



GIANT MINE REMEDIATION PROJECT

PUBLIC REGISTRY

Giant Mine Reports

S: \5620 Giant Mine\5620-8 Public registry>List\Giantlist2006.wpd
Updated: April 4, 2008

A - General Information

A1 Royal Oak Mines Inc. Background Information & Royal Oak Mine Financial and Tax analysis.

The company owns and operates five producing gold mines in Canada, two of which are in the NWT, the Colomac and Giant mines.

Prepared by INAC. November 1997.

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-A-GenInfo\A1](#)

Original Report - File A1

A2 Awareness Testing: Findings from Focus Groups on Giant Mine and the Arsenic Trioxide

DIAND's Communication Directorate sponsored five focus groups to evaluate the public's understanding of, and concerns about the status of the Giant Mine and the arsenic trioxide dust.

Prepared by Lutra Associates Ltd. January 2002

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-A-GenInfo\A2](#)

Original Report - File A2

A3 Developing Options and Recommendations to Establish and Operate a Giant Mine Community Liaison Committee

DIAND is setting up a Giant Mine Community Liaison Committee to act as a communications bridge with the public in Yellowknife on abandonment and reclamation.

Prepared by GeoNorth Limited March 2002

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-A-GenInfo\A3](#)

Original Report - File A3

B - General Information: Arsenic

B1 Task Force on Arsenic - Final Report.

A study of possible arsenic poisoning in Yellowknife, NWT. The report includes all short-term and long-term ill effects of arsenic exposure.

Prepared by Canadian Public Health Association.

Yellowknife, NT 1977

[Elec. File - Not available](#)

[Original Report - File B1](#)

B2 Arsenic and its Compounds.

CEPA, Priority Substances List Assessment Report.

An assessment on arsenic and its inorganic compounds.

Prepared by Environment Canada & Health and Welfare Canada. 1993

[Elec. File - Not available](#)

[Original Report - File B2](#)

B3 Guide Document on Arsenic: Sources, Fate, Analysis, Toxicology and Regulations.

A reference document on arsenic, covering its properties, methods for detection and speciation, toxicology and fate, as well as the current regulations controlling its release to the environment. It covers a comprehensive overview of the issues and current practices associated with arsenic.

Prepared for Royal Oak Mines Inc. by Seacor Environmental Engineering. May 1996.

[Elec. File - Not available](#)

[Original Report - File B3](#)

C - Water License Information

C1 Application for Renewal of Water License N1L2-0043

Supporting Documentation. Royal Oak Mines Inc. August 1997

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-C-WaterLic\C1](#)

[Original Report - File C1](#)

C2 DIAND Intervention for Giant Mine Water Licence Renewal Public Hearing.

A brief description of the environmental screening process conducted under the Canadian Environmental Assessment Act (CEAA), followed by a summary of the District Water Resource Officer's Compliance Report, and analysis of the major conditions of the current Water Licence.

Prepared by INAC January 1998

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-C-WaterLic\C2](#)

[Original Report - File C2](#)

C3 Public Hearing for Royal Oak Mines Giant Mine.

Northwest Territories Water Board called the Public Hearing on January 28, 1998.
Questions and Comments included in this report.

Prepared by Northwest Territories Water Board. January 1998.

Elec. File - Not available

Original Report - File C3

C4 1998 Annual Report - Giant Mine.

This annual report is a requirement by the Northwest Territories Water Board.

Prepared by Royal Oak Mines Inc. March 1998.

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-C-WaterLic\C4

Original Report - File C4

C5 Water Licence #N1L2-0043

Royal Oak Mines. Renewal - June 30, 1998. Expiry Date - June 29, 2003.

NWT Water Board grants Royal Oak Mines Inc. to use water in accordance with the conditions specified in the Licence.

Prepared by Northwest Territories Water Board.

Elec. File - Not available

Original Report - File C5

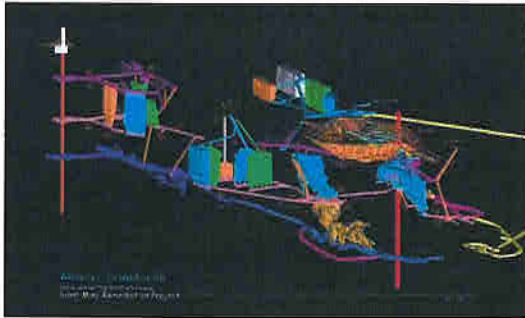
C6 Arsenic Trioxide Management Project Description - Progress Report.

