

# YUKON'S ENVIRONMENTAL ASSESSMENT ACT (EAA) SCREENING REPORT

## 1. ENVIRONMENTAL ASSESSMENT FILE INFORMATION

Application Number	LQ00026
Proponent Name	Expatriate Resources Ltd.
Contact Information	701 – 475 Howe Street., Vancouver, B.C. V6B 2B3
Project Title	Quartz exploration
Physical Work or Activity	Quartz exploration
Multiple Activity(ies)	Type "B" Water Licence- QZ01-051
E. A. Start Date	December 24, 2004
E. A. Finish Date	January 12 , 2005
E. A. Determination	YWB – January 11, 2005—Mining Lands - January 12, 2005
Subject Descriptor	Exploration
Project Category Code	Area

## 2. RESPONSIBLE AUTHORITY IDENTIFICATION

Lead Responsible Authority	Mining Lands
Other Responsible Authorities	Yukon Water Board
Date EAA coordination regs triggered	N/A
<b>R. A. Contact Information</b>	<b>Judy St. Amand, Regional Mining Lands Officer, Box 2703, Whitehorse, Yukon Y1A 2C6</b> <b>Kelly Boutilier, Licencing Officer, 106-419 Range Road, Whitehorse, Yukon Y1A 3V1</b>
Project Trigger	EAA Law List And Inclusion List
Lead Type of Approval	Permit
Status of Approval	Approved
Integrated Screening	Minerals Management – Energy Mines and Resources / Yukon Water Board
Other Triggers	N/A
Other Types of Approval	Type "B" water licence
Project File Location	Watson Lake Mining Recorders Office

## 3. PROJECT LOCATION

Region	Watson Lake	
NTS Map #	105-G-09	Quadrant __ NE __ SE <u>X</u> SW __ NW
	105-G-08	Quadrant <u>X</u> NE __ SE __ SW __ NW
	105-H-05	Quadrant __ NE __ SE __ SW <u>X</u> NW
	105-H-12	Quadrant __ NE <u>X</u> SE __ SW __ NW
Geographic Location Name	Go Creek Area	
Latitude and Longitude or UTM Coordinates	<b>N boundary:</b> 61°37'N	<b>E boundary:</b> 129°52'W
	<b>S boundary:</b> 61°19'N	<b>W boundary:</b> 130°20'W
Watershed and Drainage Region	Liard River	
Nearest Community(s)	Name: Ross River	Distance from project: 150 km
	Name: Watson Lake	Distance from project: 224 km
First Nation Traditional Territory(s)	Kaska Dene Tribal Council	
Surrounding Land Status	Existing quartz operations and First Nation Settlement Land	

Special Designation(s)

Various R-Block selections

**Ecozone: BOREAL CORDILLERA ECOZONE****Ecoregion: 181. LIARD BASIN**

The Liard Basin ecoregion spans the British Columbia–Yukon boundary to incorporate the Liard Plain, a broad, rolling, low-lying area mantled with glacial drift and outwash deposits in which the Liard River is entrenched. The mean annual temperature for the area is approximately  $-3^{\circ}\text{C}$  with a summer mean of  $11^{\circ}\text{C}$  and a winter mean of  $-18.5^{\circ}\text{C}$ . Annual precipitation is 350–450 mm. The ecoregion is characterized by extensive stands of boreal forest composed of lodgepole pine, white and black spruce, and aspen. Dry sites support lodgepole pine; moist sites have black spruce and larch with Labrador tea, horsetail, and moss. The ecoregion is underlain by Carboniferous Palaeozoic limestone and Cretaceous shale and lies 620–930 m asl. Luvisolic soils are associated with the productive upland boreal forests of the region. Cumulic Regosols support productive stands of white spruce along the floodplain of the Liard River and its larger tributaries. Eutric and Dystric Brunisols exist on coarse-textured fluvioglacial deposits. Permafrost is scattered, confined mainly to lower north-facing slopes and sphagnum bogs. Big game hunting, outfitting, and trapping are other uses of land in this region. Characteristic wildlife includes moose, black bear, wood bison, wolf, beaver, muskrat, snowshoe hare, waterfowl, crane, ruffed grouse, and other birds. Local sawlog forestry and mining are main industrial land uses. There is some recreational use of the major lakes and rivers in the ecoregion. Watson Lake is the main community. The population of the ecoregion is approximately 1400.

**4. PROJECT SCOPING****4.1 Project Scope**

The proponent has been permitted to perform exploration work on this property since 1999. The exploration activities listed in the attached exploration activity report have been assessed in 1999 and 2000, and will not be considered in this assessment, except in gauging the impact of the further imprint and in scoping for cumulative effects.

This project is an undertaking for a ten year exploration program, consisting of all previously assessed activities as well as access via an existing winter road, construction of underground structures, settling ponds, a waste rock storage facility, and a water treatment plant. The company will be required to submit a temporary and a final closure plan at an early stage of the program which will include plans for ongoing reclamation and final restoration.

**-Wolverine Property:** located on the watershed divide between Go Creek and Little Wolverine Creek, approximately 20 km due west of the Robert Campbell Highway and approximately 200 km north of the community of Watson Lake, on Topographical Map Sheet 105G/8, 105G/9; 105H/5, 105H/12--North  $61^{\circ} 37' 20''$  / East  $129^{\circ} 52'$  / South  $61^{\circ} 19' 45''$  / West  $130^{\circ} 20'$

**-Access route:** Existing winter road access. The airstrip will also be used for bulk storage of materials in an area approx. 100 metres by 100 metres.

**-Main Portal with access to advanced underground exploration mine development:**

-Laydown area of 100 metres by 100 metres to store supplies for the day-to-day mine operations.

**-Construction of a temporary waste rock storage facility:** the components that will comprise the facility include:

- a waste storage pad (150 metre by 50 metre area)
- a seepage collection system which requires a culvert installation
- compacted till cover to achieve permeability criteria
- HDPE Liners if pad compaction and till cover is insufficient to meet required permeability criteria
- installation of drainage collection ditches around perimeter of the stockpile

-**Construction of a sump:** de-water underground development to a constructed sump

-**Construction of a settling pond:** water collected in the sump will be discharged to a settling pond with dimensions of 15 metres long by 7 metres wide and 3 metres deep consisting of 5 equal compartments. The settling pond will also include a decant structure

-**Water Treatment Plant:** to further treat underground mine discharge water and stockpiled waste rock seepage to meet discharge criteria as per the *Metal Mining Effluent Regulations*.

-**Sludge disposal and Wastewater discharges**

-**Aggregate Screening and Wash Plant**

-**Construction of a permanent waste rock storage facility-**facility to be designed if the mine is not developed past the exploration phase. Details of the facility cannot be provided at the time of this assessment and for the purposes of this assessment, this facility should not be included within the scope.

-**Landfill site** – no details were provided at this time, and this facility will not be scoped into the assessment.

