FINAL SCREENING REPORT

KETZA RIVER MINE CARE AND MAINTENANCE WATER LICENCE APPLICATION

Prepared by: Development Assessment Branch

October 18, 2005



TABLE OF CONTENTS

1.	ENVIRONMENTAL ASSESSMENT FILE INFORMATION				
2.	RESP	ONSIBLE AUTHORITY IDENTIFICATION	3		
3.	PROJECT LOCATION3				
4.	Proj	ECT DESCRIPTION	4		
4	.1. L	LOCATION	4		
4		Background			
4	.3. V	Nater Licence Application QZ04-063	5		
	4.3.1	. Water Quality Monitoring	5		
	4.3.2	10			
	4.3.3	. Maintenance of Surface Diversions	5		
	4.3.4	. Treatment Plant Installation/Operation	6		
	4.3.5	The second secon			
	4.3.6	. Release of Tailings Pond Water to Environment	6		
5.	Proj	ECT SCOPING	7		
5		Project Scope			
5		Scope of Assessment			
		. Temporal Scope of Assessment			
6.		SULTATION/REFERRAL LIST			
7.		MARY OF RESPONSES FROM REFERRAL LIST			
8.	MANA	AGING THE POTENTIAL ENVIRONMENTAL EFFECTS OF THE PROJECT	11		
8		Potential Adverse Effects on the Environment			
	8.1.1.				
	8.1.2	. Effluent Quality	12		
	8.1.3	. Treatment Plant:	13		
	8.1.4	. Hazardous Materials	13		
	8.1.5	. Spill Response	13		
	8.1.6	. Tailings Dam Breach	14		
9.		JLATIVE EFFECTS			
10.		CURITY			
11.		A DETERMINATION			
12.	Aυ	THORIZATION	14		

YUKON'S ENVIRONMENTAL ASSESSMENT ACT (EAA) SCREENING REPORT

1. Environmental Assessment File Information

Application Number	Water Licence QZ04-063	
Proponent Name	Ketza River Holdings	
Contact Information	207-304 West Cordova St., Vancouver, BC, V6B 1B8	
Project Title	Ketza River Mine – Care and Maintenance	
Physical Work or Activity	Care and Maintenance of the Mine Site	
Multiple Activity(ies)	N/A	
E. A. Start Date	November 18, 2004	
E. A. Finish Date	October 17, 2005	
E. A. Determination	16(1)(a) project not likely to cause significant adverse effects	
Subject Descriptor	Mining	
Project Category Code	Linear, Aerial and Point	

2. RESPONSIBLE AUTHORITY IDENTIFICATION

Lead Responsible Authority	Government of Yukon, Executive Council Office, DAP Branch	
Other Responsible Authorities	N/A	
Date EAA coordination regs triggered	October 22, 2004	
R. A. Contact Information	Environmental Assessment Officer, DAP Branch, Box 2703 A-310, Whitehorse , Yukon, Y1A 2C6, Phone: (867) 456-3803	
Lead Project Trigger	Type A Water Licence Application	
Lead Type of Approval	Type A Water Licence	
Status of Approval		
Integrated Screening	N/A	
Other Triggers	N/A	
Other Types of Approval	N/A	
Project File Location	DAP Branch Office	

3. PROJECT LOCATION

of 1 Roolot Location			
Region	Pelly Mountains		
NTS Map #	105 F/9	QuadrantNESESWNW	
Geographic Location Name	Town of Faro		
Latitude and Longitude or UTM	NW boundary:61 25'	NE boundary :61 26'	
Coordinates	SW boundary:132 14'	SE boundary :132 19'	
Watershed and Drainage Region	Yukon River		
Nearest Community(s)	Name: Ross River	Distance from project: 80 km	
First Nation Traditional Territory(s)	Ross River Dena Council, Teslin Tlingit Council First Nations		
Surrounding Land Status	Yukon land		
Special Designation(s)	Not Applicable		

4. PROJECT DESCRIPTION

4.1. LOCATION

The Ketza River Mine is located 80 km south of Ross River. The gold deposit is situated in alpine terrain of the Pelly Mountains at 1500 metres elevation. The mine site lies at the headwaters of Cache Creek, an eastward flowing tributary of the upper Ketza River, which is a tributary of the Pelly River. The mine workings are located on the north slope of the Cache Creek Valley. The mill site, camp buildings, and tailings pond are located on the valley floor. The valley is narrow with a width of approximately 4.2 kilometres from peak to peak. The tailings pond lies at approximately 1,300 metres, while the surrounding peaks are approximately 2,000 metres in elevation.

