

**APPENDIX IX**

Excerpts from

**Mt. Nansen Gold Mine, 1998 Effluent Quality Analysis Report**

BYG Natural Resources Inc.  
July 1998

By early 1998, it became apparent that there was significant potential for water level to exceed the spillway invert elevation if measures were not implemented to treat and discharge water to the environment.

Officials from the Water Resources Division of the Department of Indian and Northern Affairs initially supported the operation of the water treatment plant using Victoria Creek water to dilute the final effluent in order to meet bio-toxicity tests. After an initial period of operation, the Water Board ruled that the existing water licence did not allow for company to use dilution water and an amendment was required.

B.Y.G. Natural Resources Inc. applied to the Water Board for an emergency amendment to waive the requirements of the bio-toxicity test. The Water Board issued amendment number three which allowed for the discharge of treated water with the requirement that the discharge meet all effluent criteria with the exception of the bio-toxicity test for a limited period of time.

During the operation of the water treatment plant during the term of the amendment, fish toxicity tests were undertaken on a regular basis. It was found that the toxicity of the effluent was decreasing and at the present time the effluent meets all licence parameters including fish bio-toxicity.

The decrease in toxicity has been linked to a reduction in cyanide concentrations in the tailings impoundment and the on-set of warmer weather. The decrease in cyanide concentrations is a result of improvements to the cyanide destruction process for the mill circuit completed during the work to upgrade the water treatment plant. Warmer weather has had the impact of improving water treatment plant efficiency and reducing levels of ammonia and cyanates in the tailings pond as well as promoting natural destruction of cyanide.

The analytical work also identified that there were relatively high levels of cyanates and ammonia in the tailings pond water. This would add to the cyanates and ammonia created during the cyanide destruction process and increase the toxicity of the effluent. It was identified that a significant reduction of cyanates and ammonia could be expected with warmer temperatures and open water conditions.