## 4.2 Scope of Assessment

This assessment will scope in the area from the Campbell Highway to the North, as far South as North Lakes. The area has been heavily staked for quartz exploration. There is a nearby project that is licenced for mining, as well as several projects involving exploration for rare gem stones. There is an outfitter who shares an interest in the land disposition, as well as a wilderness lodge from which tours are launched.

The main concerns are water quality, ARD potential, and impact to wildlife. Proper monitoring and reporting will insure that best mitigation and restoration techniques are applied.

## 5. CONSULTATION/REFERRAL LIST

Department or Organization	GY-MLU distribution Contact person	GY-Mining Land Use Response Received	Water Board Response Received
GY, Minerals Management, Director	Bob Holmes	22 December, 2005	No Response
GY, Client Services & Inspections Mining	Kevin Ristau	8 December 2004	No Response

GY, Client Services & Inspections Watson Lake SNRO	Richard Potvin	No response	No Response
GY, Client Services & Inspections Ross River NRO	Doug Bishop	8 December 2004	Not consulted
GY, Engineer of Mines	Bill Dunn	No response	Not consulted
GY, Regional MLO	Judy St. Amand	No response	No Response
GY, Environmental Affairs	Chuck Hubert	29 December, 2004	December 29, 2004 & January 7, 2005
GY, Exploration & Geological	Karen Pelletier	8 December 2004	No Response
GY, Forest Planning & Devel.	Myles Thorp	No response	Not consulted
GY, Lands Clients Services	Byrony McIntyre	No response	No Response
GY, Land Use	Marg White	No response	No Response
GY, Transportation & Engineering, Dept of Highways	Florian Vedress	No response	Not consulted
Yukon Water Board	Kelly Boutilier	No response	Not applicable
Federal - DFO	Sandra Orban	8 December 2004	No Response
Federal - DOE	Doug Davidge	8 December 2004	December 29, 2004
Assoc. of Yukon Communities		No response	Not consulted
CPAWS	Mac Hislop	No response	No Response
Yukon Chamber of Mines		No response	Not consulted
Salmon Sub Committee	Gord Zealand	No response	No Response
Yukon Conservation Society	Liasa Taylor	No response	No Response
Yukon Fish & Wildlife	Gerry Couture	No response	No Response
Liard First Nation	Laurie Allen	No response	January 5, 2005
Ross River Dena Council	Testloa Smith	10 December 2004 22 December 2004	December 20, 2004
Town of Watson Lake	Hilda Price	No response	Not consulted
Council for Yukon First Nations		No response	Not consulted
Gartner, Lee & Associates	Kirk Cameron	Asked to be withdrawn	Not consulted
GY, Environmental Health Services		Not consulted	No Response
GY, Economic Development		Not consulted	No Response
GY, Tourism and Culture		Not consulted	No Response
GY, DAP Branch		Not consulted	No Response

Transport Canada-Navigable Waters Protection Division		Not consulted	No Response
Trapline Concession Holder-Mary Charlie		Not consulted	No Response
Trapline Concession Holder-Ross River Dena Group		Not consulted	No Response
Registered Outfitter-Teslin Outfitters		Not consulted	No Response
Registered Outfitter-Devilhole Outfitters		Not consulted	No Response

## **GOVERNMENT OF YUKON-MINING LANDS:**

### **6. SUMMARY OF RESPONSES FROM REFERRAL LIST**

#### **GOVERNMENT OF YUKON - Client Services & Inspections – Mining**

Inconsistent numbers were provided as to how much waste rock will be brought to surface for storage in the temporary waste rock storage area.

Timing of when waste rock material stored in the temporary waste rock storage facility will be returned underground has not been addressed.

*The proponent will be asked to submit a Materials Handling Plan including details on how much material is to be brought out of the underground for temporary or permanent storage on surface and its timing, for review and approval.*

Several different numbers are provided for dimensions of temporary waste rock storage area. Material may not fit into the proposed storage area.

Detailed site investigations and final design for temporary waste rock storage area are not provided.

*The proponent will be asked to submit detailed design for the facility including details of how much material can be stored in the facility and measures proposed to ensure low permeability requirements of base and cover, for review and approval.*

Need to ensure that all new areas including staging areas meet permit requirements based on their land status.

*Permitting is in place for the two areas where the loading and unloading is to be undertaken at either end of the winter access trail. Amendments may be required for new activities should there be changes to the operating plan.*

Will the new access trail follow the previous route and will the trail require widening? Scarifying should be avoided in permafrost areas.

*The proposed trail will follow the same route as the 1996 winter access trail. Any deviations for environmental reasons will be discussed with Client Services and Inspections prior to any action being taken. A scarring prohibition for decommissioning of the winter trail in permafrost areas will be added to the Approval.*

Public Consultation documentation suggests two alternate routes for site access.

*Previous discussions concerning a Northern and Southern Route are no longer applicable. One route is proposed, as has been discussed above.*

Security should be required to ensure available funds to adequately reclaim the site.

*Security will be required.*

Consideration should be given to the construction of a vehicle maintenance pad. This will allow for containment of oil wastes resulting in easier cleanup and disposal of contaminated soils. An Employee/Contractor Environmental Awareness Program should be developed.

*These suggestions have been forwarded to the proponent.*

## **GOVERNMENT OF YUKON - Environment – Environmental Affairs**

Controlled and winter-only access to the site is required to ensure minimal possible impacts to wildlife including the Finlayson caribou and moose that reside in the area.

*The proponent is planning to restore the old winter access trail, for limited winter-only access. The one stream crossing will be removed immediately after the mobilization has been completed. These measures should limit public access into the area.*

There is a lack of detailed information concerning foundation conditions for the temporary waste rock storage area.

*The proponent will be asked to submit detailed plans for the facility for review and approval prior to work commencing work, followed by as-built drawings.*

Uncertainty over when temporary waste rock storage area would be permanently closed in the event of a deferral of a production go-ahead decision.

*The proponent will be asked to submit details of proposed triggers for initiating temporary care & maintenance or permanent reclamation of site facilities, for review and approval.*

Security is required to ensure long-term objectives are met, especially concerning elements such as the temporary waste rock storage area.

*Security will be required.*

## GOVERNMENT OF YUKON - Energy, Mines and Resources – Minerals Management

Areas of archaeological, historic and burial sites need to be identified through ground truthing investigations prior to development work including land clearing.

*Standard operating conditions apply to reporting of such discoveries.*

Areas of permafrost should be avoided during winter access trail and site development work. If disturbed, these areas will require additional care and attention during later reclamation work.

*The proponent will be asked to avoid these areas if possible during development, and to identify any disturbed areas in post-season reports, which are a requirement of the present approval.*

For the temporary waste rock storage: the lead document (Table 1) lists the loose volume of material produced as 33,000 m<sup>3</sup>. The program anticipates storing all of the material (ore and waste) in the temporary containment facility. However, a review of the BGC figures on this facility suggests the total storage capacity to only be 17,000 m<sup>3</sup>.