4.2. BACKGROUND

The Ketza River Mine was operated by Canamax Resources Inc. (Canamax) from March 1988 to November 1990 under water licence Y-IN87-06L issued May 1, 1987. In 1989, 119,789 tonnes of ore was processed which produced 39,000 ounces of gold and employed 127 people. The mining and milling operation was suspended in November 1990 due to declining oxide ore reserves and shifts in the price of gold.

Water licence Y-IN87-06L was amended on August 2, 1989. This amended licence required the submission of an Abandonment Plan on or before March 31, 1990. A conceptual Abandonment Plan formed part of a 1990 application by Canamax for amendment to the water licence to permit milling of sulphide ores. This application was subsequently withdrawn in March 1992 at the company's request. In November 1992 Canamax was sold to Wheaton River Minerals Ltd. (Wheaton), who thereby assumed responsibility for meeting all terms and conditions of the licence, including the submission of an Abandonment Plan.

Wheaton maintained the mine site in a state of temporary closure until 1992. In June 1994 Wheaton transferred the Ketza River Mine to Ketza River Holdings (KRH) a wholly owned subsidiary of YGC Resources Ltd. (YGC), in turn controlled by Wheaton. Both the water licence and surface lease for the Ketza River Mine have been assigned to KRH. For the remainder of this document, KRH will be used to designate the proponent of the proposed Care and Maintenance Plan.

Water quality at the site was monitored by KRH until 1996. During that time various attempts were made to complete an abandonment plan for the mine. To date there are still outstanding issues regarding stability of the tailings impoundment, water quality (in particular dissolved arsenic concentrations) and long term monitoring and maintenance of the site.

Water Licence Y-IN87-06L expired on December 31, 1998. In August 2004, the Yukon Government, Water Resources informed KRH that they would require a water licence for the impoundment of water on site.

4.3. WATER LICENCE APPLICATION QZ04-063

On October 22, 2004, the Water Board received a Type A water licence application for Care and Maintenance of the Ketza River Mine. As this was a Type A water licence, the Environmental Assessment Act (EAA) is triggered and the Executive Council Office, DAP Branch is a Responsible Authority (RA). No other RAs have been identified.

The proposed project, for the purposes of this screening, is the project as described in the application QZ04-063. As described by the proponent, the objective of obtaining the water license for the Ketza River Mine is to enable ongoing monitoring and maintenance at the mine and in particular the tailings pond and surface water drainage courses. The following activities are proposed within application QZ04-063:

4.3.1. Water Quality Monitoring

The previous water license under which the Ketza River mine operated required water quality monitoring to occur at the five locations listed below. This monitoring took place throughout the operation and temporary closure phases (1988 through 1996) of the mine. These monitoring locations were designated as follows:

- KR1 Cache Creek upstream of the mine site (background water quality)
- KR9 Tailings pond
- KR4 North Dam Seepage Collection Pond
- KR5 South Dam Seepage Collection Pond
- KR8 Downstream of the tailings impoundment at confluence with Oxo Creek

The surface water quality monitoring including measurement of pH, electrical conductivity, nitrate-N, nitrite-N, sulphate (SO₄), hydroxide, carbonate, bicarbonate, total alkalinity (CaCO₃), total suspended solids, total dissolved solids, ammonia-N, and cyanide-WAD as well as total metals and dissolved arsenic. In 1996 all water quality monitoring ceased. Part of the Ketza River Mine Monitoring and Maintenance proposal includes a resumption of this water quality monitoring at the 5 designated sights.

The plan also includes monitoring of seepage rates below the dams and groundwater levels along with water quality testing from functioning piezometers on sight.

4.3.2. Upgrade of Access Road

Included in the application for Care and Maintenance is the upgrading of the existing access road. This would include the repair or replacement of most bridge decks and backfilling around culverts to level crossings.

4.3.3. Maintenance of Surface Diversions

Maintenance of existing diversion structures is required in order to reduce seepage from diversion ditches. Erosion protection may be potentially upgraded as required.