A detailed progress report for the Arsenic Trioxide Management Project. The report describes activities undertaken, and progress made during the reporting period.

Prepared by Giant Mine Remediation Project Year 2000 to 2004

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-C-WaterLic\C6

Original Report - File C6



D - Arsenic Trioxide Management

D1 Giant Mine Arsenic Trioxide Management: Technical Meeting Proceedings.

The meeting was organized to provide a venue for government agencies to develop a sound technical understanding of viable options for the ultimate management of arsenic trioxide. (includes separate appendices)

Prepared for INAC by Dillon Consulting Limited. October 1997.

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D1](#)

Original report - File D1

D2 Giant Mine - Arsenic Trioxide Management.

A special study of the arsenic trioxide storage chambers. A review of arsenic chemistry, mine conditions, and emerging technologies. Current practice - storage and handling of arsenic trioxide. Options for permanent abandonment.

Prepared by Royal Oak Mines Inc. March 1998.

[Elec. File - Not available](#)

Original Report - File D2

D3 Arsenic Trioxide - Surface Storage and Handling: Project Scoping Document.

A brief synopsis of Royal Oak's existing and proposed arsenic trioxide management plan. This document describes a management strategy for the long term handling of arsenic trioxide bearing dusts.

by Royal Oak Mines Inc. & EBA Engineering Consultants Ltd. December 1997.

[Elec. File - Not available](#)

Original report - File D3

D4 Arsenic Trioxide Management Feasibility Study.

An assessment on the current market, technology and feasibility for managing arsenic trioxide currently stored underground at the Giant mine site.

Prepared for INAC by Dillon Consulting Limited. October 1997

(includes separate appendices)

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D4](#)

Original report - File D4

D5 Arsenic Market Study.

This report is divided into two sections. First, the world arsenic markets, focusing on supply and demand for arsenic trioxide. The second, the North American wood preservative market.

Prepared by Lendrum, S. Royal Oak Mines Inc.
November 1996. Revised: February 1999.

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D5](#)

[Original report - File D5](#)

D6 Arsenic Technology Review - Update.

A summary of three most viable management scenarios: Off Site Disposal, Treatment and On Site Disposal, and Refining & Marketing.

Prepared for INAC by Dillon Consulting Ltd. January 1999.

[Elec. File - Not available](#)

[Original Report - File D6](#)

D7 Review of Mining Methods Applicable to the Recovery of Baghouse Dust stored Underground at Giant Mine, Yellowknife, NWT.

This report summarizes mining and transportation methods that could be utilized to remove the arsenic trioxide dust. It reviews previous mining proposals and provides additional alternatives.

Prepared for INAC by Robertson, B. March 1999.

[Elec. File - Not available](#)

[Original report - File D7](#)

D8 Evaluation to Two Pyrometallurgical/Selective Sublimation Technologies for Processing Crude Baghouse Dust at Giant to Recover Gold Values and Produce a Marketable Arsenic trioxide Product: WAROX Process and El Indio Process

A comparison study of the two processes for recovering gold and marketable arsenic from crude baghouse dust produced and stored at the Giant Mine.

Prepared by Serena Domvile of Domvile & Associates. June 1999.

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D8](#)

[Original Report - File D8](#)

D9 Participants Workshop Material - Giant Mine Arsenic Trioxide Technical Workshop - June 22, 23, 24, 1999.

Workshop agenda, purpose & objectives, work items and selected references.

Produced for INAC by Dillon Consulting Ltd.

[Elec. File - Not available](#)

[Original Report - File D9](#)

D10 Cement and Bitumen Stabilization

A study using cement and bitumen for stabilizing the toxic mine dust.
Prepared by Dr. Bill Cullen, University of British Columbia. March 2000.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D10
Original Report - File D10

D11 Giant Mine Arsenic Trioxide Technical Workshop

A workshop to develop a common understanding of the arsenic trioxide problem at Giant Mine, provided a forum to develop and apply arsenic management options.
Prepared by Dillon Consulting Ltd. November 1999.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D11
Original Report - File D11

D12 Recovery and Purification of Arsenic Oxide - Giant Mine

A production investigation of pure arsenic using water leaching-crystallization and re-sublimation techniques.
Prepared by CANMET January 2000.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D12
Original report - File D12

