SHERWOOD COPPER CORP.

Minto Explorations Ltd.

DETAILED DECOMMISSIONING AND RECLAMATION PLAN

Minto Project, Yukon Territory

November 2006

Prepared by

ACCESS CONSULTING GROUP

SHERWOOD COPPER CORP.

November 17, 2006

Mineral Resources
Energy Mines and Resources
Box 2703, Whitehorse Yukon, Y1A 2C6

Attention: Mr. Robert Holmes, Director

Dear Sir:

Re: QLM-0001 – Minto Detailed Decommissioning and Reclamation Plan

On behalf of Sherwood Copper Corporation, enclosed is the Minto Detailed Decommissioning and Reclamation Plan prepared as per section 14.1 in Minto Explorations Ltd.'s Yukon Quartz Mining Licence QLM-0001 in support of the Minto Project, Yukon Territory. In accordance with this licence, this comprehensive plan for closure of the Minto Project is submitted six (6) calendar months prior to mill start-up.

If you have any questions or require further details, please contact the undersigned at Tel: (604) 579-0860 ext-231.

Sincerely,

Wm. W. Dunn, P.Eng.
General Manager, Minto Mine Project
Ph: (604) 579-0860 ext-231.
Cell (867) 334-5584

Attachment

cc: Darin Isaac, Chief SFN
Beverly Brown, SFN Lands Dept.
Glenna Southwick, Whitehorse Mining Recorder
Arlene Kyle, A/Mine License Officer
Steve Colp, CS&I Inspector
Peter Zurachenko, GY Water Inspections Section

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Submitted by:

Minto Explorations Ltd.

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PROJECT CONTACTS

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1.0 INTRODUCTION

Minto Exploration Ltd. (MintoEx), a wholly owned subsidiary of Sherwood Copper Corporation (Sherwood), is moving forward with the development of the Minto Project located 240 km (150 miles) northwest of Whitehorse, Yukon. For the purposes of this Report, the "Minto Project" means the development of the Minto deposit into an open-pit mine and a concentrator and the development of ancillary facilities. This project was subject to multiple developments over the years in which the principal milestones were:

- first drilling program initiated in 1971 by Silver Standard Mines Ltd. and Asarco Inc.;
- a detailed feasibility study completed in 1995 with reserves of 6,509,700 short tons at an average of 2.13% Cu, 0.018 oz/t Au and 0.27 oz/t Ag;
- completion of environmental assessment process and screening key licences (Type A Water Use Licence in 1998 and Quartz Mining Licence in 1999);
- detailed engineering and start of construction in 1997-1998. Some infrastructure was built (camp, mill concrete foundations, domestic water supply, access road);
- temporary suspension of the project in 1999 due to low copper prices and poor industry-wide macroeconomic conditions; and
- acquisition of MintoEx by Sherwood in June 2005.

A Decommissioning and Reclamation Plan was developed by the previous owners and filed with the Yukon Water Board in April 2001 as per Water Use License requirements. This plan included cost estimates for closure activities. The Company was issued a Type A Water Use Licence (QZ96-006) in 1998 pursuant to the Yukon Waters Act (YWA) and Regulations for the mine and milling operations. A Quartz Mining Production Licence (QML-9902) was issued in October 1999. These licences were screened under the Environmental Assessment and Review Process Guidelines Order (EARPGO) in April, 1997. Water Use Licence QZ96-006 was amended (Amendment #1) to revise the decommissioning requirements for the project, and to request the submission of an interim plan as the project was not yet constructed. The project is still subject to Water Use Licence QZ96-006, and QML-0001 (amendment to QML-9902), and the Company continues to ensure that all licence obligations are fulfilled as the project construction phase progresses and the mine approaches the operational phase.

A review of the 2001 plan by Yukon Government Water Resources identified areas of deficiency in the document, primarily associated with the level of detail provided and planning assumptions made. This review guided the preparation, as required in *Part G – Decommissioning and Reclamation* of the Company's Water Use Licence, of an Interim Care and Maintenance & Interim Closure Plan ("Interim Plan") which was filed with the Yukon Water Board in November 2003 (Access Mining Consultants Ltd, 2003.). The Interim Plan addressed two scenarios:

1. continued care and maintenance of the present project infrastructure; and
2. closure issues related to the decommissioning of existing site developments at the Minto mine and reclamation of the site, including reclamation and security costs associated with the then dormant property.

The 2003 plan presented closure scenarios based on existing conditions at the time, stating:

> *"The mine and related infrastructure to support mining and milling activities has not yet been fully constructed. Once the Company has made a production decision, the remaining components of the project will be constructed, including the mill, tailings facilities, open pit and waste rock storage areas. Development of those mine components and their operations will expand existing areas of disturbance and a new decommissioning and reclamation plan will be developed and submitted to the Yukon Water Board (YWB)."*

Both the 2001 and 2003 plans have been drawn upon in the preparation of this Detailed Decommissioning and Reclamation Plan (the "Plan"), the submission of which is required under the Quartz Mining Production Licence QML-0001, Section 14.1, which states:

> *"At least six (6) months prior to the Start-up Date, the Licencee must submit to the Chief a closure plan for the Undertaking for the Chief's review and approval."*

This Plan addresses the long-term physical and chemical stability of the site, including reclamation of surface disturbances. A program is presented for site management and monitoring both during implementation of closure and after decommissioning and reclamation

measures are completed. Decommissioning and reclamation cost estimates are provided and financial security requirements reviewed.

The Plan is based on the best information available at the present time. As required in section 14.3 of QML-0001, this plan will be updated every two years, and submitted to the Chief for review and approval no later than every second anniversary of the startup date.

1.1 CLOSURE PHILOSOPHY

In keeping with its high standards for environmental and social responsibility, the Company intends to implement an environmentally sound and technically feasible decommissioning and reclamation plan for the Minto mine. Closure planning and the implementation of this phase at a mine site must be undertaken with appropriate environmental care while respecting local laws, first nations agreements, and the public interest and ensuring that the Company's high environmental standards are achieved. Necessary environmental protection measures have been adopted in the development of this Plan to ensure that a healthy environment exists after mine closure. This approach is consistent with the Company's Corporate Environmental Safety and Health Policy, which states:

> *"Minto Explorations Ltd. recognizes and believes that its operations should be designed and managed to protect the natural surroundings, provide a safe and healthy work environment, and permit the responsible and cost-effective extraction of natural resources. Minto Explorations Ltd. intends to comply with all applicable legislation and regulations and to match industry best practices in its operations."*

A principle tenet of the philosophy followed during the development of this Plan was to work towards an eventual passive closure, with eventual walk-away closure after long term chemical and physical stability has been demonstrated. This involved an assessment of the key mine components that could potentially place the public or the environment at risk following closure, if not properly mitigated. Mitigation measures have been incorporated into elements of the Plan to address public safety issues and environmental concerns with post closure monitoring and inspections planned to ensure that this objective is met. Once the effectiveness of each mitigation measure is assured, then management of the site can be safely reduced to a level

that is consistent with closure. It is anticipated that final determination of the effectiveness of closure measures for passive and eventual walk-away status will be the subject of review and concurrence with regulatory agencies, First Nations and the public. Under the Quartz Mining Act (QMA), the company would then apply for a certificate of closure from Yukon Government (YG).

The Company has entered into a comprehensive Benefits and Cooperation Agreement with the Selkirk First Nation. All activities at the site including closure measures are guided by this Agreement. Therefore, a strong working relationship with the Selkirk First Nation forms a foundation for this document. To that end, preliminary meetings with SFN were held, and a draft of this document was provided for their review.

The principle of progressive reclamation is key to the Company's closure philosophy. Progressive reclamation, or those reclamation activities that are conducted during mining operations, reduces the ongoing risk carried by the company by:

- stabilizing potential sources of erosion and sediment release;
- initiating slope stability measures to enable reclamation;
- replanting and reseeding disturbed areas not scheduled for rework;
- providing sites for reclamation research trials and serving as an early indicator of reclamation success; and
- reducing the total area requiring reclamation at the end of active mining activities.

Resources required for specific progressive reclamation activities will be incorporated into operational planning, and their completion will be scheduled into yearly operational targets. The schedule for progressive reclamation is dependant upon the progress of mining activities, and is therefore not presented in this Plan.

To ensure that the overall closure philosophy can be achieved, the following objectives were emphasized during the development of this plan:

- protection of public health and safety;
- implementation of environmental protection measures that prevent adverse environmental impact;

- ensuring land use commensurate with surrounding lands;
- ensuring full consultation with the Selkirk First Nation, so that closure measures are appropriate and supported by the local peoples who are most affected;
- recognize mine start-up and construction in the short term and incorporate long term closure measures;
- progressive reclamation measures implemented during mine opening and operations;
- post closure monitoring of the site to assess effectiveness of closure measures for the long term; and
- passive post closure monitoring and management of the site until the former mine presents evidence of an environmentally benign site, in which case a walk-away closure scenario may be realized.

1.2 SCOPE OF PLAN

With the closure philosophy outlined previously guiding the development of the Plan; it has been specifically scoped to fulfill the requirements in section *14.0 Preparation, Approval and Implementation of Closure Plan* of the Company's Quartz Mining Licence QML-0001. Clause 14.2 outlines the criteria components that must be addressed:

(a) a detailed analysis of the measures required to be implemented to ensure the ongoing physical and chemical stability of the Undertaking;

(b) a description of how the Licencee intends to meet the performance standards identified in Schedule B of this Licence, unless other standards are agreed to in advance of submission of the plan by the Chief;

(c) detailed designs, prepared and sealed by a professional engineer licenced to practice in the Yukon, for the closure of all facilities associated with the Undertaking, including dams, spillways, diversion ditches, waste rock and overburden dumps, roads, or stockpiles and mill and camp infrastructure and consideration of probable maximum flood and maximum credible earthquake;

(d) plans for ensuring the long term stabilization and rehabilitation of the tailings storage facilities;

(e) detailed designs, prepared and sealed by a professional engineer licenced to practice in the Yukon, for upgrading any impoundment structures and Minto Creek diversion ditch;

(f) plans for a reclamation research program and related implementation schedule focusing on characterization of soils in the area, establishing test plots and documenting re-vegetation;

(g) program and related implementation schedule for progressive reclamation to be carried out while production and development activities are conducted at the Undertaking;

(h) monitoring program and related implementation schedule adequate to verify that performance objectives applicable at closure for all facilities are met;

(i) a cost estimate, prepared by a professional engineer licenced to practice in the Yukon, for decommissioning the Undertaking, including costs related to any required post-closure monitoring; and

(j) details respecting how site security will be maintained, monitoring of geochemical and physical stability of all facilities at the Undertaking and other matters as appropriate, during any closures, including a Temporary Closure.