*The temporary waste rock storage area requires detailed on-site investigations prior to preparation of detailed design drawings. The facility should be engineered to ensure geotechnical and chemical stability, particularly in the foundation soils. The proponent will be asked to submit detailed plans for the facility for review and approval prior to work commencing, followed by as-built drawings.*

The lead document mentions the need to expand the size of the existing airstrip.

*The proponent is proposing to use the existing airstrip located south of the project area with no further disturbance being required.*

The submitted reports speak of identified ground control and water ingress problems with the proposed advanced exploration mining program. Detailed mine plans should be submitted prior to mining commencement.

*The proponent will be asked to submit mine plans sealed by an engineer registered in the Yukon for review and approval prior to work commencing.*

Deferral of a production decision at the completion of the advanced exploration program should require prescribed activities to ensure stability of the site. This should include care and maintenance as well as reclamation activities undertaken as part of temporary or final closure plans.

*The proponent will be asked for details of phases of the advanced exploration and mine production phases, along with care & maintenance and reclamation tasks to be undertaken during each phase to protect the environment. The proponent will be asked to submit temporary and permanent closure plans for regulatory review and approval.*

The proponent should provide adequate security for site reclamation.

*Security will be required.*

Results of two humidity cell tests of hanging wall rock have been provided. All rock types should be analysed for the full suite of tests including geochemical characterization and ABA testing. The proponent should submit a detailed plan describing how any PAG and NPAG rock materials will be sampled and handled so as to minimize the environmental risk of leaving these materials on surface, enabling them to weather and possibly generate seepages with elevated metal values.

*The proponent will be asked to submit a Material Handling Plan for regulatory review and approval.*

A supporting document (Geomechanics Assessment by BGC Engineering-Nov2000) makes a number of recommendations concerning ground conditions and backfilling options related to the advanced exploration program.

*Dewatering prior to test mining and a Geotechnical Monitoring Program are recommended.*

The proponent should submit an as-built report of the underground mine, upon completion of the advanced exploration program.

*The proponent will be asked to submit an as-built mine report, for regulatory review.*

The Spill Contingency and Emergency Response Plan should be updated. Saskatchewan reporting requirements do not apply in the Yukon

*The proponent has been asked to submit an updated Spill Contingency and Emergency Response Plan, for review and approval.*

## **GOVERNMENT OF YUKON - Client Services and Inspections - Lands**

Saskatchewan Small Quantity Exemptions for reporting spills do not apply in the Yukon.

*Standard operating conditions for spill reporting will apply, including the requirement for a current Spill Contingency Plan*

Temporary creek crossing should be notched in the shore banks.

*The proponent has been advised to use best management practices and has been sent a copy of "Guidelines for the Construction and Use of Snow and Ice Bridges in the Yukon Territory (Draft)" December 2001 by Fisheries and Oceans Canada.*

Can the existing Finlayson airstrip (YTG) be used instead of requiring construction of a new airstrip?

*The proponent is proposing to use the existing airstrip located south of the project area with no further disturbance being required.*

## GOVERNMENT OF YUKON - Yukon Geological Survey

There is a lack of operational plans for segregating waste rock materials and specifically PAG and NPAG material, to facilitate later relocation of PAG material back to underground mine.

*The proponent will be asked to submit a Materials Handling Plan including details of different materials to be brought out of the underground mine for temporary or permanent storage on surface and its timing, for review and approval.*

## GOVERNMENT OF YUKON - Tourism and Culture

Discovery of any archaeological or historic sites during the program should be reported.

*Standard operating conditions apply to reporting of such discoveries*

## Government of Canada – Environment Canada - EA Office

There is a lack of details concerning the design of the temporary waste and ore containment facility.

*The proponent will be asked to submit detailed plans for the facility for review and approval before any work can commence, followed by as-built drawings.*

All materials to be mined should be characterized for geochemical aspects including Acid Base Accounting (ABA) determinations.

*The proponent will be asked to submit a Materials Handling Plan including plans for material characterization, for review and approval.*

## GOVERNMENT OF CANADA - Environmental Programs Branch

We have received two sets of comments from Department of Environment. While the Water Board is addressing most of the issues, they were not copied on one of the letters, which leaves a few outstanding concerns.

There is a concern about turn around time for water sample analysis to ensure that effluent meets discharge criteria or whether treatment is required.

Parameters of Water Quality Monitoring Plan should include Total Suspended Solids. Monitoring at receiving and discharge stations should be at an increased frequency, based on operating conditions, including pond/sump holding capacities and discharge rates.

*This will be addressed in the Water Licence and in the Water Monitoring Program that will be required of the proponent.*

Need for wetland flora and fauna characterization study for use of wetlands for receipt of discharge water.

*The compliance point will be "end-of-pipe" and not the wetlands. This should ensure that the wetlands are not adversely affected.*

Require a detailed design for temporary waste rock storage area, including confirmation of foundation infiltration performance to specified criteria in company's submission.

*This is covered in the Energy, Mines, and Resources Section.*

## **GOVERNMENT of CANADA – Fisheries and Oceans Canada**

No comments concerning non-water licence related issues, which are covered in the Water Board section.

### **Ross River Dena Council (RRDC)**

RRDC notification of any environmental incidents including fuel and chemical spills is requested.

*The proponent will adhere to regulatory requirements for reporting of any spills.*

Request for results of on-going ARD/ML assessment work, wildlife monitoring, flight records. Request for summaries of water quality testing program plans and detailed sampling results. Request for summaries of other hydro-geological and surface hydrology investigation relating to site water balance, unit area runoff characterization, stage-discharge determinations and other hydrologic studies. Request the proponent to enter an agreement to address Traditional Knowledge and the heritage interest of the RRDC and Kaska First Nations.

*The proponent will receive a copy of this request.*

Request to offer RRDC opportunity to conduct review of winter road alignment prior to any vehicle use on it as well as later.

*The route is an existing un-maintained road under the Highways Act, and the company will follow the route it did in 1996.*

Concern about increased public access to the area due to the road and resulting pressure on wildlife in the area.

*The proponent is planning to restore the old winter access trail, for limited winter-only access. The one stream crossing will be removed upon completion of mobilization. These measures should limit public access into the area.*

Need to advise area trapper before commencement of activities.

*Activities are ongoing and the trapper is aware of the project.*

## Yukon Water Board:

### Concerns/Comments Received:

#### Ross River Dena Council

1. The project is located within the traditional territory of Ross River Dena Council.
2. Recognizes that the exploration season is upcoming.
3. Ross River Dena Council has a specific list of areas of interest for environmental monitoring that they would like to have included in the water use licence and wishes to be kept informed, on an ongoing basis of the environmental monitoring activities for this project.

#### Government of Yukon ("GY")-Tourism and Culture

4. Ground disturbance, particularly along the access route and impacts to buried archaeological sites.
5. Company proposes to conduct ground truthing investigations to identify archaeological and traditional use sites in the proposed work areas.