D13 SRK Senior Technical Session, Giant Mine Arsenic Trioxide

To review the current state of knowledge about the arsenic trioxide dust; identify methods and develop alternatives for managing the arsenic trioxide dust; identify the information needed; and design & prioritize investigations to acquire the needed information.
Prepared by SRK Consulting August 2000.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D13
Original Report - File D13

D14 A review of Arsenic Disposal Practices for the Giant Mine

A literature review was carried out to obtain information about arsenic disposal practices in the mining-metals industry and about the long-term stability of the disposed arsenic compounds. The information was analysed and evaluated to determine the applicability of current arsenic disposal technologies to the Giant Mine.
Includes four separate appendices - Technical papers on arsenic disposal.
Prepared by CANMET September 2000.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D14
Original report - File D14

D15 Study of Management Alternatives Giant Mine Arsenic Trioxide Dust

This report and the supporting documents present results from the first phase. The specific objectives of the work reported herein were to: quantify the environmental and human risks; select representative management alternatives; prepare pre-feasibility level designs and cost estimates for the management alternatives; and analyze environmental, human health, technical and financial risks associated with each of the management alternatives.
Prepared by SRK Consulting May 2001
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D15
Original report - File D15

D16 Giant Mine Bulkheads Assessment

An assessment of the physical strength of the bulkheads which seal of the arsenic storage chambers. Using the original bulkhead design information, as well as information collected during underground inspections, SRK evaluated the stability of the structures under variable conditions.

Prepared by SRK Consulting September 2001

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D16

Original report - File D16

D17 S/S Studies of Arsenic-Containing Mine Dust and Mine Fungus Identification

Research and testing on the effects of temperature on bitumen and arsenic trioxide dust mixing and monitoring the long term leaching characteristics of bitumen/dust monoliths.

Prepared by Dr. Bill Cullen, University of British Columbia. September 13, 2001

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D17

Original report - File D17

D18 Underground Arsenic Trioxide Management Alternatives Workshop

June 11-12, 2001

A workshop on the future management of the underground arsenic trioxide dust at the Giant Mine, specifically addressed the nature of the Arsenic trioxide problem and identified actions that should be considered to properly manage the material. The workshop presented the results of work undertaken over the past two years.

Prepared by Terriplan Consultants Ltd. and IER - Planning, Research and Management Services. August 2001

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D18

Original report - File D18

D19 Final Report - Arsenic Trioxide Management Alternatives

A decision was made to appoint an independent Technical Advisor to assist DIAND in developing a plan for the long-term management of arsenic trioxide dust stored underground at the mine. One of the key objectives set for the Technical Advisor was to analyze a wide range of options and recommend a limited number of alternatives for further consideration by DIAND and other stakeholders. This report and the supporting documents present the results of studies to achieve that objective.

Prepared by SRK Consulting December 2002

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D19

Original report - File D19

D20 Review by the Independent Peer Review Panel of SRK's Final Report - Arsenic Trioxide Management Alternatives

This report covers findings of the Independent Peer Review Panel formed by the Department of Indian and Northern Development to carry out a technical review of the work of a team headed by SRK Consulting Inc.

Prepared by Independent Peer Review Panel March 2003

Elec. File - Not Available

Original report - File D20

D21 Giant Mine Underground Arsenic Trioxide Management Alternatives

A workshop on the alternatives for future management of the underground arsenic trioxide

dust at the Giant Mine was held on January 14 and 15, 2003. The current workshop presented the results and conclusions of the Technical Advisor and the Independent Peer Review Panel and provided a forum for further dialogue with participants.

Prepared by Terriplan Consultants March 2003

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D21

Original report - File D21

**D22 Giant Mine Underground Arsenic Trioxide Management Alternatives
Moving Forward: Selecting a Management Alternatives**

A workshop on selecting a management alternatives for the underground arsenic trioxide dust at the Giant Mine was held on May 26 and 27, 2003. This was the fifth stakeholder workshop focusing on the management alternatives. This session brought people together to provide additional public and stakeholder perspectives on moving forward with the selection of a management approach to be submitted by DIAND to the regulatory boards.

