3.0 DISCHARGES AND TREATMENT - YELLOWJACKET GOLD PROJECT

The Yellowjacket JV has proposed the implementation of best management practices and plans (April 2009) to either eliminate or minimize the impacts associated with effluents from the project operations.

The three (3) effluents associated with the Yellowjacket Gold Projects that would be discharged to the receiving environment by exfiltration from the surficial gravel materials, are specifically:

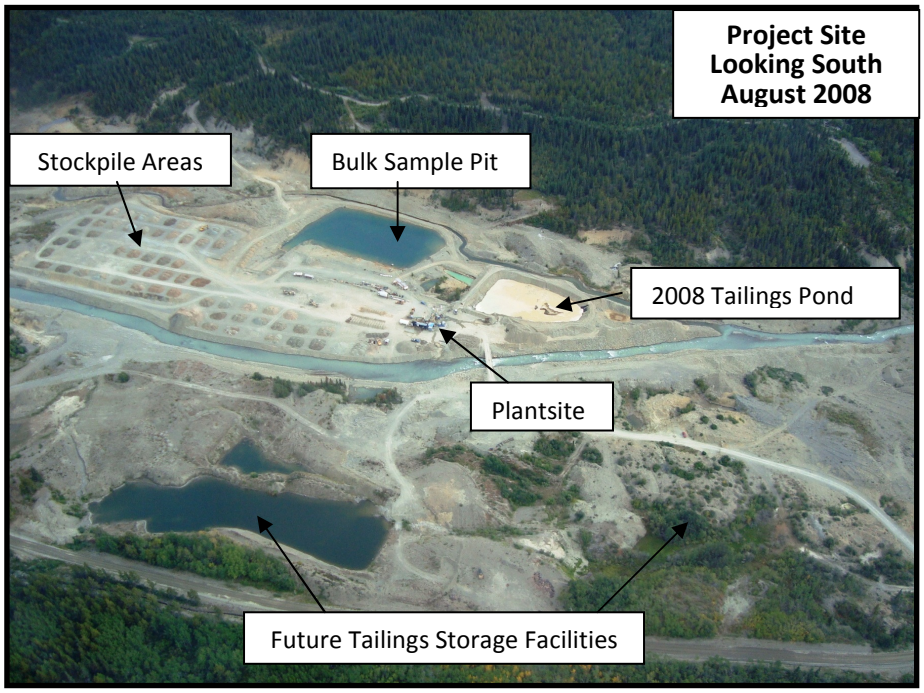
- Open pit mine water (referred to as "pit water effluent"), allowed to infiltrate into the surrounding surficial materials from a downstream settling pond;
- Tailings pond supernatant (referred to as "tailings supernatant effluent"), which will infiltrate into the surrounding surficial gravels that make-up the containment, and
- Discharge from waste and mineralized stockpiles (referred to here as "stockpile effluent"), which will infiltrate directly into the surrounding surficial materials that make-up their bases.

3.1 Open Pit Mine Water

3.1.1 Description of Facility / Location

Surface development of a small pit (40 m by 70 m) was completed in 2007 by Prize Ming Corp. as part of an approved bulk sample program issued under *Mines Act* Permit Mx-1-611. The program included:

- stripping of the placer to expose bedrock;
- sluicing of a portion of the placer material;
- mapping and channel sampling of the exposed pit floor,
- subsequent extraction of the 10,000 tonnes bedrock bulk sample, construction of a 250 tonne per day gravity grinding mill and concentrator; and
- test milling on 4,200 tonnes of the bulk sample



Currently, there is no "surface" drainage exiting the pit, except for infiltration through the contact between the coarse and fine surficial gravels. In 2007, the bulk sample pit filled with water immediately after the pumping operations ceased and is now at 861 metre elevation. BGC Engineering Inc. (BGC) calculated "groundwater" inflows from the surficial materials into the pit (pre-excavation) to be approximately 50 m^3/day. During the bulk sample mining program the inflow levels were higher than this anticipated value, but were maintained using a pumping arrangement of one (1) pump and two (2) 10 cm pipelines.

It is anticipated that the current inflows will be relatively consistent throughout mining of the four (4) Phases, with slightly greater flows in the spring during snowmelt and fall during rain events.

A majority of the water exfiltrating out of the surficial material is kept separate from the mine workings, by way of a small drainage channel at the bedrock and surficial material contact. The water from here is either pumped to the process plant or to the settling pond located between the existing 2007 pit and the 2008 tailings pond. As well, there is a seepage control ditch that collects surface and seepage water from the former Pine Creek Channel (Figure 2.1). This ditch is located along the southern perimeter of the mining operation, and it is estimated that it will capture 80 to 100% of the water, thus keeping it from contacting disturbed areas. The actual flow rate (L/s) of this water will need to be determined during the 2009 water balance work that has been contracted to Lorax.

The existing settling pond located by the pit is measured at 1,500 m^2 with dimensions of 50 m by 30 m. During the 2007 mining operations this pond effectively handled 2 - 10 centimetre pipelines that were pumped into the pond. The flows were not calculated, but again these can be determined in 2009 when the pit is pumped down in preparation for surficial and bedrock mining. It is the Yellowjacket JV opinion that this particular pond has sufficient settling capacity and space for any sediment accumulation, given that the Total Suspended Solids (TSS) is very low.

The pit water effluent that goes into this settling pond from all four (4) phase of mining is expected to meet baseline water quality values, which were determined during the 2006/2007 surface water quality baseline environmental program.

