



Natural Resources Canada Ressources naturelles Canada

Ottawa, Canada
K1A 0E4

June 11, 2012

Nicole Spencer
Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board
Box 938 #200 Scotia Centre 5102-50th Avenue
Yellowknife, NT X1A 2N7

Sent via e-mail: nspencer@reviewboard.ca

Subject: Natural Resources Canada's Information Requests for Tyhee NWT Corp. Yellowknife Gold Project 2008 (EA0809-003)

Further to the Mackenzie Valley Environmental Impact Review Board's (MVEIRB) notice of April 19, 2012, Natural Resources Canada (NRCan) is submitting the attached Information Requests (IR) for the Yellowknife Gold Project.

NRCan is using this first round of IRs to ensure that additional information relevant and related to the scope of the environmental assessment is obtained to better understand the project's impacts.

NRCan reviewed the Developer's Assessment Report (DAR) and appendices with respect to mine waste management - waste rock, tailings, mine effluents, acid mine drainage and metal leaching.

On May 31, 2012 the MVEIRB posted additional materials from the proponent on the subjects of the tailings containment area design, water balance and related water quality issues. NRCan has not had sufficient time to review these documents by the Board's deadline.

Should you have any questions regarding NRCan's information requests, please do not hesitate to contact me at 613-995-7686 or at johnking@nrcan.gc.ca.

Sincerely,

Original signed by

John King
Senior Policy Analyst
Environmental Assessment Division
Natural Resources Canada

Attach: (1)

c.c.: J. Clarke, C. Hogan, R. Johnstone, F. Schellekens (NRCan)
K. Witherly (NPMO)

Canada 

NRCan's Information Requests Regarding the Environmental Assessment of the Tyhee NWT Corp. Yellowknife Gold Project (2008) EA0809-003

IR Number: NRCan 1-1

Source: Natural Resources Canada

To: Tyhee NWT Corp.

Subject: Mine Waste Management - Metal Leaching and Acid Rock Drainage – As Release

References: DAR, ARD Report, Appendix H.

Preamble:

The report states that the measures to prevent/control ARD could effectively control As release. This is not entirely correct since As is known to become mobile under neutral and alkaline pH conditions which is acknowledged elsewhere in the ARD Report (e.g. App. H, p.6). Controlling ARD through buffering may not prevent As releases. Since As is contained in sulphide minerals, the measures should be focused on preventing the oxidation of sulphide minerals.

Request:

Please clarify that the control measures will be on preventing the oxidation of the sulfide minerals.

IR Number: NRCan 1- 2

Source: Natural Resources Canada

To: Tyhee NWT Corp.

Subject: Mine Waste Management - Metal Leaching and Acid Rock Drainage – Estimates of ARD Potential

References: DAR: ARD Report; App. A, E-9, and E-10.

Preamble:

It appears that the ARD potential of some of the rock types or groups is underestimated. Examples are listed below:

1. ARD Report page 17: ARD potential of the unmineralized amphibolite in stockpile as non-PAG is not justified since close to half of the samples have uncertain ARD designation on Table 6.

2. ARD Report, Table 19: ORM-F-TS should be PAG based on CaNP; also kinetic testing (barrel) indicate leachate pH of 4.6
3. Similarly, ORM-F-MA should be PAG.
4. ARD Report, Page 37: non-PAG nature of the greywacke sample (ORM-F-BG) is not justified because CaNP values indicate low carbonate alkalinity.

Similarly, the data tables in Appendix A have inaccurate ARD designations for numerous samples. A random check of the tables has indicated that many of the non-PAG designations could in fact be PAG or uncertain if CaNP is considered in the assessments. Examples include the samples 70825, 474783, 70776, 70812, 70832, 70860, 70809, 70786 and 70865.

Some of the ARD designations of the field barrel test data given in Appendix E-9 are questionable when CaNP values are taken into consideration in the calculation of NPR. For instance, the Burwash Greywacke samples should be designated as PAG instead of non-PAG and uncertain. Similarly, mineralized amphibolite (-2mm) and transitional sediments should be designated as PAG.

There are discrepancies in data presented. E.g. App E-9 and App E-10

There is a major contradiction between the ABA and quantitative mineralogy data presented in Appendix E-10. Sulphide and carbonate mineral quantities are reasonable when compared to the ABA data listed in Appendix E-9.

