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North Western Administration
Land Branch

DEVELOPMENT SERVICES
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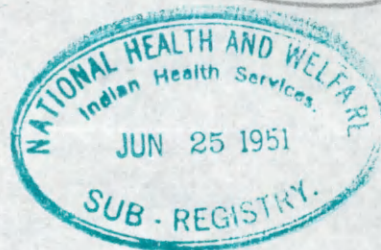
CANADA
DEPARTMENT

OF
RESOURCES AND DEVELOPMENT

OFFICE OF THE DIRECTOR

Ottawa, 22 June, 1951.

Dr. P.E. Moore,
Director,
Indian Health Services,
Dept. of National Health and Welfare,
Ottawa, Ont.



Dear Dr. Moore:

I am sending you herewith a copy of recent correspondence between Mr. J.G. McNiven, Manager, Negus Mines, Yellowknife, Mr. S. Homulos, Mining Inspector, Yellowknife, and myself, about proposals for the installation of arsenic removal equipment at the Negus Mine and for the disposal of the resultant arsenic sludge.

My letter of June 19, 1950, herewith, to Mr. Homulos, emphasizes the responsibilities of the mining companies to adopt a collecting and disposal system for arsenic trioxide which will meet with the views of interested Government agencies and ensure adequate protection from the public health standpoint. I would appreciate any comments you would care to make on Mr. McNiven's proposals.

Yours very truly,

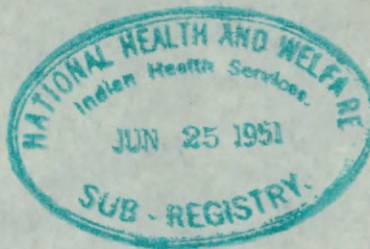
G.E.B. Sinclair

G.E.B. Sinclair,
Director.

Encl.

DEPARTMENT
OF
RESOURCES AND DEVELOPMENT

Northern Administration
& Lands Branch



Yellowknife, N.W.T.
June 13th, 1951

G. E. B. Sinclair, Esq.,
Director,
Northern Administration & Lands Branch,
Department of Resources & Development,
OTTAWA, Ontario.

ROASTER FUMES - NEGUS MINES

Mr. McNiven was in to discuss roasting, arsenic collection and arsenic disposal. I asked him to prepare a report on this topic, a copy of which I herewith enclose. It is their intention to install a Dorrco vertical type roaster and also an impinger arsenic collection plant similar to the one used at the Con Mine, if Con are willing to sell their rights; failing this they will use a Peabody scrubber. In either case the product collected will be a sludge consisting of about 20% solids.

As Mr. McNiven points out in his letter, it was impossible to find a suitable basin on surface near enough to the mill to be practical and safe for storage of this arsenic sludge. He did mention one basin that could be slashed and dammed off but the drainage is towards the lake and if by chance there was any seepage it might conceivably contaminate the Negus, and even the town water supply, this would be too risky. It was then decided to look for storage underground and 217 stope in No. 2 vein, which is quite a tight structure, was selected. It is possible, as Mr. McNiven suggests in his letter, to stop any seepage from this settling basin. If there is seepage it would be in the old abandoned part of the mine and would not contaminate the present mine workings. The greatest problem is ventilation. As there will be SO₂ gas coming off there is a possibility of pockets of this gas accumulating in dead end drifts, etc. which might become a serious problem. This problem could also, however be overcome by proper ventilation and periodic checks throughout the mine to guard against this condition cropping up.

There should not be any danger of polluting Mine domestic water supplies as the seepage, if any, would be below the lake level.

Please give this your immediate consideration as Negus are anxious to go ahead with preparations of this underground settling basin to have it ready when Roasting operations begin. In the meantime I will keep in touch with new developments by Negus with regard to this problem. Any other information required will be supplied if available.

(Sgd) S. Homulos

S. Homulos,
Mining Inspector.

Attach.

