EIS refers to various studies in the “project area and surrounding region”, the “project site”, “at and around the project site”, the “general vicinity of the project site”, and the “project footprint”. However, a LSA was not defined for Physical and Cultural Heritage Resources. The study area that was investigated is not clear.

Information Request:

Define the Local Study Area for this VEC, which includes terrestrial and aquatic potential areas, and confirm whether the areas of archaeological potential and cultural heritage resources have been assessed within this LSA.

16.7 Crown Land Use Policy

References:

EIS Guidelines	- Section 2.1.2, p. 10 (PDF 10) - Section 2.2.2, p. 11 (PDF 11)
EIS Main Report	- Section 1.3.3, p. 1.17 (PDF 86) - Section 1.4.2.3.4, p. 1.52 (PDF 121)

Contributing IRs:
MNR-EA-1

Rationale:
Ontario's Crown Land Use Policy Atlas provides area specific Crown land use policy direction for a large portion of Crown land in Ontario. The proposed project falls within the Marathon General Use Area where mining and exploration development is generally permitted, except within 300m of the Lake Superior shoreline. In addition, however, the south west corner of the mine property overlaps with the Lake Superior Shoreline Enhanced Management Area.

The land use intent for the Lake Superior Shoreline Enhanced Management Area is to provide long term tourism and recreational benefits to local communities through conservation of the coastline's significant scenic, recreational and tourism attributes. Crown land use policy for this area limits Crown land disposition, forestry, and aggregate extraction.

Information Request:
Provide information on the potential effects of the Project on the tourism and recreation values in the area in the context of the Lake Superior Enhanced Management Area land use policy direction.

17 Aboriginal Considerations

17.1 Consideration of Risk in Effects Assessment

References:

EIS Guidelines	- Section 2.6.4, p. 41 (PDF 46)
	- Section 2.7.5, p. 69 (PDF 74)
EIS Main Report	- Section 6.2.11.8, p. 6.66 (PDF 572)
	- Section 6.2.11.10, p. 6.131 (PDF 637)
	- Section 5.11.8, p. 5.179 (PDF 504)

Contributing IRs:
PMFN/PPFN-44

Rationale:
The Panel has been informed that some members of Aboriginal groups would be unlikely to continue to use the proposed Project area for traditional purposes due to perceived contamination. As a result, some Aboriginal groups have indicated in their comments that the continued use of the proposed Project area for traditional purposes could be significantly affected by the proposed Project.

Additionally, it is unclear how risk was incorporated into the effects assessment methodology. For instance, the EIS lacks information regarding which country foods are currently consumed and at what rate. As a result, it is difficult to determine the potential risk of exposure to contaminants for Aboriginal peoples and other subsistence users of country food.

Information Request:
Explain how risk was determined and incorporated into the assessment of the potential effects of the Project on the current use of lands and resources for traditional purposes. Include in this discussion, whether and how the views of Aboriginal groups were considered in determining risk.

17.2 Baseline Information

References:

EIS Guidelines	- Sections 2.6.4.3, p. 42 (PDF 47)
	- Section 2.6.4.4, p. 43 (PDF 48)
	- Sections 2.7.4 - 2.7.5, p. 69 (PDF 74)
EIS Main Report	- Section 4.4.2, p. 4.6 (PDF 220 - 222)

Contributing IRs:
PMFN/PPFN-25
PMFN/PPFN-26
PMFN/PPFN-30
PMFN/PPFN-44
RSMIN-2
MNO-1
MNO-2
MOE-EA-18

Rationale:
Section 4.4.2 “Early Agreements” of the EIS outlines which of the potentially affected Aboriginal groups have provided information related to their current use of lands and resources for traditional purposes, or on traditional use activities, as follows:

Aboriginal Group	Status of Traditional Use Study / Traditional Land Use Study	Incorporated into EIS?
Ojibways of the Pic River First Nation	completed	incorporated into EIS
Pic Mobert First Nation	in progress	not incorporated into EIS due to timing
Pays Plat First Nation	in progress	not incorporated into EIS at request of First Nation
Red Sky Métis Independent Nation	completed	not incorporated into EIS at request of Aboriginal group
Métis Nation of Ontario	completed	not incorporated into EIS (no rationale provided)
Jackfish Métis / Ontario Coalition of Aboriginal Peoples	completed	not incorporated into EIS (no rationale provided)