Prepared by Terriplan Consultants July 2003

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D22

Original report - File D22

D23 Use of a Fluorescent Dye to Assess Potential Groundwater Connections between the B1 Pit and B208 Stope, Giant Mine

Based on observations of lows in the underground mine, which indicate a rapid response to

freshet conditions and the relatively impermeable soils in the vicinity of the of the two ponds, inflows via the B1 pit were identified as the most likely source for inflow to the B208 stope. A tracer study was proposed to establish whether seepage percolating into the bottom of the B1 pit contributes to water entering the B208 arsenic stope.

Prepared by SRK Consulting April 2004

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D23

Original report - File D23

D24 Review of the “FINAL DRAFT – Giant Mine remediation Plan”

A final review on SRK October 2005 Final Draft Report – Giant Mine Remediation Plan .

Prepared by Independent Peer Review Panel December 2005

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-D-ArsTriox\D24

Original report - File D24



E - Surface Contamination Studies

E1 Evaluation of Surface Contamination Data

An evaluation of surface contamination data at Giant Mine to identify potential gaps in the existing database and assist in the development of a site specific remediation criterion for arsenic.

Prepared for Royal Oak Mines Inc. by EBA Engineering Consultants Inc. March 1998.

~~Elec. File - Not available~~

Original Report - File E1

E2 Tailings Management Plan

The report outlines the proposed tailings management plan for the next five years of operation at Giant Mine.

Prepared for Royal Oak Mines Inc. by Golder Associates Ltd. January 1999.

~~Elec. File - Not available~~

Original report - File E2

E3 Baseline Environmental Report

A baseline assessment of existing surface environmental conditions at the Giant Mine and Nicholas Lake exploration site.

Prepared by Golder Associates November 1999

~~Elec. File - Not available~~

Original Report - File E3

E4 Giant Mine Environmental Site Assessment and Cost Estimate

A non-intrusive environmental site assessment and reclamation cost estimate of the surface and underground components of the Giant Mine site. The report presents the environmental risks associated with the site and includes a cost estimate for the mine clean-up.

Prepared by Deton'Cho Corporation for INAC and GNWT. November 1999.

~~Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E4~~

Original Report - File E4

E5 PCB Investigation at Giant Mine

Assessment to determine if soil and transformers at suspect locations on the Giant Mine site

meet GNWT Remediation Guidelines for PCBs.
Prepared by Deton'Cho Corporation for INAC. April 2000.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E5
Original Report - File E5

E6 Waste Battery Consolidation at Giant Mine

A report on waste batteries scattered at several sites throughout the mine property.
Prepared by Deton'Cho Corporation for INAC. June 2000.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E6
Original Report - File E6

E7 Waste Oil Characterization at Giant Mine

A waste oil report for the initial reclamation. An inventory of waste oil barrels is included.
Prepared by Deton'Cho Corporation for INAC. June 2000.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E7
Original Report - File E7

E8 Arsenic Concentration on the Giant Mine Mill Site

Report on work carried out on the Giant Mine Mill Site in September 2000. Analysis of data was limited to a discussion of the total arsenic concentrations found on the property.
Prepared by Royal Military College of Canada for INAC. December 2000.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E8
Original Report - File E8

E9 Environmental Study of Arsenic Contamination from the Giant Mine

A scientific study was carried out to assess the levels of arsenic found from the Giant Mine property. The study was conducted by the Environmental Sciences Group (ESG).
Prepared by Royal Military College of Canada for INAC. November 2000.
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E9
Original Report - File E9

E10 Preliminary Site Characterization Giant Mine Assay Lab and B138 Pit

An investigation to delineate the extent of hydrocarbon contamination at four historical spill locations at Giant Mine. These are spills that occurred between 1996 through 1999.
Prepared by EBA Engineering Consultants Ltd. November 2000
Elec. File - Not available
Original Report - File E10

E11 Characterization of Arsenic in Solid Phase Samples Collected on the Giant Mine Townsite

The goal of this study was to employ a variety of analytical and mineralogical techniques in

order to characterize the form in which arsenic is present in the soil, as well as its bioavailability.



Prepared by Environmental Sciences Group (ESG).
Royal Military College of Canada 2001

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E11

Original Report - File E11

E12 An Examination of Arsenic Contamination in the Roaster and Gas Handling Complex at the Giant Mine Mill

Roaster and gas handling facility are the main focus of this study, all equipment having a potential to contain arsenic in significant amounts was examined and selected samples of material were taken for arsenic analysis.

