

IR Number: EC-1-1
Source: Environment Canada
To: Tyhee NWT Corp.
Subject: TCA Design, Water Balance, Water Quality
References: Tyhee NWT Corp. letter to the MVEIRB, April 4, 2012; IR 1-2-4; IR 1-1-6

Preamble:

It is EC's view that the Proponent has made significant material changes to the proposed project design as per the IR Response submission by the Proponent on March 28, 2012. The major changes/modifications proposed by the Proponent are:

1. Nicolas Lake ore deposit would not be mined and hence would no longer be included as part of the project;
2. The Winter Lake TCA has been redesigned – the TCA would be divided into three cells, with the middle cell storing the cyanide leached tailings subaqueously; and
3. The proposed location of waste rock disposal has been revised, with two separate waste rock disposal areas now proposed:
 - one, to the north of the TCA, would infill Round Lake and cover a small area of the historic Discovery Mine tailings cap.
 - the other would be immediately west of the TCA, in the area between Winter Lake and Narrow Lake.

Request:

Changes identified in items 2 and 3 above are of direct relevance to EC's review. EC requests that the proponent provide a detailed response that reflects these significant changes to the project.

IR Number: EC-1-2
Source: Environment Canada
To: Tyhee NWT Corp
Subject: Updates to project design
References: Tyhee NWT Corp. letter to the MVEIRB, March 28, 2012

Preamble:

It is EC's view that the Proponent has made significant material changes to the proposed project design as per the IR Response submission by the Proponent on March 28, 2012. In the absence of detailed information on the project modifications, EC is not in a position to assess the impacts from the proposed project components and understand the links between these key pieces of the project.

With respect to waste rock management, EC has significant concerns about potential impacts on the water quality in Narrow Lake due to the close proximity of one of the proposed waste rock disposal areas to Narrow Lake. According to the map provided on March 28, this waste rock pile would come within less than 150 m of Narrow Lake.

This raises concerns about the potential for seepage and surface runoff from the waste rock pile to impact Narrow Lake. EC notes that both seepage and surface runoff are defined as effluent under the *Metal Mining Effluent Regulations*. Therefore, they must only be discharged through an identified final discharge point, and are subject to the effluent discharge limits specified in the Regulations.

To better understand potential risks to Narrow Lake associated with this waste rock pile, and to understand the measures the proponent proposes to take to ensure that they are able to operate in compliance with the MMER if a waste rock disposal area is established in this location, additional information should be provided as part of the updated waste rock management plan.

Request:

1. EC requests that the Proponent submit revisions in light of the major changes to the Project. At a minimum, the Proponent should provide:
 - a revised and updated project description;
 - updated mine waste (tailings and waste rock) and water management plans;
 - updated water balance and water quality predictions; and,
 - as further described below, an updated assessment of alternatives for mine waste disposal.
2. To address EC's concerns about potential impacts on water quality in Narrow Lake associated with the proposed waste rock disposal area adjacent to the lake, EC requests that the Proponent include as part of the updated waste rock management plan:
 - information on the hydrogeological characteristics of the bedrock and surficial materials in the proposed location of this waste rock disposal area, including information on the surficial units present, their depths, and their hydraulic conductivities;
 - information on mitigation measures that the proponent proposes to implement to control and collect seepage and surface drainage from the waste rock pile, in order to prevent those effluents from reaching Narrow Lake;
 - an assessment of how effective these mitigation measures are expected to be;
 - information on monitoring measure that the proponent would implement to assess the effectiveness of these mitigation measures; and
 - an outline of potential adaptive management measures that could be implemented in the event that these mitigation measures are not effective.

IR Number: EC-1-3
Source: Environment Canada
To: Tyhee NWT Corp.
Subject: Revised Assessment of Alternatives for Mine Waste Disposal
References: Tyhee NWT Corp. letter to the MVEIRB, March 28, 2012

Preamble:

As described above, it is EC's view that the Proponent has made significant material changes to the proposed TCA design. These changes will require a revised "Assessment of Alternatives for Mine Waste Disposal" outlining the rationale for the selected tailings management options.