4.3.4. Treatment Plant Installation/Operation

Installation of an effluent treatment plant is incorporated into this Care and Maintenance plan. As described within the application the proponent plans to use the treatment plant as an interim measured to limit the mobilization of metals through the tailings dam to the receiving environment. Seepage water from below the tailings dams will be pumped to the water treatment facility and treated before being returned to the tailings pond. The proponent plans to have the tailings water assessed before finalizing the design of the treatment facility.

4.3.5. Maintenance of Waste Rock Dump

No additional waste rock will be added to existing dumps. Some slope stabilization may be undertaken as required.

4.3.6. Release of Tailings Pond Water to Environment

It has been suggested that the water level in the tailings pond should be lowered to improve dam stability and reduce the risk of a dam breach occurring. The proponent intends to discharge water from the tailings pond provided water quality standards can be met. The proponent has suggested the following water quality standards for discharge:

Parameter Maximum Concentration for any Grab Sample

All waste discharged at KR-4, KR-5

Suspended Solids

Not greater than 25 mg/L

PH

Not less than 6.5 pH units

Colour

Not greater than 20 Pt –Co units

Turbidity Not greater than 15 Jackson Turbidity units

Oil and grease None visible

Floating solids None

Fish toxicity Non-toxic as determined by LC₅₀ Bioassay

All wastes discharged at KR-4 and KR-5

0.05 mg/L
1.0 mg/L
0.2 mg/L
0.3 mg/L
0.1 mg/L
0.3 mg/L
0.3 mg/L
1.0 mg/L

Receiving water objectives below confluence of Cache Cr. & Oxo Cr. and at KR-8

Dissolved Arsenic 0.05 mg/L

5. PROJECT SCOPING

5.1. Project Scope

The scope of the project refers to the various components of the proposed undertaking or activities that will be considered as the project for the purposes of the environmental assessment.

Subsection 11(1) of the *Environmental Assessment Act* (EAA) requires the Responsible Authorities (RAs) to determine the scope of the project in relation to which an environmental assessment is to be conducted. Subsection 11(3) of the EAA requires that where a project is in relation to a physical work

"...an environmental assessment shall be conducted in respect of every construction, operation, modification, decommissioning, abandonment or other undertaking in relation to that physical work that is proposed by the proponent or that is, in the opinion of the responsible authority...likely to be carried out in relation to that physical work."

The scope of the project includes the construction, operation, care and maintenance, closure and post closure or any undertaking in relation to the project. For the proposed projects this includes:

- Water quality monitoring
- Upgrade of existing access road
- Maintenance of existing surface diversions for subsidiary Creek and Cache Creek
- Treatment plant installation and operation
- Discharge of tailings pond water
- Hazardous material removal
- Development of a Decommissioning Plan

During consultation with stakeholders, concern was voiced regarding the scope of activities that would be allowed to occur under the proposed water licence based on the information provided by the proponent. In order to clarify the scope of the project, for the purposes of this assessment, the following activities are **not** considered as part of the scope of the project:

- Mining and/or Milling operations on site
- Mineral exploration
- Dewatering of workings

5.2. Scope of Assessment

The environmental assessment of this project shall consider the following factors:

- 1. the environmental effects of the project, including the environmental effects of malfunctions or accidents,
- 2. cumulative effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out,
- 3. measures that are technically or economically feasible and that would mitigate any significant adverse environmental effects of the project,
- 4. the significance of the environmental effects,
- 5. comments from the public that are received in accordance with EAA, and
- 6. any other matter that the RAs consider relevant

In relation to #6 above, the RA has not included any additional matters within the scope of the assessment.

5.2.1. Temporal Scope of Assessment

The temporal scope of the assessment is for the period of time between 9 May 2005 (when RA received final clarification on the application from the proponent) and ending no later then the period of the proposed licence (or sooner if a decommissioning plan is submitted to the board for review prior to the end of the proposed licence). Any extensions to the proposed water licence are beyond the scope of this assessment.