Prepared by Northwest Consulting Limited February, 2003

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E12

Original Report - File E12

E13 Characterization of Soil and Groundwater in the Calcine and Mill Areas, Giant Mine

A shallow auger drilling program was implemented to obtain information on the quantity and geochemical properties of the calcine, and data on soluble arsenic concentrations in the vicinity of the mill.

Prepared by Indian and Northern Affairs Canada and SRK Consulting March, 2004

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E13

Original Report - File E13

E14 Giant Mine Site Soil Arsenic Assessment, Yellowknife NT

A literature review was conducted to consolidate all data on arsenic in soil at the Giant Mine. Based on the results of the review, additional shallow auger drilling and test pitting was conducted to supplement the existing data and to refine contaminated soil volume estimates.

Prepared by Golder Associates September 29, 2004

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E14

Original Report - File E14

E15 Environmental Assessment Giant Mine

An assessment of existing surface environmental conditions at the Giant minesite, and in particular to make a comparison to the site conditions noted during a baseline assessment conducted in October 1999.

Prepared by Golder Associates June 23, 2005

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E15

Original Report - File E15

F - Hydrogeology and Water Quality Information

F1 Yellowknife - Back Bay Summer Water Quality Monitoring Program

(September 1992 to June 1995).

Investigation of the Yellowknife-Back Bay area in follow up to the August 1992 to March 1994 water, sediment and fish study in the same area. The focus of this study was to gather water quality data with additional sampling locations.

Prepared by F.J. Jackson INAC April 1998.

[Elec. File - Not available](#)

Original Report - File F1

F2 Yellowknife - Back Bay Study on Metal and Trace Element Contamination of Water Sediment, and Fish

Six species of fish were analysed for eight heavy metals. In addition to the metal analyses, a final section summarizes the following: an estimate of the annual loading of metals by Royal Oak Mines Inc. (Giant Mine) and Miramar Con Mine; and a description of shoreline for the two bays likely to be impacted by the future expansion of the City of Yellowknife. Prepared by Jackson, F. (DIAND), Lafontaine, C. (DFO) & Klaverkamp, J. (Freshwater Institute). November 1996.

[Elec. File - Not available](#)

Original Report - File F2.

F3 Preliminary Hydrogeological, Geochemical, and Isotopic Investigations at Giant Mine

A preliminary hydrogeological study required in support of DIAND's intervention on the application submitted by Royal Oak Mines Inc. for renewal of the water license.

Prepared for INAC by Fracflow Consultants Inc. & Dr. J.J. Gibson June 1998.

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F3](#)

Original Report - File F3

F4 Giant Mine - Geotechnical Assessment

Assessment of the geotechnical conditions of arsenic stopes and chambers, surrounding areas and excavated tunnels. Appendices includes: Table of bulkheads; Photo catalogue of accessible bulkheads; and 3D stope modelling.

Prepared by SRK Consulting. April 2000.

[Elec. File - Not available](#)

Original Report - File F4

F5 Giant Mine Hydrogeology Experts Meeting

This report summarizes the proceedings and recommendations resulting from a meeting of

hydrogeologic experts convened in Calgary, Alberta, on March 2000. The meeting was held to review existing work; to solicit expert opinion; and to provide directions for future work. Prepared for INAC by Duke Engineering & Services Inc. November 30, 2000

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F5](#)

Original Report - File F5

F6 Groundwater Monitoring Report

Surface water and mine water sampling at selected sites at the Giant Mine. The objective of this water sampling program were to: characterize the late-summer chemical and isotopic composition of surface waters and groundwaters; compare current data to previous data; and establish the framework for continued monitoring of surface water and groundwater quality.

Prepared by Fracflow Consultants Inc. March 9, 2000

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F6](#)

Original Report - File F6

F7 Construction and Calibration of a 3D Numerical, Flow and Transport Model

Development of a three-dimensional groundwater transport model of Giant Mine to understand and evaluate how water flow through the mine and arsenic trioxide storage vaults if the mine pumps were shut of and the mine allowed to flood. Complements the hydrogeological work done in 1998.

Prepared for Royal Oak Mines Inc. & INAC by Fracflow Consultants Inc.

December 22, 1999

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F7](#)

Original Report - File F7

F8 Assessment of Back Bay Tailings Deposit, Giant Mine

A geochemical and physical assessment of the tailings material currently located within Back Bay, prior to assessing the methods of mitigation and reclamation of the tailings deposit.