#### Environment Canada

6. A public hearing is not requested.
7. A significant portion of the information required to complete the environmental assessment of the Type A licence application for the Wolverine Project, will be obtained through the advanced exploration program.
8. Effluent Standards
9. Canadian Council of Ministers of the Environment Water Quality Objectives
10. Water Quality/Quantity Monitoring Program
11. Application does not appear to suggest a licence term.
12. Proposed maximum allowable water discharge of 203 cubic metres per day. EC is not opposed to the quantity proposed by the applicant.
13. Provision of water treatment
14. Financial Security for reclamation
15. Temporary closure
16. Closure plans
17. Sludge Disposal Plan
18. Studies that are referenced in the application.
19. Spill Contingency and Emergency Response Plan
20. Sediment monitoring
21. Water Quality Model
  - a) EC notes that while Little Wolverine Creek may have the worst quality among those sampled, there are some uncertainties surrounding its use as worst case water quality for any eventual underground discharge.
  - b) The waste rock storage facility will contain material from two major hanging wall units (rhyolite and argillite) and will also contain ore. Waste rock seepage quality did not account for the metal release from the ore.
  - c) Impacts to water quality were modelled and Section 5.1.2 of the July 2004 application outlines the parameters included in the model. Groundwater quality (G<sub>Q</sub>) is assumed to be

- equivalent to Wolverine Creek low-flow quality, which EC indicates that their concerns are indicated above.
- d) Waste rock seepage quality ( $S_Q$ ) is based upon the average quality of hanging wall rock from humidity cell testing and is included in the model described in (c) above. Since ore produced from the project will also be stored with other waste rock in the containment cell,  $S_Q$  will be underrepresented by the degree to which contaminants will report to seepage from ore. EC recognizes that there may be a delay factor, however, no information is available to quantify that possibility.
  - e) Release of nitrogen (ammonia is the main nitrogen component of concern because of its toxicity) from blasting residues from the use of ANFO.
  - f) The company proposes to flood the underground workings during permanent closure as key mitigation to prevent ARD. EC acknowledges that sub-aqueous disposal is the best practice, EC indicates that it is also recognized that metals such as selenium and sometimes arsenic can continue to be released in sub-aqueous environments. As well, the underground can only flood to the level of the portal and no higher. The workings may intercept faults draining ARD ("ARD") zones from higher up in the mountain. Contaminants from such sources would continue to report to the portal discharge after flooding.
22. The company indicates that blending Non Acid Generating ("NAG") with Potential Acid Generating ("PAG") materials will be investigated as a means of reducing ARD. EC indicates that it is not clear how blending will be consistent with the desire to ensure that all the PAG materials are disposed of sub-aqueously.
  23. There appears to be no information regarding the liner design for the 5 cell settling ponds to be used for clarifying the treated wastewater. If the ponds leak excessively it will be difficult to manage this system effectively.

#### GY - Environment

(in conjunction with Energy, Mines and Resources and the Executive Council Office, DAP Branch)

24. A public hearing is not requested. GY requests to reserve the right to participate should a hearing be convened by the Board.
25. Effluent Standards
26. Water Management Plan-the application only provides conceptual details or preliminary methods. Further details are required by the regulatory authorities in order to adequately assess these concepts.
27. The project is located at or near a height of land to both the Go Creek/Money Creek Drainage and the Wolverine Lake drainage. Unforeseen events, such as winter glaciation or the blow-out of the portal plug, may redirect portal flow away from treatment facilities and into the Wolverine Lake system adversely affecting fish and other aquatic resources within the lake system, which would be more significant than effects to a small creek and wetland system.
28.
  - a) ARD-the company proposes water treatment for both "long term" and "in perpetuity". GY's position is that treatment in perpetuity is not desirable.
  - b) The company proposes that the site could be placed in a state of "temporary closure" and that "permanent closure" would be a closure following any period of continuous temporary closure of five years. GY indicates a concern that PAG waste rock could be left exposed to the elements for up to five years and that further test mine work within a five year period could extend a temporary closure beyond five years.

29. The applicant only outlines conceptual plans for water quality management, rock monitoring and testing, waste rock storage and closure and further detailed onsite analysis is needed.
30. GY indicates that based on the information provided by the company in the application, it is difficult to determine when to expect reclamation to take place. The company should answer this question upon completion of the underground exploration program.
31. Security: GY is concerned about the uncertainties surrounding the availability of equipment after 2005/2006, the conceptual designs for onsite works, the proposal for water treatment in perpetuity, temporary closure for five or more years and available financial resources.
32. The Schedule 4 Application does not have a recommended expiry date.

#### Liard First Nation

33. Liard First Nation fully supports all comments and/or concerns expressed by the Ross River Dena Council, as they are the affected Kaska First Nation.

#### **Recommendations:**

##### Ross River Dena Council

1. No recommendations.
2. Ross River Dena Council indicated it does not wish to delay the process with a formal hearing.
3. Specific consultation and notifications include:
  - a) any fuel or chemical spill reports, or other adverse environmental impacts,
  - b) regular summaries of the ongoing ARD/Metal Leachate assessment program, including test results of all discharges,
  - c) details of environmental monitoring and environmental engineering/design parameters relating to all temporary and permanent stream crossings including as built assessments,
  - d) The RRDC (or an agent of the RRDC) will require the option to conduct field or office reviews of the winter road alignment at any time they deem necessary,
  - e) Summaries of all planning and operational decisions related to water quality testing,
  - f) Summaries of water quality/quantity monitoring conducted during underground decline dewatering including results of instream monitoring to detect elevated levels of acid or metal leachate,
  - g) Summaries of all discharges and associated water quality assessment data generated during the advanced exploration program,
  - h) Summaries of other hydro-geologic and surface hydrologic investigations relating to site water balance, unit area runoff characterizations, stage discharge relationships and other hydrologic studies.

##### Government of Yukon-Tourism and Culture

4. Scheduling the project in the winter months will provide mitigation.
5. GY should be notified if sites are discovered during the advanced exploration project.

Additional archaeological assessment is recommended in the mine site area when the Wolverine Project proceeds.

### Environment Canada

6. For informational purposes.
7. The recommendations that EC is making for this Type B licence should not be viewed as precedents which will be applied to a Type A licence for the mine operation.
8. Although Expatriate Resources Inc. has proposed that the MMER should apply, the MMER standards are the least stringent effluent standards which are allowed for operating mines in Canada. The MMER itself will not apply to this application. The effluent standards proposed are those which have been applied to Yukon mine sites for the past 20 years or more and which have been demonstrated to be readily achievable.

The effluent standards should be:

Arsenic .10 mg/l  
 Cadmium .02 mg/l  
 Copper .20 mg/l  
 Lead .20 mg/l  
 Nickel .50 mg/l  
 Zinc .50 mg/l  
 TSS 15 mg/l  
 Ammonia 2.50 mg/l  
 Selenium 0.15 mg/l

Fish Bioassay: 96 hour LC<sub>50</sub> as per Environment Canada Method EPS 1/RM/13.