To achieve these criteria, a review of pertinent historical information relating to the Minto operation was undertaken. Table 1-1 Global Information List, presents a listing of reports and other information sources that are related to and/or have been prepared specifically for the Minto Project. Many of these documents were reviewed in preparation of this Plan.

Various closure options were assessed to ensure that closure objectives were met for each mine component. A meeting was held between the company's consultants and First Nations to review the closure philosophy and approach and methods to optimize the Plan.

The approach taken in the presentation of this Plan is to provide a brief description of each mine component and the closure issues and measures related to that component. Previous work or reports on the project have been referenced without repeating details so that this document is focused on decommissioning and reclamation.

Table 1-1 Global Information List

(List of Reports Related to and/or Prepared for the Minto Project)

Report Title / Topic	Author	Date
Initial Environmental Study of the Minto Project. Prepared for Wright Engineers Ltd.	Division of Applied Biology, B.C. Research	1976
Report to Wright Engineers Ltd. on 1976 Geotechnical Investigations, Minto Project Feasibility Study.	Golder and Associates	1976
An Assessment of the Pre-Development Water Quality and Biological Conditions in the Water Shed Around the Minto Ore Body.	Fisheries and Environment Canada, Environmental Protection Service	1977
The Minto Copper Deposit, Yukon Territory: A Metamorphosed Ore Body In The Yukon Crystalline Terrane", An M.Sc. Thesis, Queen's University, Kingston, Ontario, Canada	Pearson, W.N.,	1977
The Minto Copper Deposit, Yukon Territory, A Metamorphosed Orebody in the Yukon Crystalline Terrane. In Economic Geology, Vol. 74, p. 1577-1599.	Pearson, W.N., Clark, A.H.	1979
The Minto Project, Yukon, Mineral Inventory Review Minto Explorations Ltd, Vancouver, B.C.,	H.L. Klingmann and J.S. Proc	1994
Minto Project, Initial Environmental Evaluation, Supporting Volume I, Development Plan. Prepared for Minto Explorations Ltd.	Hallam Knight Piesold Ltd.	1994
Minto Project, Initial Environmental Evaluation, Supporting Volume II, Environmental Setting. Prepared for Minto Explorations Ltd.	Hallam Knight Piesold Ltd.	1994
Minto Project, Initial Environmental Evaluation, Supporting Volume III, Socioeconomic Description and Impact Assessment. Prepared for Minto Explorations Ltd.	Hallam Knight Piesold Ltd.	1994
Survey of Firekilled Fuelwood Harvest Potential, Minto Creek, Yukon, Prepared for Minto Explorations Ltd. Vancouver, B.C.	John Gibson	1994
“Development of the Minto Project Process Design”, Project No. 8553-15	Kilborn Engineering Pacific Ltd.	1994
An Impact Assessment of the Minto Project. Memo from the Selkirk First Nations to the Northern Affairs Program.	Magrum	1994
Minto Project Prospectus prepared for Minto Explorations Ltd.	Pearson, Hofman and Assoc. Ltd.	1994
Minto Area Archaeology And History - Final Report of the Minto Archaeological Impact Assessment Project	Sheila Greer, Edmonton	1994

Report Title / Topic	Author	Date
Development of the Minto Project Process Design	Kilborn Engineering Pacific Ltd.	1994
Geotechnical Evaluation – Minto Core. Internal report submitted to Minto Explorations Ltd.	Steffen, Robertson and Kirsten Ltd.	1994
Technical Feasibility Study - Thickened Tailings Disposal System - Minto Project - Phase 1. Laboratory Tailings Characterization Tests, Project 94-608	E.I Robinsky Associates Limited, Consulting Engineers	1995
Geotechnical Design Tailings/Water Dam, Minto Project, Yukon	EBA Engineering Consultants Ltd., Edmonton, Alberta, 0201-95-11509	1995
Metallurgical Test Work And Mill Design Criteria", Minto Project, Yukon	H.L. Klingmann	1995
The Minto Project, Yukon, Feasibility Study – May 1995	H.L. Klingmann & J.S. Proc, Vancouver, BC	1995
Minto Project, Initial Environmental Evaluation, Supporting Volume IV, Environmental Mitigation and Impact Assessment. Prepared for Minto Explorations Ltd.	Hallam Knight Piesold Ltd.	1995
Minto Project, Application for Land Use Permit YA5F045. Submitted as reference to the YWB.	Minto Explorations Ltd.	1995
Minto Explorations Ltd., Minto Project, Proposed Designs for Big Creek Crossing, Minto Creek Crossing, Yukon River Barge Landings	N.A. Jacobsen, P. Eng., Civil Engineering Consultant, Whitehorse, Yukon.	1995
Minto Explorations Ltd., Access Road Design Report	Yukon Engineering Services, Whitehorse, Yukon	1995
Evaluation of Grinding Testwork for the Minto Deposit and Recommendations for Grinding Equipment Sizing at 1,500 stpd,	Fluor Daniel Wright Ltd.	1995
Environmental Assessment Screening Report and Project Summary: Land Use Permit Application YA5F045 and Water Licence Application MS95-013.	Department of Indian Affairs & Northern Development (DIAND) and YWB	1996
Minto Waste Rock Stability Evaluation. EBA File 0201-96-11509	EBA Engineering Consultants Ltd.	1996
Environmental Assessment Screening Report and Project Summary: Land Use Permit Application	DIAND and Yukon Territory Water Board,	1997

Report Title / Topic	Author	Date
YA5F045 and Water Licence Application MS95-013.		
Environmental Assessment Screening Report: Minto Explorations Ltd. Minto Property. Whitehorse, Yukon Territory.	DIAND and Regional Environment Review Committee	1997
Revised Preliminary Dam Design, Minto Project, YT	EBA Engineering Consultants Ltd., Edmonton, Alberta.	1997
Construction Quality Assurance Manual for Waste Dumps, Tailings/Water Dam, Mill Water Pond and Diversion Ditch, Minto Project, Yukon", Project No. 0201-95-11509	EBA Engineering Consultants Ltd., Whitehorse, Yukon	1997
Design Brief Tailings/Water Dam, Minto Project, Yukon Project No. 0201-95-11509	EBA Engineering Consultants Ltd., Whitehorse, Yukon	1997
Brief to the YWB, re. Water Licence Application QZ96-006 Minto Explorations Ltd..	Environment Canada and Fisheries and Oceans Canada	1997
Minto Project, Application for Water Licence QZ96-006. Submitted to the YWB.	Minto Explorations Ltd.	1997
Review of Hydrology for Minto Project	Remi J.P. Allard Rescan Environmental Services Ltd.	1997
Geotechnical Evaluation - Proposed Main Waste Dump - Minto Project - Yukon Territory - 0201-95-11509	EBA Engineering Consultants Ltd., Edmonton, Alberta	1998
Minto Project, Geology, Ore Reserves & Mine Design	H.L. Klingmann and J.S. Proc	1998
Mill Water Pond, Minto Project	H.L. Klingmann and J.S. Proc	1998
Grout Curtain For The Tailings/Water Dam	H.L. Klingmann and J.S. Proc	1998
Minto Explorations Ltd., Minto Project, 6102-01, Design Progress At June 1998. Vancouver, B.C.	Rescan Engineering Ltd.	1998
Minto Project, Yukon Airborne Geophysics Interpretation, Geological Synthesis and Target Generation	Steffen, Robertson and Kirsten (Canada) Ltd., Bartsch, R.	1999
Cumulative Effects Assessment, Minto Project. Prepared for Minto Explorations Ltd.	Access Consulting Group	1999

Report Title / Topic	Author	Date
Construction Monitoring Report Grout Curtain for Tailings/Water Dam, Minto Project, Yukon. Prepared for Minto Explorations Ltd.	EBA Engineering Consultants Ltd.	1999
Revised Construction Specification Tailings/Water Dam Minto Project, Yukon. Prepared for Minto Explorations Ltd.	EBA Engineering Consultants Ltd.	1999
Minto Project, Annual Report for Water Licence QZ96-006. Submitted to the YWB.	Minto Explorations Ltd.	1999
Minto Project, Yukon Airborne Geophysics Interpretation, Geological Synthesis and Target Generation	Steffen, Robertson and Kirsten (Canada) Ltd., Bartsch	1999
Minto Optimisation Study: SAG Milling Throughput Studies for a Two-Stage Grinding Circuit,	Fluor Daniel Wright Ltd.	1999
Minto Project, Yukon – Site Inspection & Compilation of Environmental Information. Prepared for DIAND, Renewable Resources Waste Management Program.	Access Consulting Group	2000
Minto Project, Annual Report for Water Licence QZ96-006. Submitted to the YWB.	Minto Explorations Ltd.	2000
Minto Project, Annual Report for Water Licence QZ96-006. Submitted to the YWB.	Minto Explorations Ltd.	2001
Minto Project, Decommissioning and Reclamation Plan.	Minto Explorations Ltd.	2001
Metallurgical Test Work & Mill Design	Minto Explorations Ltd.	2001
Minto Project, Annual Report for Water Licence QZ96-006. Submitted to the YWB.	Minto Explorations Ltd.	2002
Minto Project Summary	Minto Explorations Ltd.	2003
Minto Project, Annual Report for Water Licence QZ96-006. Submitted to the YWB.	Minto Explorations Ltd.	2003
Minto Project, Yukon. Care and Maintenance & Interim Closure Plan. Prepared for Minto Explorations Ltd.	Access Consulting Group	2003
Minto Project, Annual Report for Water Licence QZ96-006. Submitted to the YWB.	Minto Explorations Ltd.	2004