6. CONSULTATION/REFERRAL LIST

On November 30, 2004, the DAP Branch, Executive Council Office circulated the application for Care and Maintenance to all stakeholders for comment, with a response due date of December 22, 2004. Arising from this consultation, numerous deficiencies were identified within the proponent's project description resulting in the RA requesting further clarification on the project from the proponent on February 21, 2005. This request for information was given a response due date of April 18, 2005 which was later extended, at the proponent's request, to May 9, 2005. The DAP Branch received final clarification on May 10, 2005 and distributed to all stakeholders for review with a deadline for response of June 2, 2005.

Contact	Organization	Response Date
DFO - Sandra Orban	Can	January 5, 2005
DIAND - Laura Spicer	Can	None Received
DOE - Benoit Godin	Can	February 11, 2005 and June 2, 2005
Parks Canada – Mike Walton	Can	None Received
Council of Yukon First Nations	FN	None Received

Ross River Dena Council First Nation	FN	December 29, 2004
Client Service and Inspection – Ross River	GY	None Received
YG Environment – Randy Lamb V-8	GY-EAA	January 14, 2005 and June 2, 2005
Community Services - Eric Magnuson C-9	GY-EAA	None Received
Economic Development - Terry Hayden F-4	GY-EAA	None Received
Education – Gordon DeBruyn E-1	GY-EAA	None Received
EMR - Bryony McIntyre K-320	GY-EAA	None Received
EMR - David Murray K-320	GY-EAA	None Received
EMR – Doug Bishop K-RR	GY-EAA	December 23, 2004
EMR - Diane Brent K-6	GY-EAA	None Received
EMR - Judy St. Amand K-9	GY-EAA	February 23, 2005
EMR - Karen Pelletier K-10	GY-EAA	None Received
EMR - Ken Galambos K-10	GY-EAA	None Received
EMR - Marg White K-320	GY-EAA	None Received
EMR - Myles Thorp K-918	GY-EAA	None Received
EMR - Richard Corbett K-12	GY-EAA	None Received
EMR – Frank Patch	GY-EAA	February 24, 2005
Health - Violet Van Hees H-1	GY-EAA	None Received
Highways - Florian Vedress W-13	GY-EAA	December 20, 2004
Justice - Laurie Henderson J-2A	GY-EAA	None Received
Tourism - Cathryn Paish L-1	GY-EAA	No Concerns
Tourism - Ruth Gotthardt L-2A	GY-EAA	No Concerns
Yukon Water Board A-419	GY-EAA	None Received
Canadian Parks and Wilderness Society	Public	None Received
Yukon Chamber of Mines	Public	None Received
Yukon Conservation Society	Public	None Received
Yukon Fish and Wildlife Management Board	Public	None Received
Yukon River Intertribal Watershed Council	Public	None Received
Yukon Salmon Committee	Public	None Received
Terry Bidniak, Community Development, C-9	YERC - GY	None Received
Al Beaver, Protective Services, C-19	YERC - GY	No Concerns
Dan Boyd, Protective Services, C-19	YERC - GY	No Concerns
Fred Jennex, Protective Services, C-19	YERC - GY	No Concerns
Transportation Engineering - Allan Nixon W-13	YERC - GY	None Received
Environmental Programs - Ken Kiemele V-8	YERC – GY	None Received
EMR - Fred Privett K-235	YERC - GY	None Received
CSI - Mark Zrum K-325	YERC - GY	None Received
AAM - Marg Crombie K-419	YERC - GY	December 21, 2004
YWHSB - Naresh Prasad	YERC - GY	None Received

7. SUMMARY OF RESPONSES FROM REFERRAL LIST

Below is a summary of the identified concerns and suggested mitigation regarding the clarified project only. Many of the initial comments regarding deficiencies within the project description have been omitted due to clarification offered by the proponent.