9. Expatriate proposed that Station W16 be the reference site for receiving water quality monitoring to assess whether the CCME aquatic life objectives are being achieved in Go Creek. EC accepts this proposal.
10. The program proposed by Expatriate in their Nov.19 correspondence to the YWB is recommended, with the following additions:
  - a) Station W12 should be added with the same parameters as W16 but on a quarterly basis,
  - b) Station W9 should be included with the same parameters and frequency as W12,
  - c) Dissolved Organic Carbon (DOC) should be measured at Stations W9, W12 and W16,
  - d) If the portal is discharging then the winter monitoring should be at least monthly for all stations except W12 and W9. If there is no surface discharge from the property then only quarterly at the receiving water stations is required, and
  - e) Quarterly bioassay sampling of effluent if discharging.
11. It is recommended that the licence include a term for about 10 years, in the event that the mine does not proceed to production and to facilitate recommendation # 15 below.
12. Effluent discharge rates should be timed in accordance with the proposal in section 6.1, page 36 of the application which links the discharge rate to the available dilution at station W16.
13. a) an interim water treatment plan should be submitted within 30 days of the licence

being issued which details the methodology, equipment and controls which will be in place. The plan should demonstrate that effective effluent treatment will be available on site upon the commencement of the development of the portal.

- b) it is recommended that a water treatment plant similar to that described in Appendix A-1 of the Application be operational within 90 days of the commencement of portal development.
  - c) a water treatment plant operating manual and detailed plans should be submitted to the Board within 90 days of the commencement of portal development. The detail plans should document, for example:
    - i) the results of the treatability testwork,
    - ii) the design of the facility,
    - iii) details on how water will be routed to and from the treatment facility, and
    - iv) contingency provisions for winter operation.
  - d) Expatriate should be required to notify the Board within 7 days following the date of commencement of portal development.
14. The company acknowledges that there is a possibility that the underground workings will discharge in perpetuity and that the discharge may require some form of treatment. The treatment for the discharged water is very conceptually discussed and the feasibility of the proposed "bioreactors" and wetlands is unproven. If the company experiences financial collapse after the underground flow is established and the potential for an eventual portal discharge exists, any liabilities could fall to the taxpayer. Government supports the "polluter pays" principle.
- a) Due to the uncertainties noted above, it is recommended that the Board establish initial reclamation security requirements. Although later it may be found that there is no discharge from the portal or that the water that may discharge is and will remain environmentally benign should not be presumed.
  - b) In recommendation # 16, EC is recommending the licensee submit temporary and permanent closure plans. EC recommends that the licensee be required to include cost estimates for the implementation and operation of these closure facilities.
- EC also recommended that:
- i) those costs be critically reviewed by the Board and stakeholders, and
  - ii) the licence amended to incorporate a schedule for the provision of reclamation security, and
  - iii) for the Board to adopt the plans into the licence, including any accepted changes to the proposed plans. Such an amendment to a Type B licence would not require a mandatory public hearing.
15. The company proposes that temporary closure will become permanent after a continuous temporary closure period of 5 years. EC supports this proposal. EC recommends using the resumption of underground mining as the triggering activity for interruption of the temporary closure period to avoid ambiguity.

16. Temporary Closure Plan

- a) The Board should require the company to submit a plan for the temporary closure for the works that the Board authorizes in a licence. The plan should be submitted to the Board within 60 days of the effective date of the licence.
- b) The temporary closure plan should have detailed enough information to permit a reliable determination of feasibility, performance and costs. The temporary closure plan should include at a minimum:
  - i) an updated water quality model, and
  - ii) a contingency plan in the event the portal eventually has a discharge and requires year-round water treatment, and
  - iii) a cost estimate for closure based on completion by third party contractors, and
  - iv) mitigation for all components of the works to ensure long term physical and chemical stability.

#### Permanent Closure

- c) The Board should require the company to submit a plan for the permanent closure for the works that the Board authorizes in a licence. The plan should be submitted to the Board within 8 months of the commencement of the portal development under this licence. The timing for the permanent closure plan should not be tied to a future decision regarding mine development under a Type A licence.

The objective EC noted is that the company's objective should be to minimize requirements for active care and maintenance during permanent closure. EC recommends that:

- i) Expatriate should be required to notify the Board of the date of commencement of portal development no later than 7 days following such commencement.
  - ii) The permanent closure plan should contain the same information requirements as the temporary closure plan except the emphasis will be on meeting the very long term physical and chemical stability objectives for the site.
17. The Board should require the company to submit a plan for treatment of sludge stabilization and disposal. The plan should be submitted to the Board with 120 days of the commencement of water treatment at the portal.
  18. The Company should be required to submit reports to the Board, within 1 year of the commencement of portal development, which detail the results of the studies.
  19.
    - a) The Spill Contingency and Emergency Response Plan should be updated to reflect *Yukon Environment Act* requirements, that any chemical or petroleum spills into water should be reported immediately, regardless of amount.
    - b) EC noted several inaccuracies regarding government agencies and phone numbers listed in Part 10 of the Spill Contingency and Emergency Response Plan, recommending that the list be updated and reflect the correct regulatory agencies and contact information.

20. The Board should require triplicate sediment samples at Stations W9, W12 and W16 (which are directly downstream of the advanced exploration project) during summer low flow, annually. The samples should be analyzed for metals in the sediments <70 um for comparison with baseline studies.

Sediments in the smaller fraction size react more readily to disturbances and is a very useful method to track contaminants in the receiving environment. Some results are already provided from the baseline for comparison. If changes are to occur it will do so in a short period of time and an annual program is adequate in this case to record site disturbances and changes to sediment quality due to water quality of the effluent and suspended solids.

21. a) no recommendation provided  
 b) the calculations should be revisited accommodating relevant humidity cell information for the ore component of stored waste and similar concerns for the iron formation from the hanging wall.  
 c) Seepage flows and quality in the underground should be monitored and the input value for the Groundwater quality term revisited with possible adjustments to both the value of the term used here and thus the computed value for maximum allowable groundwater flow.  
 d) i) The maximum allowable groundwater flow ( $G_F$ ) should be recalculated accordingly.  
 ii) The use of the term ( $E_Q$ ) used in the model should be explained.  
 iii) Both model outputs ( $B_Q$ ) presented initially, and ( $G_F$ ) should be recalculated to address the concerns noted.  
 iv) Some adjustments to the dewatering rate will be necessary once there is a better understanding of groundwater quality.  
 e) ANFO must only be used in dry environments and the emulsion (or slurry) form of ANFO in wet environments of the underground workings.  
 f) No recommendation.
22. Sub-aqueous disposal will be more effective than blending for the long term chemical stability of the PAG wastes.
23. Information on the liner design should be clarified.