Report Title / Topic	Author	Date
Early Jurassic porphyry (?) copper (-gold) deposits at Minto and Williams Creek, Carmacks Copper Belt, western Yukon. In Yukon Exploration and Geology 2003	Tafti, R. and Mortensen, J.K.	2004
Minto Project, Annual Report for Water Licence QZ96-006. Submitted to the YWB.	Minto Explorations Ltd.	2005
Technical Report on the Minto Project, for Sherwood Mining Corporation, July 15, 2005.	Orequest Consultants, Cavey, G., Gunning, D. LeBel, J.L., and Giroux Consultants Ltd., Giroux, G.	2005
Technical Report on the Carmacks Copper Project, Whitehorse Mining District, Yukon Territory for Western Copper Corp.	Cavey G., Gunning D., Clegg J.	2006
Report on the Geological Exploration Programs, Results and Perspectives, STU Claims, Hoochekoo Creek Area, Whitehorse Mining District. Internal Minto Explorations report.	Rus, John	2006
An Assessment of Metallurgical Response - Global & Variability Composites"	G&T Metallurgical	2006
Minto Project: Updated Projections of Mill Throughput with One Additional Ball Mill (ex. Asarco Silverbell),	DJB Consultants, Inc., (June 2005) with Addendum (June, 2006)	2006
Geotechnical Design Ice-Rich Overburden Dump Minto Mine, Minto, YT	EBA Engineering Consultants Ltd.	2006
Minto Project, Annual Report for Water Licence QZ96-006. Submitted to the YWB.	Minto Explorations Ltd.	2006
Minto Geotechnical (Open Pit) Feasibility Study. EBA File: 1200173.	EBA Engineering Consultants Ltd.	2006
Detailed Feasibility Study for the Minto Project	Minto Explorations Ltd.	2006
Phase I Water Treatment Contingency Plan	Access Consulting Group	2006
Minto Mine Flow Monitoring Plan	Access Consulting Group	2006

1.3 STATUTORY AND REGULATORY RESPONSIBILITIES

1.3.1. Government Environmental Assessment and Permitting Regime

Several agencies are involved in reviewing, assessing, authorizing and monitoring mining projects in the Yukon. Through the licences previously mentioned, these agencies have permitted this undertaking after review of various environmental assessments and screenings completed for the project. Included in the information assessed was a conceptual closure plan, but both the Water Use Licence and the Quartz Mining Licence require submission of closure plans. This Plan was developed to meet these regulatory requirements.

The Company has taken a proactive approach towards its regulatory responsibilities by meeting with various government regulatory agencies, boards, and local First Nations. Periodic meetings are held to provide project updates. A similar approach is planned for implementation of the Plan.

Prior to implementing the closure measures described in this Plan, meetings will be held with the Selkirk First Nation and the local community to ensure that FN and community interests and concerns are addressed and included in the closure planning of the Minto mine. Also prior to plan implementation, the Government of Yukon, Water Resources Division and Mining Land Use Divisions will be informed of the Company's intentions to implement the Plan. Meetings will also be held with Environment Canada, Environmental Protection, Department of Fisheries and Oceans, Environmental Health, and Government of Yukon departments of Environment and Occupational Health and Safety to apprise regulators of planned site activities. These meetings will ensure that regulatory agencies' concerns with closure implementation are met.

1.3.2. Initial Project Assessment and Licensing

Minto has completed extensive environmental and permitting work for the Minto Project. In December 1994, a four volume Initial Environmental Evaluation (IEE) was submitted under EARPGO to DIAND for review. The IEE prepared by Hallam Knight Piesold, encompassed:

- Volume I – Development Plan providing a general overview of the Minto Project
- Volume II – Environmental Setting which described the local environmental conditions and studies undertaken at the site since the 1970's; and

- Volume III – Socio-Economic Description and Impact Assessment describing socio-economic conditions and archaeological evaluation and impact assessment for the Minto Project
- Volume IV of the IEE – Environmental Mitigation and Impact Assessment was submitted in May 1995 and summarized the results of overburden and waste characterization studies.

The assessment indicated no acid generation potential as tailings solids and effluent test work indicated very low levels of metals present and showed solids that were strongly acid consuming. Subsequent correspondence and information was exchanged with DIAND regulators to address issues raised during the review. Public consultation was carried out with interested members of the public, stakeholder groups and First Nations. DIAND issued an EARPGO screening report decision on April 7, 1997, indicating that potentially adverse environmental effects that may be caused by the project are mitigable using known technology and that the project could proceed.

Type A Water Use License

In February 1997, MintoEx submitted a Type A Water Use Licence application (QZ96-006). The YWB convened a public hearing into the application in May 1997 and after deliberations by the YWB, the Type A Water Use Licence was subsequently issued in April 1998. The Type A Licence was supported by the SFN and contained typical licence terms and conditions to ensure that mitigation measures identified during the environmental assessment are implemented. The licence expiry date for the Type A Water Use Licence was June 30, 2006.

Type B Water Use Licence

A Type B Water Use Licence application was filed with the YWB in August 1995 for construction of the Yukon River barge landing sites, the Big Creek bridge and Minto Creek road culvert installations. In October, 1995 a land use and quarry permit application for the access road construction were filed with DIAND Land Resources. An integrated CEAA screening of the Type B and land use applications was completed and a positive determination was made in August 1996. Type B Water Use Licence MS95-013 and Land and Quarry Permit YA5F045 were issued in August 1996 and the initial 16 km of the Minto project access road, barge landings and Big Creek bridge were installed in September and October 1996.

Yukon Quartz Mining Production Licence

In 1999, the YQMA was amended and section 139 of the YQMA required that all development and production activities related to quartz mining in the Yukon be carried out in accordance with a licence issued by the Minister. In June 1999, Minto filed an application with DIAND Minerals for a Yukon Quartz Mining Production Licence, which included a cumulative effects assessment for the project to ensure that the provisions of CEAA were met. DIAND issued Yukon Quartz Mining Production Licence QLM-9902 in October 1999 with a licence expiry date of June 30, 2006.

1.3.3. Existing Permits and Licences

As the Type A Water Use Licence (QZ96-006), Type B Water Use Licence (MS95-013) and Yukon Quartz Mining Licence (QLM-9902) were set to expiry in June 2006 and in recognition of the changing nature of the environmental assessment regime in Yukon, licence amendment applications were filed with the YWB and YTG Department of EMR in October 2004.

The YWB completed a YEAA screening of the Type B application and subsequently issued the amended Type B Water Use Licence (MS04-227) in February 2005. YTG Development Assessment Branch completed a YEAA screening of the Type A Water Use Licence and Yukon Quartz Mining Licence using the previous EARPGO screening and issued their screening report in March 2005. The YWB issued the amended Type A Water Use Licence (QZ04-064) in September 2005 and YTG Energy Mines and Resources ("EMR") issued amendments to the Yukon Quartz Mining Licence QLM-0001, Amendment No. 05-001 in December 2005 and Amendment No. 05-002 to change the mill rate to 2,500 t/day in October 2006.

Generally, the amended licences contain similar terms and conditions as the original licences and are typical of other Yukon mining licences. All of the above noted licences have an expiry date of June 30, 2016.

In addition, the Federal MMER (Metal Mining Effluent Regulations) under the Fisheries Act currently apply to the Minto mine. This regulation is a law of general application and the requirements of this legislation will be the responsibility of the company. Generally, the Type A

Water Use Licence is considered more restrictive that the MMER, however separate reporting for effluent discharge and receiving water monitoring is required by the Federal Department of Environment Canada.

1.3.4. Remaining Permitting Schedule

The existing licences have terms and conditions that require the company to submit plans, undertake monitoring and report on site activities. MintoEx has submitted necessary plans and annual reports and has undertaken monitoring in accordance with various licence conditions. These include submission of existing engineering plans for the main water dam and a Construction Quality Assurance Manual and a Spill Contingency Plan. Recently submitted plans include the Waste Rock Dump and Overburden Dump Design Plans, Flow Monitoring Plan and Water Treatment Contingency Plan (see Table 1-1.) Monthly and annual reporting is ongoing in accordance with licence conditions.

Upon final decommissioning and reclamation, the Company will apply for a closure certificate under the YQMA legislation at the conclusion of the implementation of the final closure measures to seek government approval of conditions at the site.

Various other agencies grant the permits necessary to develop operate and close a project of this nature. As part of implementing the Plan, the Company would ensure that the various other licences and/or permits that are required for undertaking various closure measures are secured and followed.

1.4 DOCUMENT ORGANIZATION

Section 1 of this document introduces the philosophy and scope for the decommissioning and reclamation plan for the site and the Company's corporate background. Information is provided on the property and its history and a discussion of regulatory responsibilities regarding closure.

Section 2 provides a project description, including a brief overview of the current status of the Minto mine and the Company's plans for eventual mine opening.

Section 3 provides a brief summary of the environmental setting for the mine.

Section 4 presents the reclamation strategy for the project, including reclamation objectives and reclamation research planning. The research will focus primarily on revegetation efforts and success.

Section 5 outlines the details of the Company's decommissioning and closure plan, and the activities to be followed at closure. The information is presented in a format that briefly describes the mine "reclamation component" and then presents closure issues in the context of physical and chemical stability. Closure measures are then presented in detail and in summary form as the basis for the closure cost estimates.

Section 6 presents the implementation schedule for the plan.

Section 7 deals with post closure site management plans and activities. This section presents the environmental management measures proposed for the decommissioning and post closure period.

Section 8 provides an updated cost estimate for implementing the closure plan.

Section 9 provides report references.

1.5 ACKNOWLEDGEMENTS

This report benefited from input by the following companies:

Minto Explorations Ltd. – Bill Dunn provided overall direction for the Project as well as the corporate policy framework and senior technical review of the proposed closure measures.

Access Mining Consultants Ltd. – Responsible for overall project management, document preparation and coordination.

Selkirk First Nation – Provided input into the development of closure scenarios based on current and potential future use of the project area.