EC notes that the proponent is now proposing to establish a waste rock disposal area in the Round Lake basin. If Fisheries and Oceans Canada officials conclude that Round Lake is a natural, fish frequented water body that could not be used for the disposal of deleterious mine wastes unless it is added to Schedule 2 of the MMER, then the proponent would need to:

- demonstrate to EC whether or not the waste rock would be a potential source of releases of deleterious substances; and
- if the waste is demonstrated to be a potential source of releases of deleterious substances, then the scope of the assessment of alternatives for mine waste disposal would need to be expanded to address the proposed disposal of waste rock into Round Lake.

Request:

1. EC requests a revised and updated "Assessment of Alternatives for Mine Waste Disposal" outlining the rationale for the selection of the best option for tailings disposal following Environment Canada's "Guidelines for the Assessment of Alternatives for Mine Waste Disposal". The revised document must reflect the revised scorings and weightings for indicators and sub-indicators for accounts and sub-accounts that need to be considered as part of the multiple accounts analysis.
2. Subject to determination by Fisheries and Oceans Canada of whether Round Lake is considered a natural, fish frequented water body, EC requests that the proponent provide:
 - results of geochemical characterization of waste rock to determine whether the waste rock that would be deposited into Round Lake would be a potential source of releases of deleterious substances; and
 - if the waste rock is determined to be a potential source of releases of deleterious substance, then also provide an assessment of alternatives for waste rock disposal.

IR Number: EC-1-4

Source: Environment Canada

To: Tyhee NWT Corp.

Subject: Vegetation removal and rare habitat types

References:

- DAR Section 6.5 and 6.6.2.4
- Developer response to IR #1-2-8
- Developer response to IR #1-1-5 - Figure

Terms of Reference Section:

- Section 3.3.4 – Vegetation

Preamble:

Section 3.3.4 of the Terms of Reference requires the developer to describe:

- 1) The type, extent and reach of impacts to local plant communities and rare or highly valued species in the project area, including:
 - a. the effects of vehicle, mill and power plant emissions on vegetation; and
 - b. the effects of dust emissions on vegetation;
- 2) The impacts of removing vegetation, for any project purpose, on the various species that depend on vegetation for food, shelter or other reason.

The Developer provided a revised estimate of vegetation removal and rare habitat types in response to the Review Board's IR #1-2-8. The Developer states that the habitat disturbed by the project is not unique to the regional area and not critical to the life cycle of any wildlife species identified in the YGP study area. However, the table provided with the IR response indicates that 93.2 % of the Graminoid water sedge –narrow leaved cottongrass fen habitat type will be removed by the project. Given that almost all of this habitat type will be removed, it appears that this was the only patch of this habitat type available in the RSA and that all of it could be affected once indirect effects such dust are considered. EC also notes that the project has changed since IR response 1-2-8 was issued. The Developer has provided a revised general site layout that involves relocation of the North Waste Rock Facility and the airstrip (Figure 1 – response to IR 1-1-5) and the Nicholas Lake component of the project has been removed. An updated assessment of vegetation removal and wildlife habitat loss in the RSA should be provided.

Request:

EC requests the Developer:

1. Provide a revised assessment of vegetation removal and habitat loss for wildlife based on the revised facilities layout
2. Indicate on a map the location of the Graminoid water sedge –narrow leaved cottongrass fen habitat type with respect to proposed project facilities
3. Indicate whether any project components could be relocated or adjusted to avoid destroying this rare habitat type
4. Indicate whether any wildlife surveys were conducted in this habitat type or if this habitat type is known to be of particular importance to any wildlife species

IR Number: EC-1-5

Source: Environment Canada

To: Tyhee NWT Corp.

Subject: Project design features to limit denning sites for carnivores and roosting and nesting sites for avian predators and scavengers

References:

- Developer response to IR #1-2-7
- DAR Section 6.6.1.6

Terms of Reference Section:

- Section 3.3.3 – Wildlife and Wildlife Habitat – subsection 4

Preamble:

The Developer's conceptual wildlife monitoring plan (IR #1-2-7) indicates that worksites will be monitored to insure they are kept clean and that all waste foods, human garbage and non-hazardous waste will be removed and disposed of in accordance with the waste management plan as a means to eliminate or minimize potential wildlife attraction/habitation.