The assessment of the potential effects of the Project on Aboriginal considerations in the EIS focuses on OPRFN. While SCI makes general references to ‘Aboriginal groups’ as a whole, no specific information on any other groups is provided. While this is understandable where the groups have requested that their traditional use study (TUS) information not be incorporated into the EIS, the Panel notes that the TUS information from Métis Nation of Ontario (MNO) and Jackfish Métis appears to have been available for incorporation into the EIS. In its comments to the Panel, MNO confirmed that its TUS was provided to SCI. Further, it appears possible that the information from Pic Mobert First Nation (PMFN) may now be available for incorporation (i.e. PRFN’s comments to the Panel included some historical data). Red Sky Métis Independent Nation (RSMIN) also provided information in its comments relating to the specific land claim it has filed. Additionally, the Panel has received some information regarding the use of Hare Lake by Aboriginal people, which indicates that some Aboriginal people use Hare Lake as a recreational fishery.

Based on comments received from PMFN and OPRFN, it appears that there are differences of opinion regarding whether SCI has held sufficient consultations with these Aboriginal Groups to obtain baseline information.

Information Request:
Update the baseline information regarding the current use of lands and resources for traditional purposes to incorporate the latest available information. This should include information on the use of Hare Lake and other water bodies by Aboriginal people for recreational purposes.

Using this updated baseline information, update the assessment of the potential effects of the Project on the current use of lands and resources for traditional purposes by Aboriginal people, identify any required measures to mitigate potential effects and evaluate the significance of any residual effects.

Where relevant information is not currently available, provide an estimated timeframe in which SCI would be able to provide an assessment of the potential effects of the Project on the current use of lands/resources for traditional purposes by these groups.

17.3 Mitigation Measures and Monitoring

References:

EIS Guidelines	- Section 2.7.1.2, p. 45 (PDF 50) - Section 2.8.3, p. 76 (PDF 81)
EIS Main Report	- Section 6.2.11.9, p. 6.134 – 6.135 (PDF 640-641) - Section 7.3, p. 7.11 (PDF 748)

Contributing IRs:
PRFN-4
MNO-7
RSMIN-12

Rationale:
In addition to the mitigation measures outlined in Section 6.2.11.9 of the EIS to lessen the potential effects of the Project on Aboriginal considerations, SCI states that it has initiated continued discussions with the PRFN on additional mitigation strategies that could be implemented to further reduce the potential effects of the Project. However, no details of these additional mitigation strategies are provided.

With respect to monitoring, the Panel notes that follow-up monitoring is a requirement of the Canadian Environmental Assessment Act. However, the EIS indicates that "No specific monitoring program focusing on the effects of the Project on Aboriginal considerations such as traditional land uses, collection of country foods, the PRFN community trap line, traditional diet and heritage features is proposed other than as specifically negotiated in any benefits agreement. SCI will continue to consult with Aboriginal people to update its traditional knowledge information and address potential issues that arise in a proactive manner" (p. 7.14).

In its comments to the Panel, PRFN has stated that while they remain hopeful regarding the negotiations that are ongoing between PRFN and SCI, they note that "there are no guarantees that these negotiations will result in adequate mitigation strategies to address residual impact. Thus we would like mitigation measures to be more fully addressed within the EIS, not left up to future negotiations."

The Panel also notes that PMFN and Pays Plat First Nation (PPFN) have indicated that no discussions have been held with SCI in recent months.

Information Request:
Without disclosing the details of any confidential agreements, provide further information on the types of mitigation measures and monitoring programs that SCI is discussing with Aboriginal groups regarding the potential effects of the Project on Aboriginal Considerations.

Provide information regarding whether SCI has been in recent contact with groups in addition to PRFN to discuss "accommodating non-mitigable effects through continued engagement."

Provide information regarding how SCI intends to monitor the accuracy of its predictions regarding the potential effects of the Project on Aboriginal groups and to verify the effectiveness

of the proposed mitigation measures. As such, provide information regarding a follow-up monitoring program on the potential effects of the Project on Aboriginal groups.