Respondent	Identified Concern	Suggested Mitigation Measures
Benoit Godin – DOE, Government of Canada	 Insufficient information provided to adequately assess environmental effects. Term of licence should be longer than 3 years as a 3 year licence term only allows time for exploration and does not cover environmental liability that will be carried forward longer than 3 years. Application does not propose that money be set aside by the site owner to ensure the site is ultimately left in an environmentally secure condition. Application does not provide commitments for the development of a decommissioning plan within the term of the licence. Application does not provide assurance that the existing site owner is prepared to take responsibility for the site over the long term. Suggested water monitoring program is inadequate. Application does not discuss reclamation security. Environmental geochemistry as related to the mineral assemblages present at Ketza is absent from the application. Regarding the potential discharge of tailings pond water, the proponent has not provided appropriate supporting information. What is the expected tailings pond water quality? What will be the impact with respect to the geochemical stability of those tailings which are presently submerged? The suggested spill response plan is insufficient for an active site where fuel especially will be handled, transported and used. 	 any licence that is issued, for this current application, should prohibit the mining or milling of ore. Applicant should apply for an amendment if mining/milling is to occur. the water licence should specifically prohibit dewatering of underground workings. The proponent's suggested effluent quality standards for tailings water discharge should be lowered for suspended solids to 15 mg/L and an upper limit of 9.5 be placed on pH to reflect current standards. Receiving waters at Ketza should be subject to all the CCME guideline values for protection of aquatic habitat. A fuel spill response plan should be developed which would include: site risk analysis, roles and responsibilities of personnel required to act in case of an event, alerting and notification procedures, and a training plan.
Frank Patch – AAM, YG	Proponent has not assumed responsibility for potential liabilities associated with the site.	 Prior to approving any licence to use water or deposit waste, assurance must be provided that all environmental liabilities will be remediated and that the necessary funds are guaranteed to complete the remediation. Conceptual plans and timelines for decommissioning the current site should be provided.
Randy Lamb – Environment,	No conceptual decommissioning and abandonment plan exists.	Mining/milling operations should be excluded from the scope of the assessment.
YG	•The application does not include discharge	•The proponent should provide a conceptual

	standards for effluent. The timelines are provided for the proposed dam stability study. Water Resources has identified issues with the tailings pond and there is a need to determine the risk these issues pose. Due to the tailings pond containing water with elevated levels of arsenic, should the dam breach, significant adverse effects are likely to occur to fish and fish habitat. Previous inspections and advice suggests that some of the water management facilities at the site are not adequately sized for operational or abandonment purposes. Surface water quality sampling being proposed for the site will not be reflective of low flow periods	decommissioning and abandonment plan with technically and economically feasible measures to abandon the site in a manner that would ensure no significant adverse environmental effects. • Previous license conditions for minesite discharge may be reasonable limits for effluent quality, and there should be no exceedance of MMER. • Cache Creek should be subject to CCME limits for aquatic life wherever practical, or some limited level of exceedance. • Assessment and implementation of technical measures to prevent environmental impacts from a tailings pond failure. • The proponent should provide a detailed water balance for the proposed tailings pond • Sampling should occur from March to October to allow the assessment of the late winter period in which groundwater dominates the flow and water quality of Cache Creek may be affected by mine water discharges.
Testloa Smith – Ross River	There is a possibility that permafrost has damaged the tailings dam causing seepage.	•Tailings dam should be repaired.
Dena Council	Oil spill on site has not been properly dealt with.	Diversion water ditches be repaired.
		Oil spill should be cleaned up.
	•The waste pile may be leaching into the	Mill site be cleaned up.
	creek.	Waste pile be checked to ensure stability.

8. Managing the Potential Environmental Effects of the Project

8.1. Potential Adverse Effects on the Environment

The following environmental issues were identified:

- Mine Site Reclamation and Closure
- Effluent Quality
- Tailings Dam Breach
- Treatment Plant Malfunction
- Hazardous Materials
- Spill Response

8.1.1. Mine Site Reclamation

To date an acceptable mine site reclamation and closure plan has yet to be submitted for the Ketza River Mine. While this assessment has been triggered by the application for a new water licence, the care and maintenance activities described within the application are part of the larger mining activities associated with the Ketza River Mine. Section 11(3) of the *Environmental Assessment Act* (EAA) states that:

"Where a project is in relation to a physical work, an environmental assessment shall be conducted in respect of every construction, operation, modification, decommissioning, abandonment, or other undertaking in relation to that physical work that is proposed by the proponent"

The lack of a reclamation and closure plan for this site means there is a potential for the waste materials presently stored on site to contribute to a significant adverse environmental effect. There are approximately 340 thousand tonnes of waste tailings containing 4% arsenic; depleted open pits and underground workings; waste rock piles and numerous seepage and mine features which require attention to ensure long term stability of the site.