#### GY - Environment

24. For information purposes.
25. GY supports the effluent standards recommended by EC, as standards prescribed for similar Yukon mining activities. GY provided clarification that the effluent standards listed in recommendation 8 above, should be referenced by the Board.
26. The Board should require the company to submit a detailed water management plan that includes the following:

#### Water Management Plan:

- a) Provide a detailed water management plan to the Board within 60 days of the effective date of the licence. The licence should include, but not necessarily be limited to:
- i) reassessment of the site precipitation including consideration of Pelly Mountains Ecosystem precipitation and an appropriate correction for elevation of the site compared to monitored sites,  
 ii) assessment of daily precipitation for a mean annual, 1:20 and 1:100 year events,

- iii) design for all ditches with typical cross sections and sizing for 1:50 year daily flood event,
  - iv) detailed site layout showing portal, path for portal discharge, shops, buildings, fuel tanks, generators, laydown areas, temporary and permanent rock storage areas, roads, ponds treatment areas and ditches,
  - v) detailed designs for settling ponds and pre-settling ponds or holding ponds including location, sizing, side slopes, compaction specifications, material specifications including any liners to be used,
  - vi) an assessment of the retention capacity of the ponds in terms of volume and retention time for various discharge rates,
  - vii) details of any water control structures such as gates, culverts or bypasses including operating procedures if relevant,
  - viii) protocols for decisions related to water management activities including any tests to be used and turnaround time for results,
  - ix) detailed design of water treatment plant as shown in application preliminary design,
  - x) contingencies for modification of the treatment plant should water quality differ from substantially that predicted in the application, including consideration of treatment for arsenic and/or selenium, and
  - xi) a preliminary plan for handling any sludges produced by water treatment and a detailed plan for assessment of sludge stability.
27. All drainage from the project should remain within the Go Creek/Money Creek system.
28. (a) and (b) The Board should require the company to monitor water discharged from the portal, waste rock dump, ore stockpiled and wash plant. The Board should also require the company to ensure that all water discharged from the portal, waste rock dump, ore stockpile and wash plant is compliant with the water quality standards, that the Board includes in the licence, prior to release of waters to the receiving environment.
29. a) The recommendations for details that should be provided to the Board for the water management plan are in recommendation 26 (a) above.

#### Rock Storage Area:

- b) Provide a detailed design and site assessment of the rock storage area sealed by a Professional Engineer licensed to practice in Yukon, in accordance with the preliminary design submitted as part of the application, including but not limited to:
  - i) location,
  - ii) size and contained volume and tonnage,
  - iii) site assessment of the selected location including characterization of the foundation soils for permeability, presence or absence of permafrost and thaw stability of any permafrost (including the criteria used to establish thaw stability),
  - iv) sections through the rock storage area clearly indicating side slopes, top contouring, cover material and thickness of all components,
  - v) details of base of rock storage area including permeability of base, use of liner and detailed specifications of liner, liner bedding and cover for liner,
  - vi) characterization of material proposed for use as a cover for the rock pile including geochemical stability, freeze thaw and slaking stability and compacted permeability including details of compaction where appropriate,

- vii) any appropriate QA/QC measures to be followed during construction, and
  - viii) procedures for placement of rock on the pad including any plans for segregation of rock types based on ARD potential.
- c) The detailed design and results of the site investigation should be submitted to the Board by May 30, 2005.
  - d) The rock storage structure should be constructed in conformance to the design by June 30, 2005.
  - e) Following completion of the rock storage area, all waste rock must be placed on the pad.
  - f) Waste rock temporarily stored on the ground between commencement of underground operations and completion of the rock storage facility, must be moved to the facility within 15 days of completion of the facility.
  - g) The licence should authorize temporary rock storage from the underground excavation in the area shown on Figures 5 and 6 of the application, only until completion of the rock storage area.
  - h) Temporary storage may be directly on the ground, but the area must be cleaned up to the satisfaction of Water Use Inspector when the rock is rehandled to the waste rock storage area.
  - i) The Board should require as built drawings sealed by a Professional Engineer licensed to practice in Yukon of the rock storage facility. These drawings should be submitted within 90 days of completion of construction of the facility.
  - j) The Board should require an updated as built report of the rock storage facility upon completion of the underground program. The report should specify the total amount of rock placed and provide an updated survey of the configuration of the facility.

#### Rock Monitoring and Testing Plan:

- k) Provide a detailed plan describing the procedures to be used for sampling and testing the geochemical characteristics of rocks encountered during underground excavation:
  - i) plans for the sampling of each rock type encountered including size and number of samples,
  - ii) plans for assessing the physical characteristics of each rock type including petrographic and hand specimen descriptions, mineralogical analysis, freeze thaw stability grain size characterization,
  - iii) plans for geochemical characterization of each rock type including whole rock and trace element chemistry,
  - iv) protocol for shake flask testing of each rock type,
  - v) plans for assessing ARD/Metal Leaching (ML) characteristics of the rock types including static and kinetic test protocols and test duration and plans for analysis of the test data, and
  - vi) if applicable, details of any proposed decision-making protocol involving segregation of rock materials in the rock storage area.
- l) The plan should be submitted to the Board prior to commencement of underground excavation.
- m) The Board should require the company to provide notification of the commencement of underground operations immediately.
- n) The Board should require the company to provide notification of the completion of underground excavation and, separately if applicable, of cessation of dewatering operations.
- o) The Board should require the company to submit an as built report within 90 days of completion of the underground excavation. The report should include details of the final

surveyed configuration of the workings showing all rock types encountered, structural observations and volume and tonnage of each rock type encountered.

30. a) The Board should require the company to submit a Care & Maintenance/Temporary Closure Plan within 60 days from the effective date of the licence.
- b) The Board should require the company to submit a Final Closure Plan within 8 months of commencement of portal construction. The plan should be for all site facilities which provides specific measures to be undertaken for stabilization and restoration of the appurtenant undertaking including but not necessarily limited to:
- i) all surface facilities and disturbances,
  - ii) final configuration of the rock storage pad and plan for return of waste rock underground,
  - iii) placement of material returned to underground and provisions for mixing pH modifying materials if applicable,
  - iv) handling of portal discharge,
  - v) security of portal discharge,
  - vi) settling and holding pond stability including any contained sludges,
  - vii) seepage and runoff collection system,
  - viii) provisions for ongoing water collection and treatment if needed to maintain discharge standards,
  - ix) monitoring of discharge, receiving environment and all physical structures remaining on site,
  - x) maintenance of ponds, covers, ditches, culverts, etc.
  - xi) an updated water quality model and assessment of impact of closed site,
  - xii) a schedule for completion of closure measures described in the plan, including ongoing monitoring,
  - xiii) cost estimate for a third party to complete the decommissioning and restoration measures included in the plan, and
  - xiv) a proposal from the licensee for revision of financial security in light of the cost estimate and of any restoration work already completed by the licensee.
- c) Implementation of the final closure should commence within five years of the commencement of temporary closure and should substantially follow the schedule outlined in the plan.
- d) The Board should require the company to submit an updated Final Closure Plan within a maximum of 3 years. The updated plan should provide any work completed to date and provide any necessary revisions to the remaining measures required for final closure.
31. a) The Board should require security in the licence to cover the cost of total reclamation. GY recommends that the security be provided within 30 days of the effective date of the licence.
- b) Based on the information provided in the application, the cost of water treatment would be a total of \$64,000.00 for initial capital costs and water treatment for one year. GY recommends that the Board require security in the amount of \$64,000.00 for site reclamation. This is an initial security feature that would keep water quality in compliance for a one year period. Plans for closure or care and maintenance may require a reassessment of security.