3.1.2 Pit Water Effluent Quantity

The pit water effluent quantity will need to be re-assessed in 2009, as the current BGC evaluation indicates a projected inflow of 50m^3/day through surficial gravels having a hydraulic conductivity (K) of 10^{-6} m/s. For more information see *Hydrogeological Investigation and Analyses Report – Proposed Excavation, BGC Engineering Inc., 2006* – Appendix A. As the estimated monthly flow is expected to remain relatively constant for the period of operation the rate would only be 1,500 m3 per month (0.58 L/s). The Yellowjacket JV is planning in 2009 to develop a hydrogeology program that will meet acceptable objectives with respect to the project environment. The proposed receiving environment hydrogeological program is discussed in more detail in Section 4.1.2 of this application.

3.1.3 Pit Water Effluent Quality

The pit water effluent going into the settling pond will be monitored as part of the proposed water quality monitoring program (Lorax, March 2009). Sampling of new site PC-BS Pit (UTM 6607234 581865) was initiated in March2009, and the first sample results are generally the same as the background results as seen in PC 6 (UTM 6602141 575127), which is located 200 metre downstream of PC-BS Pit and PC-1 (UTM 6608000 583537) the project control site.

It is expected that the results of the pit water effluent quality will continue to be similar to those values obtained during on-going monitoring and/or the 2006/2007 baseline environmental water quality program. For a complete review of the baseline data, see the report entitled *Yellowjacket Gold Project – Baseline Water Quality Conditions (2006—2007) Monitoring), Lorax, March 2009* – Appendix D.

For the Yellowjacket Gold Project to determine the potential quality and quantity of this pit water effluent, site water and load balance will be required for the project. Yellowjacket JV has contracted Lorax in March 2009, to develop a program to determine the water balance for the site, with the goal of quantifying a range of expected groundwater discharges to Pine Creek from the surficial (placer) gravels that underlie and encompass project tailings (sediment) storage facilities (TSF), the stockpile pads and the mining pits.

Based on the on-going water quality sampling program, the company will be able to define source concentrations for discharge. It is anticipated then that the water quality in Pine Creek can be predicted using the source concentrations combined with the Pine Creek flow rates and groundwater discharges obtained from the water balance.

The proposed baseline receiving environment water quality monitoring program is discussed in more detail in Section 4 of this application.

3.2 Tailings Supernatant Effluent

3.2.1 Description of Facility / Location

The proposed mine plan will produce tailings from the gravity concentration plant for a six (6) to eight (8) month period starting in late spring to early fall from 2009 to 2015. The tailings will be pumped to two (2) separate TSFs located on the north side of the Pine Creek (Figure2.2) starting in 2009 and 2010.

The selected sites for the TSF are located within close proximity to the process plant; they require no dam embankments as the entire facilities are located within surficial material, they have a total footprint of only 2.82 ha, and they will have a potential capacity of 307,000 tonnes of tailings.

There is currently no surface drainage features near the proposed TSFs, therefore there will be no requirement to construct diversions ditches around the TSF as part of a water management plan.

3.2.2 Tailings Supernatant Effluent Quantity

At this time without a confirmed water balance, the exact quantity of tailings supernatant quantity that potentially will be available for infiltration of the surficial materials cannot be exactly calculated. However, the following estimations have been completed to at least determine a projected level of discharge. Using a settled 65% by solids by weight for the tailings (solids and water), the estimated maximum daily infiltration into the surficial materials surrounding the TSF would be 389 m^3 per day of effluent using the following assumptions with the process plant operating at 100% efficiency:

- Process Plant operating period 100 to 140 days per year
- Water usage per day by process plant operation = 480 m^3
- Tailings solids produced per day = 170 m^3

This gives a total tailings slurry produced per day = 650 m^3 for the operation.

It is assumed that the tailings slurry will settle to 65% solids by weight, thus the 650 m^3 would be divided as follows:

- Tailings solids produced per day = 170 m^3
- Water trapped in voids of tailings per day = 91 m^3
- Expected maximum exfiltration volume of effluent per day = 389 m^3

It is actually anticipated that the effluent would only infiltrate the surficial gravels at this rate during the initial startup period of the TSF. The clay/carbonate materials of the tailings slurry will tend to seal off the TSF, and the rate could be substantially less than 389 m^3 per day for an extended period. In 2009, as part of the water balance and upon review of the operating conditions, this volume of effluent from the TSF will be calculated accordingly for the project.

3.2.3 Tailings Supernatant Effluent Quality

The tailings supernatant water chemistry was not been characterized as part of the metallurgical assessment completed by G&T Metallurgical Services Ltd., in 2006. Therefore, Yellowjacket JV as part of the 2009 monitoring program will acquire and analyze the tailings supernatant effluent from the process plant.

3.3 Stockpile effluent

3.3.1 Description of Facility / Location

The mineralized rock and waste stockpile(s) will be constructed on top of existing surficial material pads near the process plant. The effluent drainage from the stockpiles is projected to infiltrate into the surficial materials beneath the stockpile(s).

The mineralized stockpiles are projected to be constructed and removed within each operating year, and the waste stockpile is projected to be constructed and removed to the mined out pits and covered with water within a two (2) year period.

3.3.2 Stockpile effluent quantity

The input into the stockpiles will be precipitation and the output will be evaporation, as there are no drainages or watercourses near the stockpile area. The average annual precipitation recorded for the period 1971-2000 is 347.2 millimetres in Atlin. During the calculation of the water balance in 2009, the input and output values for the site will be determined, but it is anticipated that there will be very little input into the stockpiles to create any substantive volume of effluent.

3.3.3 Stockpile effluent quality

The quality of the effluent based on the ML/ARD characterization work completed in 2006, is not expected to have a detrimental effect on the environment. To substantiate this some field-based kinetic tests will be conducted in 2009, in order to collect and monitor the quality of contact water draining (stockpile effluent) from the stockpiles at the Yellowjacket Gold Project. For additional information refer to Section 6.3 of this application.