EBA Engineering Consultants Ltd. - Provided base data for conceptual design drawings and contributed to the technical review of closure design elements and cost estimates.

JDS Mining and Energy, Ltd. – Provided technical review of closure measure planning and associated cost estimates.

2.0 PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND AND LOCATION

The Minto Project is a copper-gold-silver project located on the west side of the Yukon River approximately 75 km (47 miles) north-northwest of Carmacks, Yukon Territory. The mine site and access road lie within the traditional territory of the Selkirk First Nation and comprises part of land claim settlement parcels R-6A, R-44A (Type A settlement lands) and R-40B. The Company concluded a comprehensive cooperation agreement with the Selkirk First Nation on September 16, 1997. This agreement is still in effect.

The Minto Property is centered at approximately 62°37'N latitude and 137°15'W longitude (NAD 83, UTM Zone 8 coordinates 6945000N, 384000E). The Minto Project consists of 284 claims. There are 120 pending quartz claims, 99 quartz claims and 65 quartz claims under lease. The 100% registered owner of the claims and leases is MintoEx. The quartz claims are in good standing until 2007/03/01 while the DEF leases are valid until 2007/10/07 and the Minto leases are valid until 2018/05/13.

Copper deposits were first discovered in 1970 and claims were staked in 1971. Extensive exploration yielded the first significant drill intersection in July of 1973. The Minto and DEF claims and leases cover an area of approximately 10 square miles. Mineable reserves for the deposit, above a cut-off grade of 0.50% copper, consist of 8,510,000 tonnes at grades of 1.81% copper, 0.57 g/t gold and 7.57 g/t silver. Current project design parameters are based upon 8,850,800 t at grades of 1.68% copper, 0.60 g/t gold and 6.9 g/t silver.

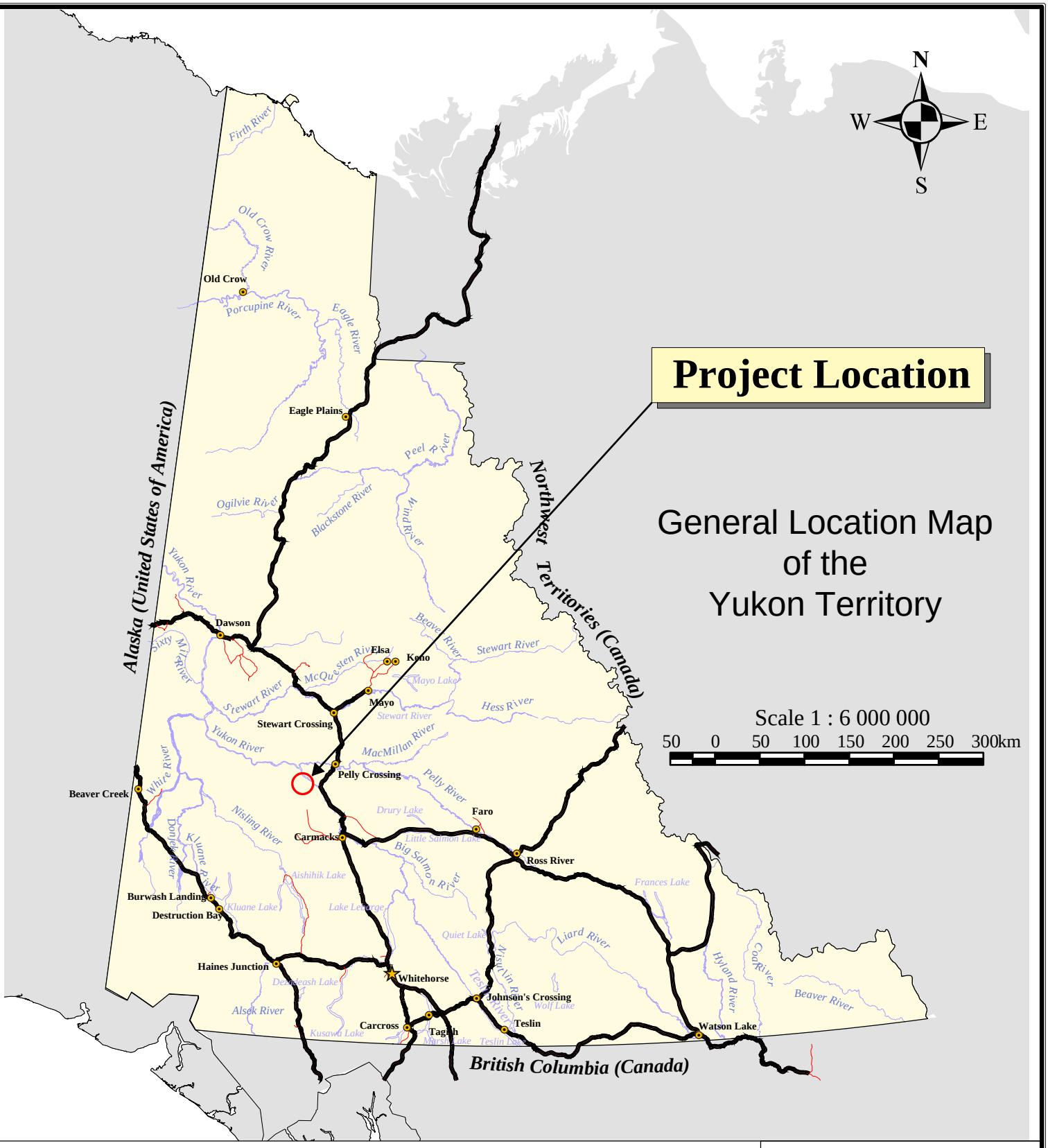
The ore deposits are to be mined using conventional open pit truck and loader operations and processed in a mill plant on site. The plant will initially process 1,563 tpd (metric tons per day) of ore in year 1 defined as Phase 1. In year 2, the plant throughput increases to 2,400 tpd of ore for the rest of the mine life, defined as Phase 2. Tailings will be thickened and vacuum filtered into a 'cake' and deposited on a bench to the south (upslope) of Minto Creek, and precipitation and surface water will collect in the main water storage pond.

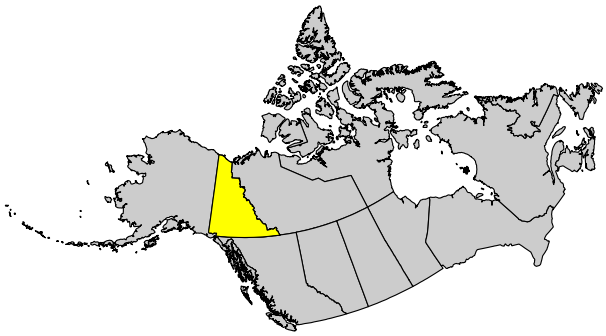
A total complement of 110 employees will be required once the mine is in full production. A camp to accommodate 54 persons was constructed in 1998, and was expanded to its present

capacity of 140 persons in the summer of 2006. The camp is presently at full capacity with the mine construction management, contractors and support staff.

The property is accessible by crossing the Yukon River at Minto Landing. Barge landings have been constructed for ice-free crossing and an ice bridge is used upon freeze-up of the Yukon River.

Figure 2-1 and Figure 2-2 present visual depictions of the general project location with in the Yukon and the project area overview.





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Minto Explorations Ltd.

ACCESS CONSULTING GROUP

Minto Mine Project

Detailed Decommissioning Reclamation Plan

Drawn By: HD	**Figure 2-1**
Checked By: RM	Date: Sept. 2006

Our file: D:\Project\AllProjects\Minto\gis\mxd\ClosurePlanSept06\Fig2_1_GenLoc.mxd

Minto Mine Project

Detailed Decommissioning Reclamation Plan

SHERWOOD COPPER CORP.

Minto Explorations Ltd.

N

Wolverine Creek

SFN R-41B

Yukon River

Minto Creek

Minto Mine Site

SFN R-10B

Lhutsaw Wetland Habitat Protection Area

#2

Von Wilczek Creek

North Klondike Highway

SFN R-11B

SFN R-44A

Minto Access Road

SFN R-40B

Minto Landing

Yukon River Landing

Minto

Yukon River Landing

SFN R-6A

Big Creek

Dark Creek

To Carmacks

SFN R-43B

McCabe Creek

Legend

- Minto Mine Site
- Contour (100' interval)
- Limited used road
- Road
- Access Road
- Proposed Access Road Extension
- Trail
- Watercourse
- Minto Claim - DEF
- Minto Claim - MINTO
- Waterbody
- Habitat Protection Area
- First Nation Settlement Land

Projection: UTM Zone 8 NAD83
Units: Meters
NTS Sheet 115 I/10 and 115 I/11

Figure 2-2

Project Area Overview

Scale:

1:100,000

0 0.5 1 2 3 4 km

ACCESS CONSULTING GROUP

Drawn by: HD	Checked by: SK

Date: September 2006

Our File: D:\Project\AllProjects\Minto\gis\mxd\ClosurePlanSept08\Fig2_2_AreaOV.mxd

Preliminary site development was initiated at the property in 1996. Construction activities at the site can be summarized as follows:

1996 Construction - The initial 16 km of access road and a barge landing on the west side of the Yukon River and the bridge across Big Creek were constructed.

1997 Construction - The remaining 12.8 km of access road were constructed with only final grading and minor clean-up to be done after the 1998 spring break-up.

The site for the permanent camp was excavated. A water well to supply domestic water for the camp was drilled to a depth of 72 m, tested and equipped. A set of septic tanks was installed and a leach field was constructed. A camp services unit built in Whitehorse during the winter months was moved to site. This unit includes a water purification system, water storage for both fire protection and for domestic purposes and has provision for housing a generator for emergency power generation.

The mill site was excavated and various roads on site and the pit perimeter road for the first phase of mining were constructed.

Two used grinding mills were purchased in the United States, dismantled and shipped to the Yukon and across the Yukon River.

1998 Construction - The mill footings were constructed. A total of 1,688 m^3 of concrete was placed over a period of eight weeks.

The Company purchased a used, eight-unit, 42-man bunkhouse and a new, seven-unit kitchen/diner/change house complex. These units were erected on site and all services such as sewage disposal, potable water supply and power distribution were installed.