Requests:

- (1) Please review and provide justification for the ARD potential of rock types identified in the ARD Report.
- (2) Please review the ARD designations for the data tables in Appendix A and E-9.
- (3) Please review and explain discrepancies in data presented (e.g., E-9 and E-10)
- (4) Please explain contradiction between the ABA and quantitative mineralogy data presented in Appendix E-10.

IR Number: NRCan 1- 3

Source: Natural Resources Canada

To: Tyhee NWT Corp.

Subject: Mine Waste Management - Metal Leaching and Acid Rock Drainage – Sobek NP Analyses

References: DAR, ARD Report.

Preamble:

The report states that repeat Sobek NP analyses were conducted on samples reporting NP significantly higher than Carbonate NP.

Request:

Where are these repeat analyses and how were they incorporated into the final assessments?

IR Number: NRCan 1- 4

Source: Natural Resources Canada

To: Tyhee NWT Corp.

Subject: Mine Waste Management - Metal Leaching and Acid Rock Drainage - Non-PAG Amphibolite Rock for Construction

References: DAR, ARD Report.

Preamble:

The report suggests that non-PAG amphibolite rock could be used in construction (ARD report, page 47). This is an erroneous statement since there is no non-PAG amphibolite. Both mineralized and unmineralized amphibolite types have uncertain PAG designation.

Request:

Please review and correct statement on the use of non-PAG amphibolite rock in construction.

IR Number: NRCan 1-5

Source: Natural Resources Canada

To: Tyhee NWT Corp.

Subject: Mine Waste Management - Metal Leaching and Acid Rock Drainage – Coverage of PAG Waste Rock

References: DAR

Preamble:

The report states that PAG waste rock will be adequately covered by NAG waste rock.

Requests:

- (1) Is there enough NAG waste rock to achieve this?
- (2) In addition, would the cover have material and design characteristics to adequately prevent oxygen ingress into the pile?

IR Number: NRCan 1- 6**Source:** Natural Resources Canada**To:** Tyhee NWT Corp.**Subject:** Mine Waste Management - Metal Leaching and Acid Rock Drainage – PAG Waste Rock Surface and Cover**References:** DAR**Preamble:**

There is a mention about the use of synthetic membrane and growth materials to form an impermeable surface over the PAG waste rock. The composition of the synthetic membrane and growth materials is not identified. The long-term effectiveness and cost implications of the synthetic membrane and growth materials are not described.

Requests:

- (1) Please identify the composition of the synthetic membrane and growth materials.
- (2) Please describe the long-term effectiveness and cost implications of the synthetic membrane and growth materials.

IR Number: NRCan 1- 7**Source:** Natural Resources Canada**To:** Tyhee NWT Corp.**Subject:** Mine Waste Management - Metal Leaching and Acid Rock Drainage - Cyanidation**References:** DAR**Preamble:**

It appears that the processing involves direct cyanidation of the sulfide concentrate without a pretreatment step to destruct the host sulfide minerals prior to cyanidation.

Requests:

- (1) Please confirm if this is the case.
- (2) Would direct cyanidation of the sulphide concentrate cause excessive cyanide use?
- (3) Should the flotation concentrate be treated to destruct the sulfides prior to cyanidation?

IR Number: NRCan 1-8

Source: Natural Resources Canada

To: Tyhee NWT Corp.

Subject: Mine Waste Management - Metal Leaching and Acid Rock Drainage – As Concentrations

References: DAR

Preamble:

The report states that the arsenic concentration in the mill process tailings entering the TCA will be reduced to levels compliant with the MMER discharge criteria.

Request:

Please provide the details of the testwork employed to precipitate As with ferric sulphate from mill effluents following cyanidation and cyanide destruction (e.g. molar Fe/As ratios of the solution and solids, solution pH, temperature).

IR Number: NRCan 1-9

Source: Natural Resources Canada

To: Tyhee NWT Corp.

Subject: Mine Waste Management - Metal Leaching and Acid Rock Drainage – Tailings

References: DAR

Preamble:

The report states that based on static testing results, the tailings will be potentially acid generating.

Requests:

- (1) Would the sub-aerial slurry deposition (where tailings are discharged overland and run downhill to the water pond) be appropriate considering the PAG nature of the tailings?
- (2) Would the proposed soil (\pm synthetic material) cover be effective in terms of preventing acid generation following closure?
- (3) As requested in NRCan IR 1-6 for waste rock, please provide details of the cover materials planned for the tailings.

