CANADA
DEPARTMENT
OF
RESOURCES AND DEVELOPMENT

DEVELOPMENT SERVICES
BRANCH

LANDS DIVISION

Ottawa, Ont.,
14 September, 1950.

MEMORANDUM FOR MR. SINCLAIR

ARSENIC PROBLEM, YELLOWKNIFE

Although I was unaware of the most recent developments on this problem, during the month of August, while I was in Yellowknife for a few days on my recent inspection trip, I took the opportunity to discuss the situation with both Mr. A. K. Muir of Giant Yellowknife Gold Mines and Mr. Clare White of the Con Mine.

Briefly, the situation at present is this: that Giant Yellowknife Gold Mines plan on underground storage and are presently driving a cross-cut on their second level at No. 2 shaft into the greenstone belt. They are firmly convinced that it will be possible to stope out an underground chamber using the broken rock for necessary fill in other parts of the mine. From the main cross-cut, a short drift will be run to the proposed underground chamber then after the chamber has been excavated and sealed off by grouting, if necessary, with connecting raises to surface for ventilation and dumping of arsenic into the chamber, arsine gas should not accumulate. When the excavation of the chamber is finished the drift will be completely sealed off with a concrete bulkhead. As additional chambers become necessary, it will be possible to excavate these from the main cross-cut in the greenstone area. I pointed out to Mr. Muir that before they dumped any arsenic into an underground chamber he would have to give us the assurance that there could be no possibility of arsenic in solution escaping from the chamber and, further, safeguarding against any health hazard would be his responsibility and not that of the Department of Resources and Development should he go to this method of storage. Mr. Gibson's letter to Mr. Muir

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of July 21st., stated in paragraph 3: "That while the use of concrete vats is recognized as the safest method of storage, the Departments concerned do not desire to put the mining companies to unnecessary expense."

Regarding the situation at Con Mine, I went over the proposed rock basin with the Mine Manager, Mr. Clare White, and after learning that the method had been approved during the month of August, 1950, from correspondence in possession of Mr. White, I inspected the basin.

This basin is approximately 400' in length and will be approximately 300' in width. During the time of my inspection, most of the earth had been bulldozed out of the basin and workmen were clearing off the rock outcrop for the purpose of constructing a dam on the north side facing the tailings disposal pond of the former Crank Lake area. The rock appeared quite solid except in two or three places where small shear zones caused the rock to be blocky. Four Jackhamers were working in clearing off the blocky rock to more solid rock and holes were being drilled for dowels to be used in anchoring the concrete dam.

There will be another short dam of approximately 15' on the west side of the rock basin where a porphyritic dyke crosses the greenstone belt. I examined the contact along this dyke, and it appeared to be quite solid with no fissures on either side. The remainder of the perimeter is entirely surrounded by rock. Primary elevation will be 1590' with an additional 6' added to an elevation of 1596' providing the impinger method is satisfactory. This will give a capacity of at least five years. A much larger basin exists immediately to the southwest of the present basin and if necessary, the overburden could be excavated providing a storage for several years.

The slurry from the roaster will be conducted through lead pipes to the rock basin, and in turn, lead pipes will be used to carry the filtered solution back to the impingers for re-use. As the slurry comes out of the roaster in a rather warm state and by using wire-resistor heaters around the pipes, they do not envisage any difficulty during the winter with freezing pipes.

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I took one roll of coloured film showing the rock basin from all angles, as well as the present method of disposal in excavated pits in the tailings pile. These will not be printed for approximately three weeks, but will be submitted immediately upon receipt to graphically depict the rock basin arsenic disposal area.

K.J. Christie

K.J. Christie,
Chief Mining Inspector.