Final grading, minor cleanup and reclamation were done along the 28.8 km long access road. The road was in excellent condition and approximately sixty loads of freight were hauled to site during the three months of construction.

A grout curtain, designed to control seepage through the foundation of the tailings/water dam, was completed.

1999 Construction - A short construction program was completed in September 1999. The two grinding mills were moved to site, mill components were cleaned, sandblasted and painted and the two mills were assembled. Svedala Canada Inc. completed a detailed inspection of the mills and submitted a proposal for the final installation of the mills.

2000 Construction - The Company completed work on the camp in September 2000 and additional engineering work is ongoing.

2001 Construction - Road maintenance and repair work was done along the access road in the vicinity of Big Creek as per a recommendation by BK Hydrology Service, which was submitted to the YWB on January 8, 2001.

2002 Construction - Further repair and preventative maintenance completed on access road near Big Creek. Tension cracks in the mill pad were repaired and the mill floor sumps were pumped. Eroded fill near the camp septic system was replaced and camp was winterized and maintained. Road signs were repaired and replaced.

2003 Construction - Regular inspection and maintenance conducted.

2004 Construction - Regular inspection and maintenance conducted.

2005 Construction - In July 2005, fill was added to the east bank of the Yukon River barge landing. In July and August 2005 the Minto camp was retrofitted and re-opened so that workers could be accommodated at the site, in support of MintoEx exploration programs.

Two diesel fuel tanks (capacities 9,150 L and 50,000 L) were installed at the Minto Property in the summer of 2005. All tanks are double walled envirotanks.

2005 Exploration - In September 2005, approximately 5 km of access roads were rehabilitated and approximately 2.5 km of trails were constructed to support the drill programs. Diesel and propane were hauled to the site to support the drill programs.

2006 Construction - In February and March 2006 equipment was mobilized to the Minto property and assembled in anticipation of the upcoming construction season. Another 400,000 L of double walled envirotank diesel storage capacity was added to the site. Snow clearing and

site grubbing activities occurred during the month of March. Work was done on the construction camp and access road, and on sediment control structures in Minto creek in April and May in anticipation of construction activities during spring freshet.

The summer of 2006 saw pre-stripping and civil construction activities. This included the construction and upgrading of site haul and access roads, the expansion of the mill pad and construction of the mill water pond, the excavation and construction of a fuel storage pad, the expansion of the camp and the installation of a new septic field, and the excavation of the starter pit and the construction of the toe berms for the main waste rock dump and the ice-rich overburden dump. The sulphide ore storage pad and the explosives plant sites were also cleared/constructed.

The construction of the main water dam on Minto Creek began in July, and is presently nearing completion. Construction activities related to the mill and concentrate storage shed, as well as the tailings handling facility and infrastructure, have begun and are scheduled for completion in the spring of 2007 for the commencement of milling activities.

Table 2-1 provides on overview of the Project area and environmental setting information for the study area. This table provides physical Project location information, geographic reference, access route, watershed drainage, special designations, and key environmental features within the study area. The information has been extracted from a number of documents, including previous *CEAA* and *YEAA* screenings, which are all summarized in Table 1-1.

Table 2-1 Project Area Overview and Environmental Setting

Project Area Attribute	Description
Region:	Yukon
Topographic Map Sheet:	NTS 115 I/10, 115 I/11
Geographic Location Name Code:	Minto Project
Latitude:	62° 36' N
Longitude:	137° 15' W
Drainage Region:	Yukon River
Watersheds:	Yukon River, Big Creek, Wolverine Creek, Dark Creek, and Minto Creek.
Nearest Community:	Pelly Crossing, Yukon, approx. 33 km north on Klondike Highway.
Access:	Klondike Highway, Barge crossing on Yukon River at Minto Landing, Minto mine access road. Airstrip on site.
Traditional Territory:	Northern Tutchone, Selkirk First Nation peoples. Traditional use for hunting, trapping and fishing.
Surrounding Land Status:	Selkirk First Nation Settlement Lands and Federal Crown Land.
Special Designations:	Lhutsaw Wetland Habitat Protection Area located approx. 17 km NE of Minto Landing (outside the project area).
Ecoregion:	Yukon Plateau (Central) - Pelly River Ecoregion.
Study Area Elevation:	Rolling hills above mine site at 1131 metres to 600 metres at the Yukon River Valley bottom.
Site Climate:	Temp. ranges from –30.9°C (Jan. 1994) to 12.1°C (July.1994). Mean annual temp. of -7.3°C. Mean annual precipitation is 378mm.
Vegetation Communities:	Riparian, black spruce, white spruce, paper birch, lodgepole pine, buck brush/willow and ericaceous shrubs, feathermoss, sedge, sagewort grassland, mixed, aspen, balsam, and sub-alpine. Discontinuous permafrost is present on site. Site has been subject to recent forest fires.
Wildlife Species:	Moose, caribou, Dall sheep, mule deer, grizzly and black bear, varying hare, beaver, lynx, marten, ermine, deer mouse, fox, mink, wolverine, least weasel, wolf, squirrel, porcupine coyote, muskrat, otter and wood frog. Bird species include: spruce, blue, ruffed, and sharptail grouse, waterfowl, raptors, and a variety of smaller birds.
Fish Species:	In the Yukon River, chinook, coho, and chum salmon, rainbow trout, lake trout, least cisco, bering cisco, round whitefish, lake whitefish, inconnu, arctic grayling, northern pike, burbot, longnose sucker and slimy sculpin; In Big Creek, Chinook and chum salmon, arctic grayling and whitefish species; In Wolverine Creek, chinook salmon, arctic grayling, and slimy sculpins; In Minto Creek and project area watershed (lower reaches only), slimy sculpin, round whitefish, arctic grayling.
Known Heritage Resources:	East side of Yukon River in the vicinity of Minto Landing four historic sites designated KdVc-2 (Minto landing), KdVc-3 (Minto Resort), KdVc-4 (Old Tom's Cabin), and KdVD-1 (Minto Creek).

Note: Information summary drawn from various sources, including several Minto project reports and the CEAA screening report.

2.2 CURRENT STATUS

The Minto mine is currently under full construction, with the Startup Date for milling activities scheduled for the second quarter of 2007. Prior to 2005, the site had seen only minor development, and was in a state of interim closure and was under the care of the Company and a part-time caretaker. The caretaker provided security for the site, conducted periodic checks of the mill and the general area, mine camp, as well as documenting site maintenance requirements. Annual maintenance is conducted on the access road and camp to facilitate planned start-up. Details of the current state of all facilities are provided in later sections of this report.

Water quality monitoring, as required by Water Licence QZ96-006, was conducted on an annual basis until 2004, and on the company's initiative was conducted on a monthly basis during the open season of 2005, and on a daily basis by Access Consulting Group during spring freshet of 2006 (April-June). Combined, this sampling has ensured that adequate baseline data has been compiled prior to formal operational start-up.

Figure 2-3 presents an overview of current site conditions.

N

Low-Grade Ore
Oxide Pad

Fuel Storage Pad

Waste Rock
Dump

Oxide
Waste

Mill Site

Camp

Main Access Road

Starter Pit

Mill
Water
Pond

Laydown
Pads

Contractor's Work
Area & Office Pad

High-Grade Ore
Stockpile Pad

Ice Rich
Overburden Dump

South
Diversion
Ditch

Minto Creek

Main Water Dam

W-3 - Water
Compliance
Site

Minto Creek

Solid Waste Facility

Exploration Camp

Land Treatment Facility

Special Waste Storage

Airstrip

Explosives Plant Site

AN Storage Site

Magazine Sites

Minto Mine Project

Detailed Decommissioning Reclamation Plan

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Legend

- Access Road
- Exploration Road
- Contour
- Water Course

Projection: UTM Zone 8 NAD83
Units: Meters
NTS: 105I/11
Basedata obtained from Yukon Engineering Services
Nov3_06_status_plan.dwg

Figure 2-3

Current Site Conditions

Scale:

0 50 100 200 300 400 500 m

ACCESS CONSULTING GROUP

Drawn by: HD	Checked by: RM
Date: September 2006	

Our File: D:\Project\AllProjects\Minto\gis\mxd\ClosurePlanSept06\Fig2_3_CurrentConditions.mxd

2.3 PLANNED MINING OPERATIONS

Along with standard blast and haul open pit mining practices, a conventional crushing, grinding and flotation process plant has been proposed for the projected 7 year mine life of the Minto project, utilizing standard unit processes and equipment. The plant will initially process 1,563 tpd (metric tons per day) of ore in year 1 defined as Phase 1. In year 2, the plant throughput increases to 2,400 tpd of ore for the rest of the mine life, defined as Phase 2.

The Minto plant was designed to process 1,563 tpd of ore containing copper, gold and silver to produce a copper concentrate. In Phase 2, provisions will be made to the plant layout and design to accommodate the increased throughput. The main changes will include a new building extension to contain the second ball mill circuit, 3 additional rougher flotation cells and also the utilization of the new re-cleaner cells in the main mill building. Equipment will be sized to handle both Phase 1 and 2 tonnages. The plant will consist of the following main unit operations:

- primary crushing;
- coarse ore conveying;
- two stage grinding circuits for Phase 1;
- additional Ball Mill circuit for Phase 2;
- copper flotation;
- concentrate thickening and pumping;
- concentrate filtration;
- concentrate storage (on-site);
- tailings handling; and
- water reclaim.

The primary crushing circuit will operate 6 hours per day, 365 days per year at an availability of 75%. The mill circuit will operate 24 hours per day, 365 days per year at an availability of 90%. Availability is the scheduled and unscheduled downtime for equipment maintenance.

3.0 ENVIRONMENTAL SETTING

Table 2-1 provides a summary of the key environmental features near the project area. Note that forest fires have repeatedly swept large parts of the Minto Creek basin and surrounding areas during the past twenty years. The original information on the project area submitted in the IEE is still relevant. In addition, a detailed description of the environmental setting of the project area has been excerpted from a report prepared previously for this project on behalf of DIAND. The relevant section of that document is included here as Appendix A.