17.4 Extrapolation of Significance Determinations

References:

EIS Guidelines	- Section 2.7.1, p. 43 (PDF 48)
	- Section 2.7.5, p. 69 (PDF 74)
EIS Main Report	- Section 6.2.11.11, p. 6.136 - 6.137 (PDF 642-643)
	- Section 6.2.9, p., p. 6.102 (PDF 608)

Contributing IRs:
PMFN/ PPFN-50

Rationale:
As outlined in IR 17.2, the Panel notes that the baseline information that was used to evaluate the potential effects of the Project on Aboriginal Issues was limited to information from OPRFN. In section 6.2.11.11 "Significance of Residual Effects on Aboriginal Considerations", SCI concludes "…the Project has not been determined at this time to be likely to have a significant adverse effect on Aboriginal interests and considerations, including specifically those of the PRFN." Similarly, in section 6.6.1.7 of the EIS, SCI concludes that there is "no basis ... to conclude that there will be a significant adverse cumulative impact on the interest of any First Nation or Aboriginal community from the Project together with the other current and planned project and activities in the RSA." Based on these statements, it appears that the conclusion of no significant adverse effect is intended to apply to all Aboriginal groups that could be potentially affected by the Project.

Information Request:
Clarify whether the conclusion regarding the effects of the Project and the cumulative effects of the Project also applies to groups other than PRFN. If not, what are the conclusions, and if so, provide an explanation of the methodology that was used to extrapolate the effects assessment and associated significance determinations to groups other than PRFN.

17.5 Fish and Fish Habitat

References:

EIS Guidelines	- Section 2.3.2, p. 19 (PDF 24)
	- Section 2.3.3, p. 20 (PDF 25)
	- Section 2.3.4, p. 20 (PDF 25)
EIS Main Report	- Executive Summary, p. xv (PDF 17)

Contributing IRs:
PMFN / PPFN-9

Rationale:
The naming nomenclature used for identifying water bodies in the vicinity of the proposed Project (for streams 1 to 6) does not consistently use existing traditional names.

Information Request:
Provide a map that includes the traditional names of water bodies, where known, for those potentially affected by the Project.

17.6 Identification of Valued Ecosystem Components

References:

EIS Guidelines	- Section 2.3.4, p. 20 (PDF 25)
EIS Main Report	- Section 6.2.11.1, p. 6.131 (PDF 63)

Contributing IRs:
MNO-4

Rationale:
Section 6.2.11.1 summarizes the VECs that were used to assess the potential effects of the Project on Aboriginal considerations. The selected VECs are:

- Aboriginal and treaty rights
- Traditional Land Use (including country foods)
- Preponderance of Traditional Dietary Habits
- PRFN Trap line – considered as separate VEC
- Aboriginal Heritage Resources
- Aboriginal archaeological resources

As the majority of the baseline information used in the assessment provided in the EIS relates to OPRFN, it is unclear how these VECs are representative of issues of concern to Métis people.

Information Request:
Provide a discussion on how identified VECs are applicable to Métis people that may be potentially affected by the Project.

17.7 Cumulative Effects

References:

EIS Guidelines	- Section 2.7.1.4, p. 47 (PDF 52) - Section 2.7.1.6, p. 48 (PDF 53)
EIS Main Report	- Section 6.6.1.5, p. 6.222 (PDF 728) - Section 6.6.1.6, p. 6.228 (PDF 734) - Section 6.6.1.7, p. 6.229 (PDF 735)

Contributing IRs:
PRFN-3

Rationale:
SCI states that the lack of access into the Project area could result in a cumulative effect with the Project due to the high level of importance PRFN attaches to traditional land and resource uses. However, SCI also states that anticipated footprint for the other projects is small compared to the traditional lands of the Aboriginal groups, particularly PRFN and that site access limitations for mining exploration projects are generally for a short timeframe.

Aboriginal groups have commented that this analysis implies that because their territory is large, the impacts are small (i.e. users of the land can go elsewhere). Further, Aboriginal groups have commented that the following factors may prevent the use of another area:

- harvesting systems are based on local knowledge;
- acquiring the local knowledge to relocate elsewhere requires transition time;
- cultural harvesting protocols may prevent the use of another area;
- restrictions resulting from the licensed trap line system and protocols relating to trap lines may prevent the use of another area;

- existing impacts from third-party interests in the region may limit use of other areas;
- non-Aboriginal hunting pressures in the region may restrict harvesting ability;
- costs associated with traveling further afield;
- issues associated with food security issues (i.e. areas close to community may be considered “community food bank”); and
- limitations from topography and access routes to areas north of Highway 17.

