

THE CONSOLIDATED MINING AND SMELTING COMPANY OF CANADA, LIMITED

Trail, B.C.
August 4, 1950

Mr. R. A. Gibson,
Deputy Commissioner
Administration of the Northwest Territories,
Ottawa, Canada,

Dear Sir:

Re: Con Arsenic Disposal

In the absence of Mr. W. G. Jewitt, I am writing you regarding the disposal of arsenic at the Con Mine. Our plans for the disposal and storage of arsenic slurry from the impinger collecting unit at the Con roaster have been completed. Your approval is necessary before construction can be started and as the time before freeze-up is short we would be grateful if you could look over our plans and give your approval at the earliest possible date.

The following prints are enclosed:

- (1) General plan of area, Scale 1" equals $\frac{1}{2}$ mile.
- (2) General plan of area, Scale 1" equals 500 feet.
- (3) Detail plan showing geology and contours - Scale 1" equals 20 feet.
- (4) Detail plan showing disposal area, dams, Scale 1" equals 20 feet.
- (5) Detail plan of construction of dams.

In general, the proposal is to take the slurry from the impinger and impound it in a rock basin with a concrete dam on one side. The excess water in the slurry will be allowed to drain off and will be returned to the impinger for re-use. The rock exposures around the basin have been examined by our geologists who give assurance that the floor of the basin consists of the massive type of greenstone with only the usual jointing and scattered small shears that are common to this type in the area. It is definite that no late faults cut the basin. In the mine there is very little seepage into openings that pass through massive greenstones of the type in the rock basin, and even a liberal estimate of the maximum leakage from the basin shows that this would be negligible.

In detail, the arsenic will be recovered from the roaster fume in an impinger. A full scale experimental model of this impinger has been in successful operation for eight months and has demonstrated that 95% of the arsenic can be removed from the roaster fume. The arsenic is recovered in the form of a slurry which can be thickened to 20% solids and this thickened slurry will be pumped to a disposal area, approximately 1000 feet from the roaster as shown on the accompanying plans.

The disposal area is a natural basin, rock rimmed on three sides. On the fourth side it is proposed to build a dam, sealed tight to the underlying rock which has been completely exposed along the dam locations and found to be solid. The dam will be of gravity rock fill type with a seal face on the pond side consisting of a reinforced concrete wall of cantilever design dowelled to solid bedrock. The walls will be constructed in two stages. The immediate height will be to the 1590 foot contour which will give an estimated storage for three years. The final height will be to the 1596 foot contour which will give an additional 5 years storage.

The slurry will be pumped at 20% solids. From tests completed it is known that this will eventually settle out to 50% solids. The excess solution will be allowed to accumulate in the rock basin and will be pumped back to the impinger unit for re-use thus making a closed circuit. Tests show that over twice as much water is used in the impinger as will be freed from the slurry in the disposal area so that under continuous running conditions there is no problem in using up the solution. In the winter, there may be 5 months in which the slurry will freeze and no solution can be returned to the impinger. However, with impinger requirements twice the amount of solution freed from the slurry, no difficulty will be encountered in using during the summer months the solution accumulated in the winter. The supposition is that natural evaporation will look after precipitation that falls within the storage basin but in case it does not or if for any reason there should be an excess of solution in the storage area, provision will be made for treatment of the excess solution with quicklime so as to render it insoluble.

The whole storage area will be fenced with a substantial picket fence, six feet high, with a strand of barbed wire on top.

It should be noted that the present impinger unit, while operating satisfactorily, is of temporary construction. It is planned to install a new and improved model next year using the information gained in the past eight months. It is also planned to install this year a thickener to cut down the amount of solution going to the disposal area and a sump will be constructed at the lower end of the impinger building to catch any arsenic or arsenic solutions that might get onto the floor. The accumulation in the sump will be pumped to the thickener for disposal, the solids going to the disposal area and the solution returned to the impinger.

In connection with the storage of arsenic slurry in an open basin, the possibility of arsenic dust being blown by the wind was considered. From experience gained with slurry in the present pits, the matter of dusting appears to be unimportant as the arsenic slurry when damp is like putty and when dry forms a fairly hard and somewhat tough crust that wind will not move. Further, when the basin has eventually been filled and it becomes necessary to move to a new site, the whole surface will be covered with a layer of tailings.

We feel that storage indicated above will satisfy all requirements for sure and safe containment of the material, and trust we can have your approval so that we can proceed with the installation at an early date.

Yours very truly,

"H.C. Giegerich"

H. C. Giegerich

General Superintendent of Exploration
and Outside Mines.

Endorsed:

"E. M. Stiles"

Chief Engineer

HCG:ml

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