Further characterization of the site water quality, specifically of Minto Creek, is submitted to the Yukon Water Board annually in the company's Type A Water Use License reports, and will be submitted monthly beginning in November 2006 when the project transitions out of Interim Closure. Hydrology on the site was characterized and submitted under Access Consulting Group's Minto Mine Flow Monitoring Plan (2006).

4.0 RECLAMATION PLANNING

A systematic approach to decommissioning and closing reclamation is required for the Minto project. This section of the Plan provides reclamation objectives and the overall reclamation strategy for the Minto site. Also provided is information regarding planned reclamation and revegetation research programs, and details and observations on reclamation and revegetation to date. Section 5.0 then addresses specific closure measures proposed for the discrete mine components.

The Company will implement progressive reclamation measures where possible during mine construction and operations. This approach will not only provide valuable reclamation success feedback for use in advanced/final closure, but progressive reclamation will reduce final reclamation liability and costs and shorten the overall reclamation implementation schedule. These progressive efforts will also help reduce slope erosion through physical slope stabilization of revegetation efforts, enhancing ultimate reclamation success.

4.1 RECLAMATION OBJECTIVES

The primary objectives of land reclamation and revegetation at the Minto mine site include:

- undertaking mining planning to incorporate progressive reclamation;
- providing short and long term slope stabilization and erosion control on linear and non-linear disturbances;
- ensuring the long-term chemical stability of residual mining components and their effects on water quality draining the property;
- ensuring the long-term physical stability of key structures such as the waste dumps and the diversion and drainage ditches; and
- working towards a walk-away closure scenario for most or all mine components.

The overall goal of closure at the Minto site is to leave the area as a self-supporting ecosystem, ensuring that land use after closure is compatible with the surrounding lands, and that the site vegetation returns to a state as near as possible to that in existence prior to mining activities.

4.2 RECLAMATION TO DATE

Reclamation of disturbed areas along the access road and at Big Creek in the vicinity of the Big Creek Bridge was completed between May 6 and May 10, 2000. This reclamation has been successful when compared against the reclamation objectives, as noted in previous annual reports for the Type B Water Use License, submitted by the company. Revegetation and fertilizer mixtures for this effort are known and the seeded areas are monitored for revegetation success. This information will be used to assist with planned progressive reclamation measures, reclamation research and measures for final closure.

Overall reclamation is therefore expected to be successful with seeding and natural re-vegetation complimenting each other.

4.3 NATURAL REVEGETATION

The project area was first disturbed by the construction of trails and trenching which was done as part of exploration programs on the property from 1971 to 1976. Natural re-vegetation has been effective in largely covering these disturbed areas in the 35 years since the area was first disturbed. For example, prior to construction activities in 2006, the airstrip was almost completely revegetated and required extensive clearing in preparation of re-commissioning. Other areas that have seen significant natural revegetation on the site (some of which are now re-disturbed by current construction activities) include areas adjacent to the water dam centerline, old borrow sources and the cleared right-of-way of the main access road.

The primary colonizing plant species now found around the mine site are willows and graminoids. The extent of recolonization at each location is dependent on local conditions, including soil conditions (type and moisture content) and aspect. Generally, revegetation is occurring more extensively next to undisturbed areas and on linear disturbances.

4.4 RECLAMATION RESEARCH

An important component of the reclamation planning process will be ongoing reclamation research with the objective of developing the methods required to implement a successful reclamation program. Reclamation research will focus primarily on the revegetation aspect of reclamation, as the success of this element of a reclamation plan is closely linked to site specific

conditions such as soil characteristics, climatic variables and existing vegetation populations. Other aspects of minesite reclamation including recontouring and erosion stabilization techniques are well established and are less reliant upon site-specific research for success.

The reclamation research will build on the information obtained during the baseline studies program. Indigenous species of plants were catalogued and soils were characterized. These conditions are documented in the IEE, and are summarized in the attached excerpt in Appendix A.

It will also be important to further document natural re-vegetation successes as described in section 4.3. Information developed on site can be supplemented with information obtained from other mine reclamation programs in the Yukon and other northern jurisdictions. Considerable research has been carried out into the reclamation and revegetation of disturbed lands in the Yukon, including operating and abandoned mines, and mineral exploration sites. Much of this information is in the public domain and is well presented in the guidance document *Mine Reclamation in Northwest Territories and Yukon* (INAC, 1992.)

The true benefits of reclamation research will be realized if the information obtained and knowledge gained is incorporated into larger scale reclamation projects as quickly as possible.

4.4.1. Growth Media

The natural vegetation found on undisturbed sites around the mine generally indicate the underlying soil properties, including texture, drainage, and pH, and the level of available nutrients.

A program of sampling and analysis of soils in the project area was done in 1994 as described in the environmental assessment, which provides the basic information required for reclamation planning. Additional soil sampling on disturbed sites will be completed in order to determine areas of localized nutrient deficiencies. Soils in the upper Minto Creek basin support growth but soil cover is relatively thin and not enough surface soils can be stockpiled to cover all disturbed areas for closing reclamation.

Plants require, as a minimum, a medium that will allow roots to penetrate, that will retain adequate moisture and that contains levels of nutrients for successful growth. It will therefore be important to determine the characteristics of the overburden from the southern portion of the open pit as this overburden will be the only material readily available to cover the waste rock dumps, the thickened tailings and possibly other areas and thus provide a growth medium.

Diamond drilling done in the 1970's indicated that the ore body is covered by up to 60m of overburden to the south in an area where permafrost is expected to depths of 18m. This overburden consists of silt and fine sand with varying amounts of organic material and occasional layers of peat and gravel. The thickness of overburden required to retain moisture is expected to be 25 cm (0.25 m). This will be confirmed by trial, as the depth of growth media placed will be varied and soil moisture measurements compared with revegetation success on the various plots will suggest an optimum depth of overburden placement for revegetation measures.

4.4.2. Revegetation Trials

Key to long term reclamation success is site-specific revegetation research. In order to establish a successful revegetation program, the Company will initiate a methodical program to assess and provide:

a) A further inventory of available soils around the site (particularly the overburden material) and their physical characteristics;

b) The nutrients in the available soils - while fertilizers will likely be necessary to encourage quick initial establishment of healthy growth, the plant mixtures used must be capable of sustaining long term growth without the aid of artificial fertilizers;

c) Practical seed mixes - while it is known what seed types have been used at the site previously and what types of plants have been naturally revegetating the site, further reviews and investigations are necessary to confirm the appropriate seed mixes that should be used. The ultimate seed mixtures will be developed using:

- knowledge of the naturally occurring vegetation and soil conditions;

- an inventory of naturally occurring seed sources on site;
- results from revegetation activities to date;
- existing literature on regional revegetation science; and
- information gained from revegetation test plot trials on site.

d) The effect of slope and aspect on revegetation success, and if necessary the subsequent effect of erosion control measures; and

e) The potential for metals uptake by the plants on the growth media over the tailings - different plant varieties and species, tailings characteristics, cover designs and other environmental conditions are all factors influencing uptake of metals by plant tissues. Sampling of plant tissues from the tailings test plots will be conducted to assist in designing the revegetation program, and existing literature and research regarding plant metal uptake and foraging patterns will be incorporated into the seed mix design.

Different seed mixes will be grown on test plots to develop optimum seed compositions. Initial recommended seed mixes have been developed (see Table 4-1 for the seed mixes proposed for specific disturbances.) Results from the test plot trials will also confirm:

- optimum seeding times;
- optimum growth media (overburden) covering depth;
- utility of techniques such as snow seeding;
- fertilizer requirements to amend nutrient content of the overburden; and
- utility of soil amendments such as lime, wood fibre or mulches.

Test plots are typically small and optimum conditions may apply. The information obtained from test plots will therefore be applied in further reclamation trials to areas 1 ha or larger in size. Overburden will be hauled by truck to the selected sites and will be spread with a dozer or grader. Successes and failures will provide valuable information on alternative approaches to closing reclamation.

The establishment of an initial ground cover of graminoids has historically been viewed as a desirable objective on most disturbed areas to stabilize slopes and control soil erosion. Graminoids are all grasses and grass-like plants, including sedges and rushes. Reclamation

and revegetation efforts on site will ensure that this objective is achieved; however, the establishment of existing or natural vegetative communities and species is also another desirable objective. Based on recent reclamation research, it is noted that there is typically an abundance of natural seed or reproductive seed material available from local surroundings, and that these naturally occurring seed sources should be considered as part of any reclamation programs (Craig, et al., 1998).

Evidence indicates that revegetation by the seeding of sod-forming grass species will inhibit the invasion of the area's natural colonizing species by competing for space, light, nutrients, sunlight and moisture (Craig, et al., 1998). Seeding predominantly with native species should aid in ensuring that the later successional stages of vegetative cover appear. The creation of shrub willow islands can also enhance natural succession.

The nutrient uptake by northern native seed varieties on nutrient deficient soil is usually more effective than nutrient uptake by southern agronomic species. Seeding with agronomic species at the Minto mine site may be required because of the high cost and limited availability of northern native revegetation species.

In the larger, more open disturbed areas at the minesite (borrow areas, mill and camp site area), where natural seed sources are less available, the seeding/planting of indigenous shrub species (primarily willows, birch and alders) may be required to encourage the later seral stages of plant succession on these sites. Shrub species would be planted concurrently with the revegetation plot trial plantings.

The initiation of progressive reclamation measures that see the covering of areas with overburden (toe berm of ice-rich overburden dump, toe of first lift of wasterock dump and toe of starter bench for tailings deposit) will provide areas of different aspect/exposure for the establishment of initial revegetation trial plots. Table 4-2 outlines the proposed trial plot locations, design and implementation and monitoring schedule for the revegetation trial program.

The successes from the trial plot program will be transferred to the progressive reclamation efforts that will provide a large-scale opportunity for refinement of reclamation and revegetation techniques and measures.