Northern industrial sites can also attract predators and scavengers by providing places for them to roost, nest or den. Wildlife may also be attracted to petroleum based products such as greases, gasoline, and glycol-based antifreeze.

Request:

EC requests the Developer:

1. Provide a description of design features, adaptive management and monitoring that will be incorporated into the project to limit the provision of nesting, denning and roosting sites for predators and scavengers such as ravens, gulls, fox, and wolverine on or under buildings and infrastructure associated with the project.
2. Provide a description of where and how other wildlife attractants such as petroleum based products will be stored.

IR Number: EC-1-6

Source: Environment Canada

To: Tyhee NWT Corp.

Subject: Risks to migratory birds and other wildlife from tailings and effluent

References:

- Developer response to IR #1-1-1
- Developer response to IR #1-1-2
- Developer response to IR #1-1-4
- DAR Section 6.6.2.3 and 6.6.2.4

Terms of Reference Section:

- Section 3.3.3 – Wildlife and Wildlife Habitat – subsection 5

Preamble:

Section 3.3.3 subsection 5 of the Terms of Reference required the Developer to describe proposed strategies for restricting access to any project component that may threaten the ability of wildlife to thrive in the area, including open pits, toxic tailings facilities, roads and airstrips.

The Developer proposes to use a portion of Winter Lake as a tailings management facility. Section 6.6.2.3 of the DAR indicated that Winter Lake provide better quality waterfowl habitat than most of the lakes surveyed in the RSA. The Developer's response to IR #1-1-2 indicates that cyanide leach concentrate tailings will be deposited in the center portion of the tailings management facility. The estimated TCA concentrations presented in response to IR #1-1-1 indicate that four parameters (As, Cu, CN and Pb) will exceed CCME guidelines. The tailings may therefore be toxic to migratory birds and other wildlife. The Developer has not provided a description of strategies to restrict access of wildlife to the tailings management facility or if monitoring will be carried out to assess whether wildlife are using this area. The response to IR 1-1-4 also indicates that holding ponds may be used to store effluent that does not meet MMER criteria. Effluent within holding ponds may also present a risk to birds and other wildlife.

Request:

EC requests the Developer:

1. Describe mitigation and monitoring measures to ensure that migratory birds, in particular waterfowl and waterbirds, are prevented from coming into contact with toxic tailings or effluent
2. Describe expected concentrations of potentially harmful substances in the tailings and supernatant water within each of the holding cells in the tailings management facility and relevant CCME guidelines for protection of wildlife

IR Number: EC-1-7

Source: Environment Canada

To: Tyhee NWT Corp.

Subject: Terrestrial habitat loss and damage or destruction of nests due to flooding or drainage

References:

- Developer response to IR #1-1-5 - Figure 1
- DAR Section 6.6.2.3 and 6.6.2.4

Terms of Reference Section:

- Section 3.3.3 – Wildlife and Wildlife Habitat

Preamble:

The Developer has provided a revised general site layout that involves relocation of the North Waste Rock Facility and the airstrip (Figure 1 – response to IR 1-1-5). The boundaries of the proposed Tailings Containment Area (TCA) are much larger than the current boundaries of Winter Lake. It is unclear whether the terrestrial habitat within the TCA will become flooded or if this surface will be prepared in any way before tailings are deposited in this area. If the water level is gradually raised within the TCA and the terrestrial habitat within this area is left intact there is potential for the nests and eggs of migratory birds to be destroyed by flooding. The Developer has also indicated that Round Lake will be drained prior to waste rock deposition. Round Lake was the only lake where Horned Grebe, a species designated as Special Concern by COSEWIC, was observed (DAR section 6.6.2.3). Horned Grebes build floating nests in shallow water which may be vulnerable to damage or destruction from rapid changes in water level.

Request:

EC requests the Developer:

1. Describe how terrestrial habitat within the Tailings Containment Area will be impacted, if any site preparation will occur, and whether any areas of terrestrial habitat will become flooded and the expected timing and extent of any changes in water level
2. Describe mitigation measures to prevent the damage or destruction of nests and eggs of migratory birds from changes in water levels within the Tailings Containment Area or drainage of Round Lake.