Further, the OPRFN has indicated that over 40% of its Exclusive Claim area has been granted to third-parties through alienations, dispositions or claims.

Information Request:

Provide a reassessment of the potential cumulative effects of the Project on the current use of lands and resources for traditional purposes by Aboriginal people, identify any required measures to mitigate potential effects and evaluate the significance of any residual cumulative effects.

18 Accidents and Malfunctions

18.1 Slope stability of MRSA

References:

EIS Guidelines	- Section 2.2.3.1, p. 15 (PDF 20) - Section 2.2.3.2, p. 15 (PDF 20) - Section 2.7.6, p. 70 (PDF 75)
EIS Main Report	- Section 1.4.3.4.4, p. 1.71 (PDF 140) - Section 6.3.2.17, p. 6.164 (PDF 670)

Contributing IRs:
NRCan-19
EC-12

Rationale:
Section 2.2.3.2 of the EIS Guidelines states: "The EIS will contain sufficient detail to be able to identify major mine components or structures which are likely to have a high failure consequence during operation and closure and where monitoring efforts will be required for the purposes of risk analysis." While the stability of the MRSA slope is discussed, the importance of its design requires extra attention. Part of the MRSA will be adjacent to Pit 1 and the potential for the MRSA to affect the stability of the pit wall (possibly enhanced by the fracture system in the bedrock of the site (see IR 9.1.1)) should be considered.

Information Request:
Provide preliminary MRSA slope design information to support the statement that the MRSA has been designed to provide a "high degree of stability" and provide information about the potential for the stability of the eastern wall of Pit 1 to be affected by the MRSA.

18.2 Explosives Manufacture and Storage

References:

EIS Guidelines	- Section 2.2.3.4, p. 17 (PDF 22) - Section 2.7.6, p. 70 (PDF 75)
EIS Main Report	- Section 1.4.3.4.12, p. 1.82 (PDF 151)

Contributing IRs:
NRCan-28

Rationale:
The EIS does not provide sufficient information related to the manufacturing, handling, and storage of explosives. For instance, the EIS does not provide an estimate of the quantity of explosives to be used at the construction phase (packaged explosives) and during operations (ANFO (Ammonium Nitrate Fuel Oil), emulsion and ANFO emulsion blend). This information is required to verify whether appropriate/standard measures will be implemented to minimize accidents and malfunctions and associated potential effects to the environment.

Information Request:
Provide the following information on the proposed explosive storage and associated facilities:

- the types of explosives to be manufactured and stored;
- maximum quantity of explosives at each facility;

- the location of the explosives storage facilities, with distances to vulnerable features such as dwellings, roads, camps, etc., and the location of the explosive magazine;
- fuel and ammonium nitrate storage plans;
- liquid effluent disposal plans;
- spill contingency plans; and
- any temporary explosive facilities to be used for starting the Project.

18.3 Explosives

References:

EIS Guidelines	- Section 2.7.6, p. 70 (PDF 75)
EIS Main Report	- Section 6.3.2.19, p. 6.170 (PDF 676)

Rationale:

Section 2.7.6 of the EIS Guidelines requires that the Proponent include an "evaluation of worst case scenarios (e.g. tailings impoundment structural failure, accidental explosion)".

Information Request:

Provide a description of the worst case scenario in terms of an explosives accident, including the potential environmental effects of such an accident. Describe the resources required to effectively respond (including equipment availability) and the capability of local responders to safely and effectively respond to such an event.

19 Effects of the Environment on the Project

References:

EIS Guidelines	- Section 2.7.7, p. 71 (PDF 76)
EIS Main Report	- Section 6.4, p. 6.180 (PDF 686)

Rationale:

Section 2.7.7 of the EIS Guidelines requires the assessment to take into account how local water conditions and natural hazards, such as severe weather conditions and external events, could adversely affect the Project. Longer-term effects of climate change shall also be discussed up to the end of the projected post-closure phase of the Project. Section 2.7.2.3 also requires consideration of the effects of climate change and variability on the future flow regime and water balance assessment, hydrology, such as peak flow rates, etc. However, the design storm used in the EIS for stormwater management is the 1961 Timmins Storm.