32. GY recommends a licence term of 10 years.

### Liard First Nation

33. The Liard First Nation does not have any other comments or concerns at this time as long as the conditions of the permit are met and adhered to.

The following mitigation recommendations were prepared by Kelly Boutilier, Licensing Officer, YWB, on January 9, 2005:

Ross River Dena Council 1 and 2 were for information purposes only and should not be reflected in the water use licence.

Ross River Dena Council 3 (a)(b)(c)(e)(f)(g) and (h) should not be reflected in the water use licence. The Yukon Water Board Secretariat can provide Ross River Dena Council a copy of any submission provided by the licensee as required by the licence. The licence should require the licensee to provide 6 copies of any document required by the licence.

*The Board determined that the licence will include a requirement for the licensee to include a clear indication that any report required by the water use licence has been sent to Ross River Dena Council.*

Ross River Dena Council 3(d) is generally a land use issue and should be deferred to GY-Mining Land Use for consideration of appropriate mitigation since a Mining Land Use Permit will be issued for this project.

GY – Tourism and Culture 4 should be reflected in the water use licence.

GY – Tourism and Culture 5 is generally a land use issue and should be deferred to GY-Mining Land Use for consideration of appropriate mitigation since a Mining Land Use Permit will be issued for this project.

Environment Canada 6 is for information purposes only and should not be reflected in the water use licence.

Environment Canada 7 is for information purposes only should be noted by the Board for future consideration of a Type A water use application, however, this should not be reflected in the water use licence.

Environment Canada 8, 9, 10, 11, 12, 13 and 14(a), 15, 16, 17, 18, 19, 20, 21(b)(c)(d)(e), 22 and 23 should be included in the water use licence.

*In regards to Environment Canada 15, the Board determined that the water use licence should indicate that the temporary closure will become permanent after a continuous temporary closure period of 5 years. The resumption of underground exploration will be used as the triggering activity for interruption of the temporary closure period.*

In regards to the recommendation 14(a), EC did not provide a specific monetary figure. It is recommended, that the Board accept GY-Environment's recommendation in # 31 above to require initial security in the amount of \$64,000.00

In regards to recommendation 19(a), the Board's typical licence condition that requires all spills to be reported will provide additional mitigation than EC's recommendation to report any spill into water.

In regards to recommendations 21(b)(c)(d), EC did not recommend a timeframe for the submission of the revisited humidity cell calculations to determine the waste rock seepage quality.

*The Board determined that the water use licence should include a condition that requires the licensee to come forward with a proposal for criteria for initiating humidity cell test, including a time frame.*

In regards to recommendation 22, if the company determines that the mine will not be developed and permanent closure is required, it is recommended that the company submit as part of the permanent closure plan; the feasibility of returning all PAG waste rock into the underground workings for back flooding and any associated costs.

Environment Canada 14(b) should not be reflected in the water use licence. It is recommended that the water use licence should require the submission of the temporary and permanent closure plans that will include cost estimates. The process provided in this recommendation by EC for Board and stakeholder review of the cost estimates that will be included with the plans is premature and should not be incorporated into the water use licence. Administratively, all documents submitted to the Board by a licensee that are required by a water use licence are distributed to the regulatory authorities. If additional security is required, beyond the initial \$64,000.00 recommended by GY-Environment, then a request for amendment can be submitted to the Board by a regulatory agency at that time and the Board can ensure public participation in the request for amendment.

Environment Canada 20(a) should not be reflected in the water use licence. EC provided general comments and noted a concern that Little Wolverine Creek had the worst water quality, but was noted an uncertainty that it should be used as the "worst case" for the water quality model. EC did not provide a recommendation.

Environment Canada 21(f) no recommendations were provided and EC acknowledges that flooding the underground workings is the best means of preventing ARD.

GY-Environment 24 is for information purposes and should not be reflected in the water use licence.

GY-Environment 25 should be reflected in the water use licence using the effluent standards provided by EC.

GY-Environment 26, 27, 28, 29 (b) through to (o), 30, 31 and 32 should be included in the water use licence.

GY-Environment 29(a) will be mitigated by recommendation # 26(a) which recommends the submission of a detailed water management plan.

Liard First Nation 33 should not be reflected in the water use licence. This project requires a mining land use permit and a water use licence which will be enforced by regulatory agencies. This should satisfy this concern.

## 7. MANAGING THE POTENTIAL ENVIRONMENTAL EFFECTS OF THE PROJECT

### 7.1 Potential Adverse Effects on the Environment

Potential adverse effects on the environment include:

1. Winter Access Trail
2. Stream Crossing
3. Permafrost Issues
4. Disturbance to Wildlife
5. Metal Leaching and/or Potentially Acid Generating (PAG) Rock
6. Concern of Lack of Detailed Designs for Site Facilities
7. Uncertainty Concerning Timing of Temporary Closure, Care & Maintenance and Reclamation

### 7.2 Cumulative Environmental Effects

Naturally elevated metal values in area waters may become further elevated due to the proposed program.

This project involves advanced exploration work in an area where quartz exploration has occurred in the past including this same site and the Kudz Ze Kayah site in the mid 1990's. At that time, both sites were taken to an advanced exploration level.

The proposed work will not cause a significant cumulative effect and with adherence to the operating conditions of the permits, any environmental impacts should be successfully mitigated before completion of the project.

### 7.3 Required Mitigation Measures

#### 1. Winter Access Trail

The original route of the 1996 winter access trail is to be followed in constructing the winter access trail for the 2005-2006 program.

Leaning trees created by the re-establishment of the winter access trail must be felled.

Access to the trail shall be limited to Company personnel and contractors. The route will be decommissioned upon completion of mobilization of equipment and goods.

#### 2. Stream Crossings

Streams must be crossed in accordance with the provisions of the *Fisheries Act* and the *Waters Act*.

The operator shall contact Fisheries and Oceans Canada prior to any fords of streams at (867) 393-6722.