The proponent has stated within their application that "there are outstanding issues with the current state of structures and the interpretation of how the mobilization of metals and specifically arsenic will impact groundwater and surface water down gradient of the tailings pond. These issues will require additional information in order to be properly addressed." The RA recognizes the requirement for additional information in order to properly address closure of the site, however, in order to ensure no long term adverse environmental effects occur; the proponent should provide a commitment to the development of a reclamation and closure plan.

Required Mitigation:

The proponent shall be required to submit a reclamation and closure plan for the site within a timeframe acceptable to the Water Board. The RA recommends that the Water Board require the proponent to submit a detailed timeline laying out the steps required to complete a closure plan. Within this document the proponent should identify the types of studies and investigations being contemplated and when they are expected to have information sufficient to produce a comprehensive closure plan.

8.1.2. Effluent Quality

Part of the proponent's "Care and Maintenance Plan" includes the possibility of lowering the tailings pond level by discharging the tailings water into the surrounding watershed. These tailings are known to contain various levels of contaminants of concern, including arsenic, that have the potential to adversely affect downstream receptors. No information is given within the application regarding the impact of lowering the tailings pond level with respect to the geochemical stability of those tailings which are presently submerged.

Required Mitigation:

The proponent shall ensure any effluent from the tailings pond meets standards acceptable by the Water Board for discharge. Water quality standards for discharge should be established to ensure no adverse effects occur as a result of this activity. It is the RA's suggestion that the Water Board ensure the tailings pond is properly characterized before any discharge occurs and that effluent meets appropriate standards for discharge to receiving waters.

8.1.3. Treatment Plant:

As a temporary solution to the problem of tailings pond seepage the proponent plans to treat seepage water in order to precipitate out arsenic. The seepage water would be returned to the tailings pond after treatment. No details are given on the treatment facility proposed and the predicted effectiveness of the proposed arsenic precipitation. There are likely other contaminates of concern contained within the tailings water that could adversely effect the downstream environment. Release of this seepage water to the receive environment would likely contribute to an adverse environmental effect.

Required Mitigation:

The proponent must submit plant design plans and report on the type of treatment required and expected effectiveness of the proposed treatment option for review before treatment would commence. As per the proponent's proposed activities, all treated seepage water should be returned to the tailings pond. The proponent must make best efforts to ensure that no seepage water is released to the receiving environment unless that seepage water meets effluent standards that are acceptable to the Water Board.

8.1.4. Hazardous Materials

It is understood that certain hazardous materials may still be on site from the original mining and milling operation. These materials pose a risk to the local environment if not properly inventoried and disposed of as required.

Required Mitigation:

As required within the company's quartz mining land use approval (LQ00156), all hazardous materials must be inventoried and, if not required for care and maintenance, removed from site.

8.1.5. Spill Response

Diesel fuel for operation of the electrical generators should be the only chemical of concern left on site for the purpose of care and maintenance. Where any hazardous material is being handled, transported, or used a complete Spill Response Plan is required.

Required Mitigation:

As per the proponent's application and requirements under their quartz mining land use approval (LQ00156), a comprehensive Spill Response plan shall be developed and displayed appropriately.

8.1.6. Tailings Dam Breach

Tailings Dam stability has been identified as an area of concern. The stability of the dam is unknown at this time and a breach would release contaminants of concern to downstream receptors.

Required Mitigation:

As per the proponent's planned activities, a qualified engineering firm shall be contracted to undertake dam stabilization studies in a timeframe acceptable to the Water Board. These studies shall be submitted to the regulators for review.

9. CUMULATIVE EFFECTS

No cumulative environmental effects are predicted from this project.

10. SECURITY

Financial security must be collected such that it reflects the cost of liability of the project.

11. EAA DETERMINATION

It is the determination of the Responsible Authority that, taking into account the implementation of mitigation and monitoring measures, the project is not likely to cause significant adverse environment effects.

EAA determination:

16(1)(a):

...subject to subparagraph (c)(iii), where, taking into account the implementation of any mitigation measures that the responsible authority considers appropriate, the project is not likely to cause significant adverse environmental effects, the responsible authority may exercise any power or perform any duty or function that would permit the project to be carried out and shall ensure that any mitigation measures that the responsible authority considers appropriate are implemented.

Oct 17/05

12. AUTHORIZATION

Signature:

Jeff/O'Farrell, Director, DAP Branch