Table 4-1 Selected Seed Mixture for Initial Revegetation Trials

Native Species	Mix #1 Willow / Sedge kg/ha	Mix #2 Black Spruce kg/ha	Mix #3 Mixed Deciduous / Coniferous kg/ha	Mix #4 Sand / Gravel Cutslopes kg/ha
Yukon wheatgrass			2	4
Violet wheatgrass			6	6
Northern fescue			2	
Arctic lupine			2	
Yellow locoweed				1
Glaucous bluegrass			2	3
Meadow foxtail	3	5		
Tufted hairgrass	4	4		
Polargrass		1		
Bluejoint reedgrass	1	1		
Altai fescue		6		
Fowl bluegrass	8			
Sheep fescue			2	5
Showy locoweed				
Sweetgrass			1	
Total (kg/ha)	**16**	**17**	**17**	**19**

Native species may be substituted with agronomic species, however, native species are recommended and require approximately one half the weight in seed as the agronomic species (adapted from Kennedy 1993.)

Table 4-2 Revegetation test plot establishment locations and monitoring schedule

Location	Description	Proposed Plot Details	Establishment Timeline	Monitoring Timeline
Toe Berm of Ice Rich Overburden Dump	east facing aspect, ~50% slope	Control Plot (no treatment) Plots with variable seed/fertilizer rates Spring and fall plantings	Spring 2007	Anually in August Observations, soil samples
Toe of Waste Rock Dump	south facing aspect, rolled bench/slope	Control Plot (no treatment) Plots with variable seed/fertilizer rates Spring and fall plantings	Spring 2007	Anually in August Observations, soil samples
Starter Bench below Tailings Deposit	north facing aspect, ~40% slope	Control Plot (no treatment) Plots with variable seed/fertilizer rates Spring and fall plantings	Fall 2007	Anually in August Observations, soil samples
Tailings Deposit Surface	low slope (~2%)	Control Plot (no treatment) Plots with variable seed/fertilizer rates Spring and fall plantings	Spring 2008	Anually in August Observations, vegetation samples, soil samples
Typical Fill Slope	variable slopes and aspects	Control Plot (no treatment) Various slopes to determine erosion/slumping impacts Plots with variable seed/fertilizer rates Spring and fall plantings	Spring 2007	Anually in August Observations, soil samples
Borrow Area on Access Road	flat, compacted gravels	Control Plot (no treatment) Plots with variable seed/fertilizer rates Spring and fall plantings Indigenous shrub plantings	Spring 2007	Anually in August Observations, soil samples

Further planning of the test program will be conducted in the winter of 2006/07 and the program will be initiated in the spring of 2007, with the establishment and planting of test plots at the ice-rich overburden dump, waste rock dump and borrow area locations. Planting of the test plot on the tailings facility starter bench will be conducted in the fall of 2007 and the tailings surface plot will be established in the spring of 2008, after the placement of the initial lift of tailings.

Monitoring of the plots will take place annually in August by a vegetation specialist. The following parameters will be monitored at each plot during the annual inspections:

- established photo hubs will documented photographically and growth success and species present will be documented;
- vegetation samples will be collected from the plots for ICP metals scan to assess metals uptake; and
- soil samples will be collected from plots and analyzed for ICP metals, available nutrients and general parameters such as soil pH and alkalinity.

In addition, natural revegetation success at other locations on the site will be tracked and incorporated into the final reclamation revegetation plan.

5.0 CLOSURE MEASURES FOR RECLAMATION COMPONENTS

This section presents a discussion of the closure issues and measures associated with the various components slated for reclamation (reclamation components) on the Minto property. The approach to each subsection is to present a description of each area so that readers are familiar with the existing facility and do not have to refer back to previous reports or information. Planned closure measures are then presented. Each section is supported with detailed figures and tables as required. Where needed, references are made to previous reports or supporting documentation.

Figure 2-3 provides a general arrangement plan for current conditions at the site as of September 2006, and Figure 5-1 presents the ultimate overall site plan as proposed at the end of mine life. Figure 5-2 to Figure 5-9 provide summaries of the various closure measures for features or groups of features on the general arrangement plan.

The disturbed area has been divided into reclamation components as follows:

- Waste Rock And Overburden Dumps;
- Open Pit and Haul Roads;
- Tailings Area and Diversion Structures;
- Main Water Dam;
- Mill and Ancillary Facilities;
- Mill Pond;
- Access Road; and
- Miscellaneous Components.

Minto Mine Project

Detailed Decommissioning and Reclamation Plan

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Main Waste Dump

Oxide Pad for Low-grade Ore Stockpile

Open Pit

Mill Site

Camp

Main Water Dam

Impounded Water Surface

Access Road and Power Transmission Line

Creek

Minto

Mill Complex

High Grade Ore Stockpile Pad

Finger Drains

Finger Drains

Tailings Deposit

South Diversion Ditch

Diversion Berms

Old Airport Road

Solid Waste Facility

Land Treatment Facility

Airstrip

Ice-rich Overburden Dump

Explosives Yard

Legend

- Access Road
- Road
- Exploration Road / Trail
- Transmission Line
- Contour
- Site Feature Profile Contour
- Water Course
- Areas of Construction

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Original Drawing by HATCH
ACAD-Overall for Reclamation.dwg, Drawn by D.L.N Feb. 06

Projection: UTM Zone 8 NAD83
Units: Meters
NTS: 115I/11

Figure 5-1

Ultimate Overall Site Plan

Scale: 0 100 200 400 m

ebo

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Drawn by: HD/RG	Checked by: RM	Date: October 2006

Our File: D:\Project\AllProjects\Minto\gis\mxd\ClosurePlanSept06\Fig5_1_UltimateMinePlan.mxd

Table 5-1 provides a summary of the project area disturbance at the end of mine life. This table lists the reclamation components and sub-components, the area disturbed by each component during construction and operations, the area slated for progressive reclamation and the area requiring reclamation at final closure. Of note is that the area disturbed is the "footprint" of the disturbance, where the reclamation areas refer, where applicable, to the entire (slope compensated) surface area of the reclamation component. An example of this would be the increased surface area of the final waste rock dump compared with the actual footprint of the area disturbed.

In addition, three different closure scenarios regarding the access road are considered, and each affects the component and total reclamation areas differently, depending upon the final closure option selected. Section 5.6 discusses these scenarios and associated reclamation measures further.

In total, it is estimated that 195.1 hectares will be disturbed as a result of the mine development with 58.9 to 85.1 hectares (depending on access road closure extent) requiring reclamation at the end of mine life. Figure 5-10 provides a summary of planned closure activities for various mine components.

Table 5-1 Estimated Area of Disturbance – End of Mine Life (7 years)

Reclamation Component	Area Disturbed (ha)	Total Surface Area Requiring Reclamation (ha)	Area Reclaimed Progressively (ha)	Area Requiring Reclamation at Final Closure (ha)	
Overburden and Waste Rock Dumps	**46.7**	**54.3**	**33.5**	**27.5**	
Main Waste Dump	31.5	37.8	32.3	5.5	
Ice-Rich Overburden Dump	6.6	7.9	1.2	6.7	
Ore Stockpile Areas	8.6	8.6	0	8.6	
Open Pit	37.1	5	5	0	
Haul Roads	5.0	5.0	0	5.0	
Tailings Area	37.3	38.5	30.9	7.6	
Main Water Dam (including 4.7 ha impacted by impounded water)	6.0	6.0	0	6.0	
Mill and Ancillary Facilities	7.6	7.6	0	7.6	
Access Road (extent of access road reclamation to be determined with SFN)	26.2	26.2	0	**Scenario 1** (No Deactivation)	**0**
				Scenario 2 (Deactivation From Mine Site to Minto Creek Crossing)	**8.8**
				Scenario 3 (Complete Access Road Deactivation)	**26.2**
Miscellaneous Components	**29.2**	**5.8**	**0.6**	**5.2**	
Mine Camp	2.2	2.2	0.6	1.6	
Air Strip	2.4	n/a	n/a	n/a	
Exploration Sites and Trails	21.0	n/a	n/a	n/a	
Land Treatment & Solid Waste Facilities	1.0	1.0	0	1.0	
Explosives Plant Site	2.6	2.6	0	2.6	
Total	**195.1**	**161**	**82.6**	**Scenario 1**	**58.9**
				Scenario 2	**67.7**
				Scenario 3	**85.1**