Information Request:

Identify where and how climate change has been factored into the assessment.

Identify new extreme rainfall events that incorporate climate change. Where extreme rainfall is used in the EIS, including but not necessarily limited to the site water management plan, provide revised analyses based on these new extreme rainfall events.

20 Cumulative Effects Assessment

20.1 Assessment of Cumulative Effects

References:

EIS Guidelines	- Section 2.7.1.4, p. 47 (PDF 52)
EIS Main Report	- Section 6.6.1.5, p. 6.222 (PDF 728)

Contributing IRs:
MNR-EA-28

Rationale:
There is very little quantitative analysis to support conclusions made regarding the potential cumulative effects of the Project over space and time. For example:

- The EIS states that for most wildlife, similar habitat exists in the local study area and that after decommissioning and closure, habitat for furbearers will be restored; however, this statement is not supported by any quantitative data (p. 6.223);
- Insufficient information is provided to support the conclusion that the cumulative effects on bird species of special concern (Ontario) and at risk (Canada) from the Project in combination with other projects that are also clearing habitat are expected to be minimal (p. 6.224). The conclusion is based on the assumption that there is abundant similar habitat available on a regional basis over space and time. However, there is no mapping or quantitative information provided to substantiate the claim regarding similar habitat availability.

Information Request:
Provide additional 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, particularly with respect to wildlife and birds species of special concern (Ontario) and at risk (Canada).

20.2 Sources of Cumulative Effects

References:

EIS Guidelines	- Section 2.7.1.4, p. 47 (PDF 52)
EIS Main Report	- Section 6.6.1.4, p. 6.202 (PDF 708)

Contributing IRs:
Ontario Nature-2A

Rationale
Section 19(1) of the *Canadian Environmental Assessment Act, 2012* requires the EA to take into account the environmental effects of a project, including "any cumulative environmental effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out." The 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 other activities could result in the overexploitation of resources during the life of the proposed project.

Information Request:

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 hunting, trapping and fishing.

20.3 Existing and Future Projects in the Region

References:

EIS Guidelines	- Section 2.7.1.4, p. 47 (PDF 52)
EIS Main Report	- Section 6.6.1.4, p. 6.202-6.203 (PDF 708-709)
	- Section 6.6.1.4.1, p. 6.204 (PDF 710)
	- Table 6.6-3, p. 6.219 (PDF 725)
SID#31	- Section 10.2, p. 41 (PDF 55)
	- Section 15.3, p. 55 (PDF 69)
	- Section 19.0, p. 198 (PDF 212)
	- Section 22.0, p. 203 (PDF 217)

Contributing IRs:

MNR-EA-25
MNR-EA-26
MNR-EA-27
Great Lakes United / Lake Superior Binational Forum

Rationale

The Geordie Lake deposit is 14 km from the Marathon project and is owned by SCI. Despite the proximity of this deposit to the proposed project, it was not included in the cumulative effects analysis. The EIS states that "…there is not enough information on Geordie Lake to support the project moving forward; therefore, Geordie Lake was considered a hypothetical project/activity and not included in the assessment."

However, SID #31 "Technical Report Feasibility Study" includes information regarding the Geordie Lake deposit, including the results of previous drilling (section 15.3), and references to other studies of this resource (section 22.0). Section 10.2 of this SID states that "the Geordie Lake Gabbro is a promising target…" while section 19.0 states "additional mineral resources within the Coldwell Complex which complement the Marathon PGM-Cu deposit include the…Geordie Lake deposit."

In making the decision to not include the Geordie Lake deposit in the cumulative effects assessment, SCI seems to have relied on the 1998 EA Practitioners Guide. However, the Operational Policy Statement, which was issued in 2006, updates the best practice with respect to the examination of 'hypothetical' projects. The Operational Policy Statement states that in completing a cumulative effect analysis, proponents should examine certain, reasonably foreseeable, and where appropriate, hypothetical projects.

Furthermore, the Panel has been notified of a number of additional existing and reasonably foreseeable future projects that should be included in the cumulative effects assessment. These include:

- a quarry proposal south of Hare Lake (currently under review by MNR);
- Exploration activity north of the mine proposal, including active exploration by SCI on Claim TB1240555 (in the Bamoos Lake area); and

- The former Terrace Bay Pulp mill (recently been acquired by Aditya Birla Group and now in operation).