Prepared by EBA Engineering Consultants Ltd. January 2001

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F8](#)

Original Report - File F8

F9 Giant Mine Hydrogeology Experts Group Meeting #2

This report summarizes the proceedings and recommendations resulting a meeting of hydrogeologic experts convened in Vancouver, British Columbia, on June 19 and 20, 2001. The meeting was held to (i) to review new hydrogeologic work undertaken at Giant Mine since March, 2000; (ii) to identify hydrogeologic issues/concerns and information gaps/needs associated with new work, with a proposal to reflood the mine to the 750 ft level and with deep reburial of arsenic dust at the site; and (iii) to provide direction for future hydrogeologic studies to support decisions for closing and remediating the site.

Prepared for INAC by Duke Engineering & Services Inc. September 26, 2001

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F9](#)

Original Report - File F9

F10 Sources of Water and Arsenic in Mine Waters Giant Mine

This report interprets geochemical and environmental isotope data collected at the Giant Mine as part of the hydrogeological investigations for the arsenic trioxide management study.

Prepared by Dr. Ian D. Clark, University of Ottawa September 20, 2001

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F10

Original Report - File F10

F11 Environmental Assessment Yellowknife Bay Tailings

This study assessed the biogeochemical conditions associated with the near-shore area of the submerged tailings. The results of the effort were used to evaluate various management strategies for the submerged tailings.

Prepared by Golder Associates March 2002

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F11

Original Report - File F11

F12 Biological Sampling at Baker Creek - Summary Report

The goal of this study was provide an initial assessment of antimony, arsenic, copper, nickel and zinc levels in surface water, sediment, and aquatic vegetation in Baker Creek.

Prepared by Dillon Consulting Limited April 02, 2002

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F12

Original Report - File F12

F12a Biological Sampling at Baker Creek 2002

The goal of this study was to collect additional data from Baker Creek for ecological and human health risk assessments being carried out. Samples collected include surface water, sediment, benthic invertebrates and fish.

Prepared by Dillon Consulting Limited November 2002

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F12a

Original Report - File F12a

F12b Biological Sampling at Baker Creek 2003

The goal of this study was to collect additional data from Baker Creek for ecological and human health risk assessments being carried out. The 2003 program provides information to be used towards the development of a more complete understanding of bio-accumulation pathways in Baker Creek.

Prepared by Dillon Consulting Limited April 2004

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F12b

Original Report - File F12a

F13 Groundwater Monitoring System Installation Report

This report describes the design and implementation of a monitoring system to collect data on the groundwater conditions around the Giant Mine. The purpose of the monitoring system is to assess the hydrogeological conditions in the bedrock mass on the periphery of the site, outside of the mined "envelope" that will dominate by flow in the tunnels and mine workings.

Prepared by SRK Consulting

June 2002

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F13

Original Report -- File 13

F14 Recommendations Regarding the Acquisition of Environmental Baseline Data in Support of the Preparation of an Arsenic Trioxide Management Project Description

In order to ensure that sufficient "baseline" environmental data is available to support the preparation of the environmental component of the detailed Project Description, (KHS) Environmental Management Group Ltd. was contracted to review existing data and provide recommendations with regard to the acquisition of additional data that might be required to prepare the Project Description.

Prepared by (KHS)Environmental Management Group Ltd.

May 2003

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F14

Original Report -- File 14.

F15 Ecological Investigations at the Giant Mine

Ecological investigations were completed on the Giant Mine surface lease area to provide an accurate description of the existing aquatic vegetation, an accurate description of the existing terrestrial vegetation and an accurate description of existing muskrat utilization within Baker Creek.

Prepared by Jacques Whitford Environment Limited December 12, 2003

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F15

Original Report - File F15

F16 Arsenic Concentration and Speciation in Fishes from Back Bay near Yellowknife

The main objective of this study was to determine the concentrations and forms of arsenic in different fish species common to Back Bay in order to later evaluate whether consumption of such fish could pose a risk to human health. The assessment would include an evaluation of arsenic forms and concentration in the liver, muscle and GIT, and an investigation of whether there were gender-related differences in arsenic accumulation in different fish species.

