



**Royal Oak  
Mines**

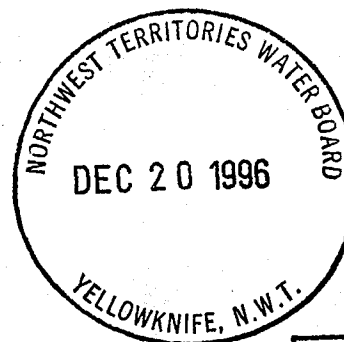
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December 20, 1996

Mr. Gordon Wray,  
Chairman, N.W.T. Water Board  
P.O. Box 1500  
Yellowknife, N.W.T.  
X1A 2R3  
Canada



**Confidential - Contains Information Not To Be Released to the Public**

Dear Mr. Wray:

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**RE: Royal Oak Mines Inc. - Giant Mine  
Underground Storage of Arsenic Bearing Materials  
1996 Progress Report Status**

I am writing in response to your letter of December 13, 1996 inquiring as to the status of the study of underground storage of arsenic bearing materials at the Giant Mine. At the current time no work utilizing outside contractors or consultants is being carried out on this study. Our own staff are continuing to collect data and to monitor the integrity of the underground arsenic storage vaults.

The company agreed to carry out this study in 1993 in accordance with the original terms of reference with the very best of intent. Due to a number of factors (which has included finding the expertise in resolving a similar challenge) the pace of work on the study was disappointingly slow in 1994 and 1995. In 1996 the company assigned a full time mining engineer to this work and sought professional assistance from what we believed were the best qualified people in their respective fields. These consultants were asked to provide the company engineering proposals and cost estimates to meet the agreed upon terms of reference for the study and to demonstrate the technical viability of a process to safely close out these storage vaults after mine closure. The company could not locate consultants who had experience in an analogous situation consequently the consultants approached expected their staff to become educated in this specific area of study at the expense of the company. Proposals were obtained in the following areas:



- a) Golder Associates provided a proposal and cost estimate to carry out a review of rock mechanics to ensure stability of the vault walls, rib pillars and crown pillars. Completion of this analysis on all of the storage vaults would have required the excavation of new access tunnels to some of the older storage vaults to which access had been cut off by storage vaults constructed later.
- b) EBA Engineering provided a proposal and cost estimate to carry out a review of permafrost conditions and history in the area of the storage vaults. EBA indicated that this would require an extensive review of permafrost history of the surrounding area as well as the collection of specific data within the existing storage vaults. This data collection would require the drilling of holes into the arsenic trioxide storage vaults with the installation of instrumentation to measure temperature and water levels.
- c) Ferguson Simek Clark provided a proposal and cost estimate to carry out a civil engineering review of the arsenic storage vault bulkheads. This would have also required the excavation or mining of new access tunnels to reach some of the older bulkheads no longer accessible. Ferguson Simek Clark personnel have been retained and have carried out such analysis on the bulkheads that can be reached.
- d) Seacor Environmental Engineering provided a proposal and cost estimate to look at other precedents within the Canadian mining industry for frozen storage of a hazardous commodity.
- e) Mr. Fred Matich of MAJM Corporation agreed to act as a senior advisor to the company on this study and to coordinate the activities of the various consultants towards achieving the study objectives.

The cost estimated by this group of consultants of carrying out only the 1996 portion of these proposals totaled between \$800,000 and \$1,000,000. The 1996 work would not have completed the study as envisioned in the original terms of reference. We estimate that an additional \$1.0 to \$1.5 million dollars of expenditure would have been required in 1997 to generate the final report. This report would have provided a lot of information on existing conditions but unfortunately the consultants were reluctant to recommend solutions preferring to recommend that the issue continue to be studied.

While not meaning to cast any negative aspersions towards these consultants, it was evident that the input from these consultants proved to be of little value in having this study reach some concrete resolution on the primary issue of how best to close out these storage vaults in perpetuity. Much of the money would have been spent educating the consultant's personnel and documenting the current condition of the arsenic trioxide storage vaults and surrounding rock. A great deal of the money would have been spent providing new access to the older storage stopes where access had been blocked by the location of the storage vaults constructed in the 1970's and



80's. While these new drifts would have provided access for the purposes of this study they would also have provided new pathways for groundwater to enter these stopes. It became clear that very little of the effort was going to be directed at coming up with any innovative solutions or in demonstrating the technical viability of a closure option.