The Panel notes that the EIS states that SCI undertook research to find information on these projects, but because no additional information on these projects was found, they were considered hypothetical and as such were not included in the cumulative effects assessment (p. 6.205). However, based on the information provided by the Ministry of Natural Resources, it appears that these projects are reasonably foreseeable and therefore should be included in the cumulative effects assessment.

In addition, the Panel has been informed of other forest management units and plans, including the Pic River Ojibway Forest, Kenogami Forest, Black River Forest and White Forest, where harvesting activities occur simultaneously and include activities such as clearing, hauling, road building and maintenance, aerial spraying, etc. The Panel is of the opinion that these existing projects should also be included in the cumulative effects assessment.

Information Request

Provide a revised cumulative effect assessment that includes the consideration of the additional projects noted above.

20.4 Transparency of Conclusions

References:

EIS Guidelines:	- Section 2.7.1.4, p. 47 (PDF 52)
EIS Main Report	- Section 6.6.1.5, p. 6.222 (PDF 728)

Contributing IRs:
MNR-EA-28

Rationale:
Many of the conclusions found in the cumulative effects assessment of the EIS are based on qualitative analysis. As a result, the conclusions are difficult to replicate and the conclusions lack transparency. Additionally, while section 6.6.1.7 of the EIS Main Report states that the significance of residual adverse cumulative effects were assessed according to the same criteria identified for the assessment of significance of residual effects for the Project, the EIS does not discuss how the effects rating criteria in Table 6.1-3 were applied to the cumulative effects analysis and the method in which criteria were combined and weighted is not explained.

In particular, the lack of quantitative analyses regarding the conclusions in the following sections of the cumulative effects assessment makes it difficult to substantiate the conclusions:

- Vegetation – the EIS recognizes that vegetation will be lost as a result of the Project, but no analysis or mapping is provided to show what vegetative communities will be impacted over space and time (i.e. permanent versus temporary effects) and what that may mean in terms of habitat availability and fragmentation within the RSA (p. 6.223)
- Wildlife - the EIS states that for most wildlife, similar habitat exists in the local study area and site reclamation activities will restore habitat for furbearers and migratory birds. However, no mapping or quantitative data is provided to support this conclusion (p. 6.223)
- Species at Risk – the EIS concludes that the cumulative effect on avian species at risk and their nesting habitats from clearing are expected to be minimal, based on the assumption that there is abundant similar habitat available on a regional basis and that

reclamation will restore habitat for migratory birds. However, there is no data provided to support this conclusion, such as information regarding the distribution ranges for potentially affected species at risk (p. 6.224)

Information Request:

Provide additional information / data and analysis to substantiate how the effects rating criteria in Table 6.1-3 were applied to the cumulative effects analysis and the method by which criteria were combined and weighted.

21 Follow-up and Monitoring

21.1 Traditional Land and Resource Uses – Country Foods

References:

EIS Guidelines	- Section 2.8.1, p. 72 (PDF 77)
	- Section 2.8.3, p. 74 (PDF 79)
EIS Main Report	- Section 7.1, p. 7.1 (PDF 738)
	- Section 7.3, p. 7.11 (PDF 748)

Contributing IRs:
RSMIN-12
PRFN -4

Rationale:
Aboriginal groups have expressed interest in participating in the environmental monitoring and management of the mine where there are programs or decisions which may affect their traditional livelihood interests.

Information Request:
Provide details on possible ways that Aboriginal peoples could be engaged in monitoring and management of the Project, especially for programs and/or decisions which relate directly to traditional livelihood interests. For example, discuss the potential involvement of Aboriginal groups in programs to collect and analyze fish as part of the Fish and Fish Habitat monitoring program.

21.2 Socio-Economic Follow-up Program

References:

Panel Terms of Reference	- Section 2.2(k), p. 13
	- Section 3.15, p. 16
JRPA	- Section 9.6, p. 8
EIS Guidelines	- Section 1.2.4, p. 5 (PDF 10)
	- Section 2.7.1.2, p. 44 (PDF 49)
	- Section 2.7.1.4, p. 47 (PDF 52)
	- Section 2.2.3, p. 12 (PDF 17)
	- Section 2.6, p. 28 (PDF 33)
	- Section 2.8.3, p. 74 (PDF 79)

Contributing IRs:
CRINO

Rationale:
The EIS recognizes the importance of the socio-economic effects of the Project, but does not include plans for monitoring socio-economic effects or ensuring overall socio-economic benefits to the potentially affected communities. The EIS states that no specific follow-up monitoring is proposed for economic issues or social issues and there are no commitments for effects monitoring of social or economic impacts.