Prepared by Simone de Rosemond

Aug 3, 2004

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F16

Original Report - File F16

F17 2005 Surveillance Network Program Report

This report was required as per the terms and conditions of the water license. Giant Mine Miramar Limited maintains the Surveillance Network Program (SNP) currently comprised of

18 SNP sampling stations.

Prepared by Ron Connell

March 27, 2006

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F17](#)

[Original Report - File F17](#)

F18 Fish Salvage Channel Relocation Baker Creek

The objective of the Baker Creek fish salvage was to observe the dewatering process and capture trapped fish so they could be rescued from desiccation and released live, downstream, outside of the dewatered pond.

Prepared by Golder Associates Ltd.

Aug 8, 2006

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F18](#)

[Original Report - File F18](#)

F19 Sediment Investigation of Baker Creek

A sediment investigation of Baker Creek in support of the Giant Mine Remediation Project's all inclusive remediation plan to be submitted to the Mackenzie Valley Land and Water Board for review and approval. The purpose of the investigation was to carry out a detailed assessment of the physical and geochemical properties of the sediment in Baker Creek and Baker Creek Pond within the Giant Mine surface land lease area.

Prepared by Jacques Whitford

Dec. 7, 2006

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F19](#)

[Original Report - File F19](#)

F20 Mill / B-2 Pit Pond Fish Salvage Programs Associated with Baker Creek Channel Relocation

A summary of the fish extraction/relocation assignment undertaken by Golder Associates Ltd. during the water drawdown of Mill Pond and B-2 Pit Pond. Water inflow and outflow to the Mill Pond has been terminated as Baker Creek channel is being re-channeled.

Prepared by Golder Associates

Dec. 21, 2006

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F20](#)

[Original Report - File F20](#)

F21 2006 Surveillance Network Program Report

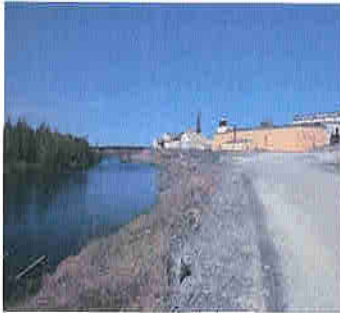
This report was required as per the terms and conditions set out in the former Water License and its attached Surveillance Network Program.

Prepared by Ron Connell

March 21, 2007

[Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-F-Hydrogeo\F17](#)

[Original Report - File F17](#)



G - Atmospheric Emission Information

G1 Workshop on Controlling Arsenic Releases into the Environment in the Northwest Territories. Final Workshop Report

A workshop was held to obtain advice and guidance on controlling arsenic releases into the environment. The workshop was designed to bring together representatives of aboriginal peoples, labour, industry, non-governmental organizations, and government agencies to develop recommendations related to releases of arsenic.

Prepared for Environment Canada by MacDonald Environmental Sciences Ltd.
October 1997.

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-G-Atmosphe\G1
Original Report - File G1

G2 Socio-economic Analysis of Three Management Options to Reduce Atmospheric Emissions of Arsenic from Gold Roasting.

This report has been prepared to provide information to a federal government Task Force, established to respond to the determination by the Ministers of Environment and Health that arsenic is a "toxic" substance under the Canadian Environment Protection Act (CEPA). This study provides a socio-economics analysis of three proposed management options.

Prepared for Environment Canada by Resource Futures International. September 1996.

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-G-Atmosphe\G2
Original Report - File G2.

G3 Arsenic Emission Control from Pyrometallurgical Operations

An assessment on current state-of-the-art air pollution control technology used in controlling arsenic releases from pyrometallurgical operations, including gold roasting.

Prepared for Environment Canada by W.R. Hatch Engineering Ltd. February 1996.

Elec. File - Not available
Original Report - File G3

G4 An Investigation of Atmospheric Emissions from the Royal Oak Giant Mine

The objective of the investigation was to measure pollutant levels resulting from arsenic and SO₂ emissions from the roaster stack and to determine the degree of impact these pollutants may be having on vegetation.

Prepared by GNWT, Yellowknife, NWT June 1993.

Elec. File - Not available
Original Report - File G4

G5 Air Quality Monitoring at Giant Mine Site - Yellowknife

An air quality-monitoring program was devised and carried out during the

summer of 2004 to establish a baseline for the fugitive emissions from the tailings areas and other disturbed areas at the minesite. This report provides details of the monitoring program, the results and discussion of the findings.