The prospect of spending between \$2.5 and \$3.0 million dollars to study this problem and end up with a report, albeit authored by a group of expert consultants, that led to no concrete resolution was not acceptable. This amount of money would go a long way towards and would be more appropriately spent in the design and construction of a facility, possibly in Yellowknife, to manufacture a CCA (copper chromated arsenate) based wood preservative product manufactured from Giant's stockpile of arsenic trioxide. Consequently the company asked these consulting firms not to proceed with their proposed work programs in mid 1996 but to wait until the company had explored other options.

Our discussions with the consultants brought realization that this study was not likely to provide much in the way of innovative technology to enable the company to deal with the long term closure issue surrounding this arsenic trioxide. The company also recognizes that it would be in the best interest of the people of Yellowknife and surrounding community if a way could be found to market the current production of arsenic trioxide and to retrieve the arsenic trioxide stored underground. During the past year the company has had several inquiries from significant overseas players in the CCA market asking for information on the quality of the current output of arsenic trioxide from the Giant mine. This led us to believe that there may be a window of opportunity to look at marketing this arsenic trioxide or in producing an end product. Historically the quality of the arsenic trioxide produced at the Giant mine has made this material undesirable to the American CCA wood preservative producers.

In the fall of 1996 Royal Oak staff conducted a study of the World, North American and Canadian markets for arsenic trioxide and of the end use products manufactured from arsenic trioxide. Corporate staff have been investigating the supply and consumption predictions for these products, the economics of the market and the types of product that are being consumed. Staff have also been investigating the state of technology to both upgrade arsenic trioxide to marketable specifications and to produce end use products consumed in the market. Our work indicates that at the current time there may well be a window of opportunity open to market this arsenic trioxide.

The world market for end use products made with arsenic trioxide is a market that is extremely sensitive to both price, supply and demand. The North American market is dominated by three American companies. Consequently we have kept our work in this area very quiet. Even the knowledge that the Giant mine may be selling its arsenic trioxide to a third party could drive short term prices for arsenic trioxide lower than the cost of shipping the material out of the N.W.T. making any such venture cost prohibitive. Similarly if word were to get out that we were investigating entering the market as a competitor then these companies could take action to freeze us out of the market or reduce the economic viability of success by reducing the price. By



the same token the companies producing CCA based wood preservatives are looking for assurance of a stable long term supply of arsenic trioxide at a consistent quality. If the parties we are negotiating with believe that the Board is on the verge of shutting down the mine as a result of this issue then our negotiating position would be severely undermined as these companies are looking for a long term stable supplier. The Giant mine can offer this stability given its inventory of arsenic trioxide in underground storage and the fact that it is located in North America.

The best solution to this environmental issue for everyone involved is for the company to find a way to market the current production of arsenic trioxide and to then extend this market by retrieving and blending material currently stored underground. We would ask the Board to work with us on achieving this objective. We would be pleased to come and discuss our plans with the Board or its Technical Advisory Committee but only if we can be assured of the confidentiality of our discussions. We would require those participating in any such exchange meeting to execute a formal confidentiality agreement prior to disclosing the results of our investigation or our plans for moving forward. Our negotiating position is lost if this information is leaked to the press.

We acknowledge the pressure brought to the Board by public and special interest groups to have the studies related to closure of the Giant Mine completed during this license term. We acknowledge that much of the public believe that the Giant Mine will not continue to operate beyond this water license term. The facts are that we have published ore reserves for approximately six additional years of ongoing production. With careful cost effective management we intend to extract these reserves. The Giant Mine will be applying for a five year renewal of its water use license in the spring of 1997. Consequently there is time to plan for final closure of the Giant Mine.

We would ask the Board's support and patience in our endeavors to resolve this environmental problem by finding a way to market both the current production of arsenic trioxide and that stored underground. We would be pleased to meet with the Board or your staff to discuss our plans provided we can be assured of the confidentiality of our discussion for the reasons given earlier.

I wish you and your staff the very best of the holiday season.

Sincerely,

ROYAL OAK MINES

Margaret K. Witte  
President and C.E.O.

cc Mr. John Stard