#### 3. Permafrost

In areas where continuous or discontinuous permafrost is present:

- Permafrost should be avoided, where possible;

- If permafrost is encountered, the vegetative mat should be maintained where possible and insulated with granular materials and geo-textiles;
- Areas of disturbed permafrost should be re-vegetated, particularly in areas where runoff could impact water bodies.
- Sediment fences and other erosion control methods should be used to control runoff and reduce sedimentation into nearby water courses. Sediment control techniques should be progressively applied when required.
- If the operator encounters areas of permafrost, any excavations or other developments should be relocated.
- As-built drawings showing disturbed permafrost areas should be included in post-season reports.
- Closure plans shall provide details on how the areas will be reclaimed.

#### **4. Wildlife**

Feeding of wildlife is prohibited.

Wildlife should be approached with caution and not be disturbed.

#### **5. Metal Leaching (ML) and/or Potentially Acid Generating (PAG) Rock**

The Company shall provide a materials management plan. It shall include details of any proposed decision-making protocol involving segregation or blending of rock materials in the temporary waste rock and ore storage area. The management plan shall also include a detailed plan describing the procedures to be used for sampling and testing the geochemical characteristics of rock encountered during the underground advanced exploration program. It shall include:

- Plans for the sampling of each rock type encountered including size and number of samples;
- Plans for assessing the physical characteristics of each rock type including petrographic and hand specimen descriptions, mineralogical analysis, freeze thaw stability grain size characterization;
- Plans for geochemical characterization of each rock type including whole rock and trace element chemistry;
- Protocol for shake flask testing of each rock type; and
- Plans for assessing ARD/ML characteristics of the rock types including static and kinetic test protocols and test duration and plans for analysis of the test data.

The Company shall submit the plan prior to commencement of underground exploration, for regulatory review and approval.

#### **6. Detailed Designs and as-built drawings for Site Facilities**

The Company shall provide detailed designs for all site facilities at the earliest opportunity after gaining access to the site in early 2005, for regulatory review and approval. These facilities include but are not limited to: temporary waste rock storage area, test mining portal, collection and polishing sump, settling pond, sludge disposal facility, and water treatment system.

The temporary waste rock storage area the detailed design will include:

- Location;
- Size and contained volume and tonnage;

- Site assessment of the selected location including characterization of the foundation soils for permeability, presence or absence of permafrost and thaw stability of any permafrost (including the criteria used to establish thaw stability);
- Sections through the rock storage area clearly indicating side slopes, top contouring, cover material and thickness of all components;
- Details of base of rock storage area including permeability of base, use of liner and detailed specifications of liner, liner bedding and cover material for liner;
- Characterization of material proposed for use as a cover for the rock pile including geochemical stability, freeze thaw and slaking stability and compacted permeability;
- Detailed specifications for all materials to be used in construction of the facility including details of compaction where appropriate;
- Any appropriate QA/QC measures to be followed during construction; and
- Procedures for placement of rock on the pad including any plans for segregation of rock types based on ARD potential

Construction of the facility may commence immediately following review and approval. as-built drawings shall be submitted for review and approval once the underground program has been completed. It shall include a breakdown of the quantities of different rock materials stored within it and providing an updated survey of the facility.

As-built drawings shall be provided for all site facilities. A final site drawing showing all area disturbances shall also be submitted at completion of the season.

## **7. Temporary Closure, Care & Maintenance and Reclamation**

The Company shall confirm criteria for milestones triggering different phases of the site: the phases include active exploration, temporary closure, care and maintenance, permanent closure with reclamation underway, etc.

The Company shall also submit details of the tasks to be undertaken during the different phases. This includes the preparation of detailed closure plans for the temporary and permanent closure scenarios.

Both of the above shall be submitted for review and approval. The Temporary Closure Plan shall be prepared and submitted as soon as possible. The Final Closure Plan shall be submitted in a reasonable length of time.

These plans will provide information to enable the estimation of closure and reclamation liabilities associated with the site at various stages of its life.

Implementation of these measures will reduce the risks to the environment of having the site sitting in a non-stable condition for an extended period of time following the advanced exploration program if the Company defers permanent closure while awaiting a final 'Go' or 'No-Go' decision on the overall mine project.

### **7.4 Residual Effects**

Natural revegetation may take longer to become established than anticipated.

The proposed mitigation measures identified in the amendment application and those noted above should be sufficient to mitigate the potentially negative effects of this project to wildlife and other terrestrial ecosystem values. No other residual effects are anticipated.

## 7.5 Significance of Effects

There should be no significant adverse environmental effects after mitigation has been applied. Security will be required to offset the possibility that the mitigation and restoration requirements of the permits are not met. Follow-up will be conducted by review of the submitted plans, inspection reports, pre and post season reports and site visits/inspections.

## 7.6 Likelihood of Occurrence

The likelihood of any significant occurrence is considered unlikely, with the proposed mitigation measures by the proponent, those brought forward in this assessment, and the requirement for security.

## 8. EAA DETERMINATION

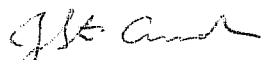
**16(1)(a)** project not likely to cause significant adverse effects, or  
 **16(1)(b)** project likely to cause significant adverse effects that cannot be justified

For 16(1)(b) determinations only:

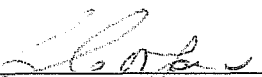
**16(1)(c)(i)** likelihood of significant effects occurring uncertain  
 **16(1)(c)(ii)** significant effects may be justified  
 **16(1)(c)(iii)** public concerns

the Minister shall refer the project to a mediator or a review panel in accordance with section 25.

## 9. AUTHORIZATION

 Jan 12/05  
Judy St.Amand, Regional Mining Lands Officer

 Jan 18/05  
Glenna Southwick, A/Chief, Mining Land Use

 Jan 17/05  
S. Cooper, Chairperson, Yukon Water Board

**MINING LAND USE  
EXPLORATION ACTIVITY REPORT**

**January 21, 2005**

**LQ00140**

Yukon Zinc Corporation  
#701 - 475 Howe Street  
Vancouver, BC  
V6C 2B3

**3  
105-G-8 NW**

<b>ELEMENT</b>	<b>CRITERIA</b>	<b>TERMS AND CONDITIONS</b>
Corridor Width	1.0m	
Total length of corridors	2000m	
Lines	10 000m	
Establishing new access roads per program	4.5 km	
Upgrading of access roads per program	1 km x 5m	
Establishment of trails per program	1 km x 5m	
Nb of clearings per claim, including existing clearings	0-20 per claim some have 10-12 clearings, 50 drill holes	
Surface area of each clearing	64m, 2 clearings each 60m x 100m, clearings for staging, rock containment & storage areas, portal laydown area etc.	
Total volume of trenching	borrow area, settling ponds etc.	
Fuel Storage in a facility	183 420 L diesel / 9 171 l hydraulic fluid-- / 19 200 L gasoline	
Use of explosives	73 716 kg ANFO	
Use of vehicles on existing roads or trails	Up to 38 000 kg	
Construction of structures	temporary winterized structures to accomodate year-round use	
Nb of persons in a camp at any one time	60	
Construction of underground structures	construction of portal and app. 960m decline	
Nb of person days per camp	22 000	