Prepared by Senes Consultants Limited June 2005

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\E14

Original Report - File G5

G6 Air Quality Monitoring at Giant Mine Site - Volume 2

An air quality-monitoring program was devised and carried out during the summers of 2004 and 2005 to establish a baseline for the fugitive emissions from the tailings areas and other disturbed areas at the minesite. This report pertains to the sampling program carried out in 2005.

Prepared by Senes Consultants Limited September 2006

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\G6

Original Report - File G6

G7 Air Quality Monitoring at Giant Mine Site - Volume 3

An air quality-monitoring program was devised and carried out during the summers of 2004, 2005 and 2006 to establish a baseline for the fugitive emissions from the tailings areas and other disturbed areas at the minesite. This report pertains to the sampling program carried out in 2006.

Prepared by Senes Consultants Limited February 2007

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\G7

Original Report - File G7

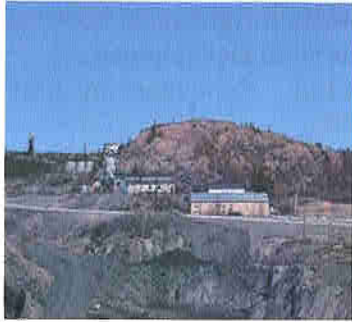
G8 Air Quality Monitoring at Giant Mine Site - Volume 4

An air quality-monitoring program was devised and carried out during the summers of 2004, 2005, 2006 and 2007 to establish a baseline for the fugitive emissions from the tailings areas and other disturbed areas at the minesite. This report pertains to the sampling program carried out in 2007.

Prepared by Linda Dufour February 2008

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-E-SurfConta\G8

Original Report - File G8



H - Abandonment and Restoration Information

H1 Reclaim: Version 3.1: Mine Reclamation Cost

Estimating Model, Generic Guide

RECLAIM was developed as a tool for government agencies, mining companies, and others to estimate the cost of mine reclamation. It is sufficiently comprehensive and flexible to provide a forecasting tool to meet most reclamation situations.

Prepared for INAC by Brodie Consulting Ltd. November 1997.

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-H-Abandon\H1 (Version 4.0)

Original Report - File H1

H2 Giant Mine Closure Cost Estimate

An assessment of the technical and financial aspects of closing the mine, including various arsenic management options.

Prepared for INAC by Brodie Consulting Ltd. November 1997.

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-H-Abandon\H2

Original report - File H2

H3 Giant Abandonment and Restoration Plan

This document is intended to meet the Abandonment and Restoration reporting requirements for both the water licence, under the authority of the NWT Water Board, and for the Surface Lease (No. L-3668T), under the authority of the Government of the Northwest Territories.

Prepared by EBA Engineering Consultants Ltd. and Royal Oak Mines Inc.

December 1998.

Elec. File - Not available

Original Report - File H3

H4 Prioritization of Demolition Sequence for Site Rehabilitation of Miramar Giant Mine

This report has been produced to provide a review of demolition estimates and a schedule of progressive demolition based on the closure activities at the Giant Mine Site. The report identifies some of the known hazards associated with the various structures and some recommendation guidelines to be followed in order to cope with these hazards throughout the demolition process.

Prepared for Miramar Giant Mine Ltd. by Golder Associates Ltd. March 2001

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-H-Abandon\H4

Original report - File H4

H5 Final Abandonment and Restoration Plan

This report presents the Final Abandonment and Restoration Plan for the Giant Mine. The Plan is submitted to comply with Water Licence No. N1L2-0043 that is effective from June

30, 1998 to June 29, 2003 and the December 14th, 1999 Reclamation Agreement between Miramar Giant Mine Ltd. and the Department of Indian and Northern Development.
Prepared for Miramar Giant Mine Ltd. by Golder Associates Ltd. September 26, 2001
Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-H-Abandon\H5
Original report - File H5

H6 Baker Creek, Reach 4 Revegetation Report

The objective was to harvest and plant live willow, alder and poplar cuttings as well as white spruce plugs to revegetate 400m along the banks of the Reach 4 section of Baker Creek, north of the bridge and the adjacent floodplain at the Giant Mine.

Prepared by Flat River Consulting November 2007

Elec. File - S:\5620 Giant Mine\5620-8 Public registry\5620-8-H-Abandon\H6
Original report - File H6

Indian and Northern Affairs Canada

Giant Mine Remediation Project