Information Request:
Provide a conceptual follow-up monitoring program, including appropriate indicators, to verify the predictions in the EIS regarding the potential socio-economic effects of the Project.

22 Decommissioning and Closure Planning

22.1 Project Cash Flows

References:

EIS Guidelines	- Section 2.8.2, p. 73 (PDF 78)
SID#18	- Section 10, p. 77 (PDF 84)
SID#31	- Section 18.8, p. 170 (PDF 184)
	- Section 18.9, p. 176 (PDF 190)
	- Section 18.10, p. 180 (PDF 194)

Rationale:

A thorough risk assessment of the Project requires an assessment of the factors associated with the risk of a temporary suspension, an indefinite state of inactivity, or early closure. Financial and economic risk is a major element of an overall risk assessment.

SID #31 contains valuable information on the Project's financial viability. However, this information appears to be dated. For instance:

- The projected internal rate of return of 21% is predicated on a base case of sub-aqueous storage of process solids in Bamoos Lake. However, this is a relatively lower cost option that is no longer being considered;
- Closure costs appear to have increased from $10M (as reported in SID #31) to $26M (reported in SID #18)

In addition, while commodity prices of base and precious metals have increased significantly since 2008, the feasibility study notes that "an adverse change of less than 25% in base case prices reduces [net present value] to zero." In this context it should be noted that:

- The price of Cu used in the calculation of NSR in SID #16 is $2.50/lb;
- The price of Cu in October 2012 was $3.72/lb;
- The price of Cu fell briefly below $2.00/lb in 2008.

Information Request:

Provide a revised cash flow forecast to reflect any significant changes to the 2008 base case, given the changes to some of the Project cash flows, and the sensitivity of the Project to commodity prices.

Determine the price of Cu and PGMs, which are the highest contributors to net smelter return, which may trigger a temporary suspension / state of inactivity over a prolonged period.

22.2 PSMF Closure Design Under a Range of Climate Scenarios

References:

EIS Guidelines	- Section 2.6.1.1, p. 30 (PDF 35)
	- Section 2.3.2, p. 19 (PDF 24)
EIS Main Report	- Executive Summary, p. x (PDF 12))

Contributing IRs:
PMFN/ PPFN-29

Rationale:

In concept, the process solids deposition strategy envisages Type 1 (non-PAG) process solids being used as cover material for Type 2 (PAG) process solids to mitigate potential ARD

generation. The effectiveness of this closure method in the long term will depend on several factors including the particle size of the Type 1 process solids, with respect to retaining porewater and maintaining saturated conditions Climate will also be an important factor, especially periods of drought and aggressive evaporation, which will in turn affect the sustainability of colonizing vegetation.

Information Request:

Provide supporting information regarding the effectiveness of the proposed PSMF closure design under a range of climate scenarios.

22.3 Country Foods

References:

EIS Guidelines	- Section 2.8.2, p. 73 (PDF 78)
EIS Main Report	- Section 1.4.3.4.7, p. 1.79 (PDF 148)
	- Section 6.2.3.3, p. 6.48 (PDF 554)
	- Section 7.2, p. 7.7 (PDF 744)

Contributing IRs:

RSMIN-4

Rationale:

The conceptual closure plan indicates that the site should be returned to a natural state and drainage pattern to facilitate use of the area for traditional use purposes by Aboriginal people. However, the EIS does not clearly lay out how SCI will manage water chemistry in the flooded pits where Type 2 mine rock will be deposited post-closure, such that metals of concern do not accumulate in fish to unsafe levels for consumption.

Information Request:

Provide additional description regarding how water chemistry in the flooded pits will be managed post closure in order to ensure metals of concern do not accumulate in fish and other aquatic species to unsafe levels for consumption. Include information regarding the length of time that is likely to be required post-closure before the fishery in Pit Lake (i.e. Pit 5) will be available for public use.