NEGUS MINES LIMITED
(No Personal Liability)Yellowknife, N.W.T.
June 7, 1951Mr. S. Homulos
Mining Inspector,
Yellowknife, N. W. T.

Dear Steve:

The following is additional to our discussion of yesterday afternoon (June 6) re disposal of As_2O_3 .

As you know we are installing a 30 ton Dorrco roaster. For collecting As_2O_3 we plan on a hydraulic scrubber of either the Con Impinger type or the Peabody scrubber, which has been recommended to us by the Dorr Company. Our concentrate runs about 12.5% As. Therefore, in a month we will produce, assuming a complete As elimination in the roast, say 115 tons of As or 152 tons of As_2O_3 . Assuming that the stuff will settle to a weight of 1 ton occupying 30 cubic feet, then 4560 cubic feet per month will be required for storage alone, or in a year 54720 cubic feet will be required. Assititional settling space would be required to ensure a clear return solution. This could amount to say one third of the above volume or say 18000 cubic feet. These total to 72720 cubic feet of storage space, or in round figures 73000 cubic feet. This is equivalent to a storage tank 80 feet in diameter by 20 feet high, which in either concrete or wood, would be a very expensive structure.

We have gone over the surface of the Negus property, within a 1000 foot radius of the proposed roaster site, looking for a suitable site. The 1000 foot radius has been chosen mainly because of pumping difficulties during the cold months of the year, as we do not consider it practicable to pump the relatively small quantities for a longer distance in cold weather. There is one possible site which could be made available by rock excavation and a concrete dam. The rock appears to be shattered considerably, and surface drainage is to the lake - which we consider to be a very bad feature.

We have therefore investigated the possibility of an underground settling chamber on one of the upper levels of the old mine. There is a stoped out area available in No. 2 vein. This was a "tight" vein with no shearing on either the foot or hanging wall which could be considered as impervious to water as the surrounding greenstones. This stope, number 217, extends from the first to second levels. The vein which has been cut on the third level station, and on the fourth level west crosscut, has not been mined below the second level. Also, the vein "pinches out" before reaching the Rycon-Negus boundary.

We propose to slash this stope out to an average width of 8 feet, and to a length of 100 feet, with a level interval of 100 feet, providing a total of 80,000 cubic feet of storage. We also propose to connect this storage area to the surface by

Mr. S. Homulos -----

a raise, which would be used for necessary pipe lines from and to the roaster building and for forced ventilation of the storage area. It is recognized that the latter is important, mainly on account of the accompanying sulphur dioxide gas. It is therefore proposed to ventilate the area with a 3 horsepower suction fan, discharging through vent pipe to the surface, via the raise.

We propose to form an overflow compartment with adjustable weir overflow at the south end of the stope, with the overflow solution being pumped back to the scrubber for reuse. As a safety precaution, to prevent any possibility of an overflow into the mine workings, the normal high water level will be maintained a minimum distance of 10 feet below the first level. This would provide at this height, three days of roaster and scrubber operation without return pumping. It is not anticipated however that this condition could occur since duplicate pumps would be arranged, providing one spare pump at all times.

A concrete bulkhead would of course be necessary on the second level. The design and installation of this is a relatively simple affair. As a check for leaks, after necessary excavation and construction of the bulkhead, we propose to fill the storage basin with water, colored with an aniline dye and watch for seepages of this colored water. Any seepage points so noted would be grouted off.

This in general covers the major points of the proposed installation. Any further details required will be supplied on request.

Maps showing the location of the proposed storage area are enclosed.

Yours sincerely,

J. McNiven (Sgd.)
Mines Manager.

P.S. After reading this letter, we feel that some further explanation may be necessary regarding scrubber operation. The scrubber solution plus precipitated As_2O_3 will be pumped to the settling basin. Clean solution will be pumped back for reuse in the scrubber. There appears to be sufficient evaporation in the scrubber to prevent any build up of solution in this circuit.