5.1 WASTE ROCK AND OVERBURDEN DUMPS

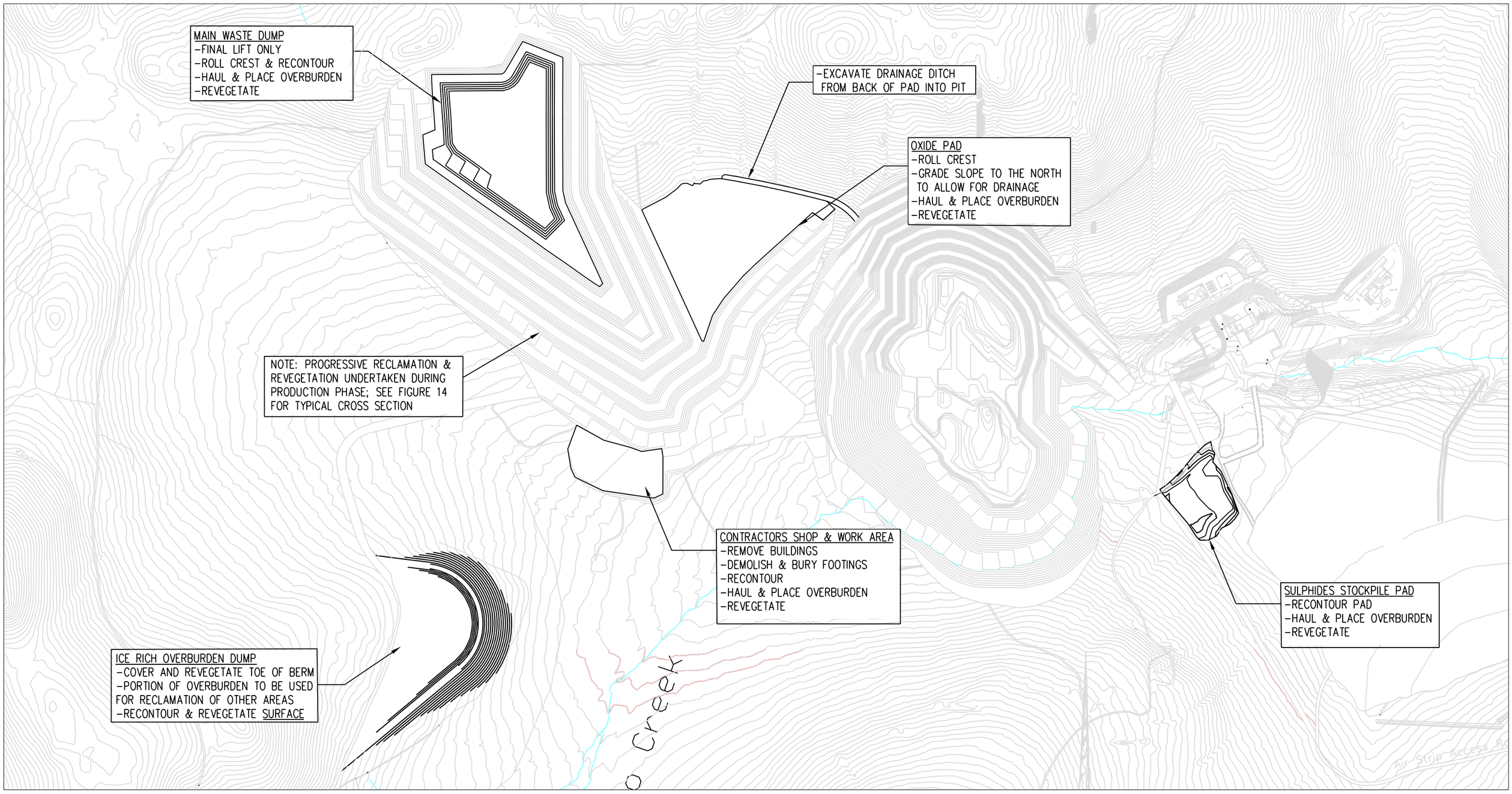
Figure 5-1 shows the locations and layouts of the main waste rock dump, ice-rich overburden dump, ore stockpile pads and contractor's shop and work area at the end of mine life. Figure 5-2 summarizes the reclamation measures for each component.

5.1.1. Main Waste Rock Dump

5.1.1.1. Closure Issues

The main waste rock dump, located immediately northwest of the open pit, will be established in sequential lifts as extracted from the pit. Prior to the placement of subsequent lifts, the toe slope and bench below the slope of the finished lift will be reclaimed as per Figure 5-3, which shows typical progressive reclamation measures of a dump slope. Slope crests will be rolled over and the slope and bench surfaces will be covered with a layer of overburden 25 cm thick. Initial reclamation of the waste rock toe slopes (recontouring and covering with growth media) will also include the establishment of revegetation trial plots, and the ultimate revegetation seed mixtures and fertilization requirements for the main waste rock dump will depend on trial and natural revegetation success.

Physical stability of the waste rock dump is of primary concern in a closure scenario. The waste rock dump will be constructed according to EBA's Waste Rock Stability Evaluation, Minto Project, Yukon (1996) which addresses physical stability design considerations such as maximum credible earthquake criteria, therefore the likelihood of failure will be low. In the unlikely event of a dump failure, the consequences would be minor as there are no public facilities downslope of the dump and the open pit would effectively act as a settlement basin for any sediment load within runoff water before it is introduced to Minto Creek.



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TITLE FIGURE 5-2: RECLAMATION MEASURES FOR WASTE ROCK AND OVERBURDEN DUMPS

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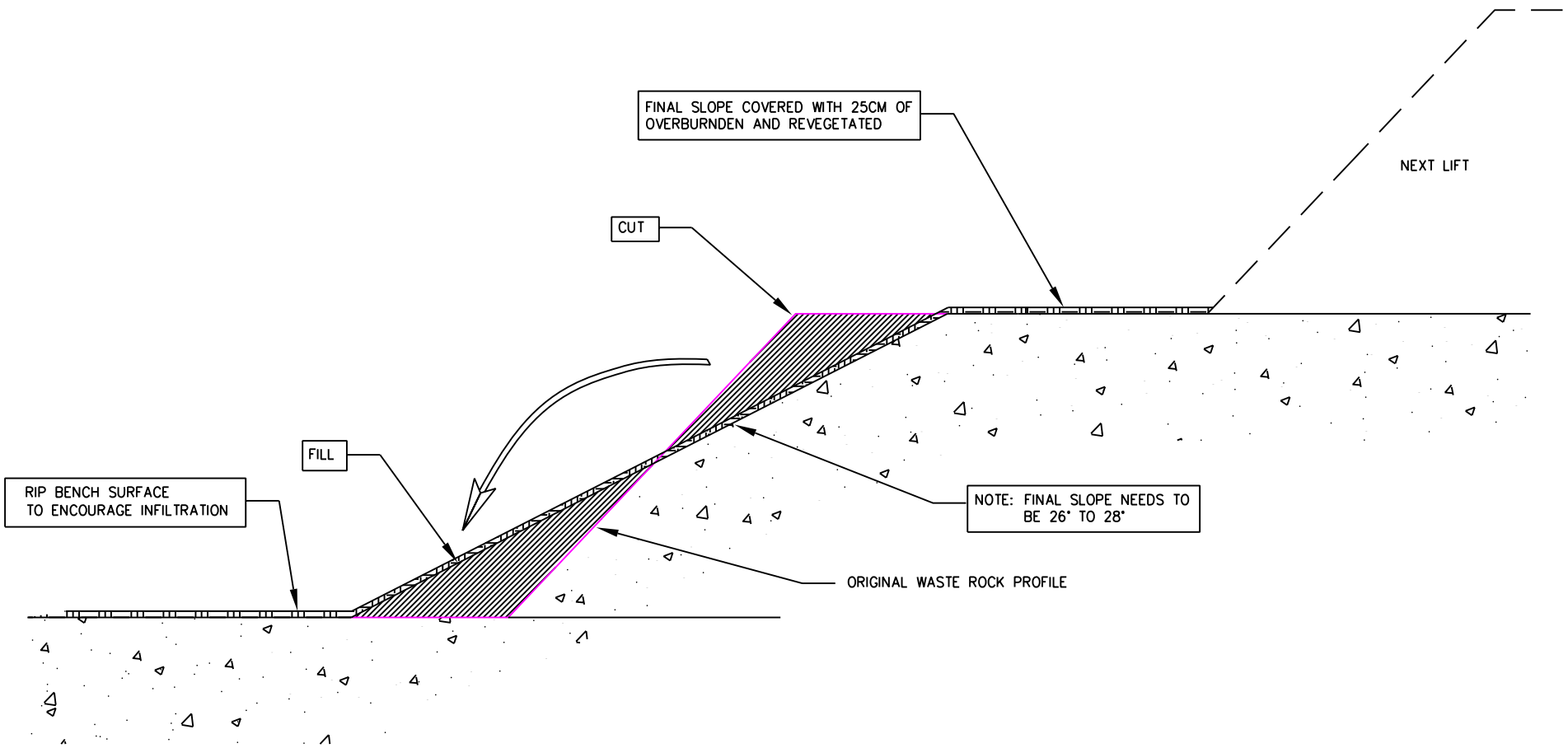

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TITLE	FIGURE 5-3: TYPICAL PROGRESSIVE RECLAMATION MEASURES
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Geochemically, runoff from the main waste rock dump would contribute a minor metal (primarily copper) load to the already high background metal concentrations of Minto Creek (IEE). Previous acid-base accounting testwork and assessment on waste rock materials overlying the orebody indicates that there is a very low potential for acid generation and metal leaching (Mills, 1997.)

5.1.1.2. Closure Measures

As progressive reclamation advances with the dump establishment, final reclamation measures will only be required for the 5.5 hectare area of the final waste rock lift. This will see the final lift covered with growth media and seeded as per successful techniques and mixtures established during progressive reclamation activities. Overburden will be loaded with an excavator and hauled by trucks initially from the pit area after removal, and later from the overburden dump. Overburden can be spread with the trucks and further spread with a dozer equipped with wide tracks. Compaction of the overburden during spreading will be minimized.

The following section lists the closure measures related to both physical stability and geochemical stability that are planned for this portion of the main waste rock dump. It is presented as an itemized list for ease of reference, as this will form the basis for the costing and scheduling.

<u>Physical Stability</u>

i. Roll crests of final waste rock lift and recontour.
   - *Dozer x 150 hrs for area of 5.5 ha*

ii. Haul and place overburden on surface and prepare for seeding.
   - *Hoe x 20 hrs; Haul Trucks x 40 hrs, Dozer x 150 hrs (5.5 ha x .25 m cap = 13, 750 m3)*
   - *Costing done on basis of actual equipment time*

iii. Revegetate based on success of test plots.
   - *5.5 ha for seeding/fertilizing, re-seeding 3 ha, plant seedlings on 5.5 ha*

<u>Chemical Stability</u>

i. Continued acid-base accounting test work as per Water Use and Quartz Mining Licence requirements during operations.

- *Ongoing operational cost, not included in closure costing.*

ii. Monitor dump seeps below dump to check on loading from dump.

- *Dump seep survey, monitoring based on findings*

5.1.2. Ice-Rich Overburden Dump

The overburden dump is the furthest west reclamation unit on the site. A toe berm constructed from waste rock will retain the ice-rich overburden and prevent migration of the material downslope.

Overburden material from this dump will be used as a growth media cover for both progressive and final reclamation of various units including the tailings disposal area, waste rock dumps, mill and plant area, water dam and access roads. Overburden that remains on the dump after closing reclamation has been completed will be resloped and revegetated.

5.1.2.1. Closure Issues

Physical stability of the ice-rich overburden dump is the primary concern for closure. The waste rock dump will be constructed according to EBA's Geotechnical Design, Ice-Rich Overburden Dump, Minto Mine, Minto YT (2006) which addresses physical stability design considerations such as maximum credible earthquake criteria, and much of the overburden material will be removed from the dump for closure measures on other sites. Therefore the likelihood of failure will be low. As with the waste rock dump, the consequence of failure of the dump would be minor as there are no public facilities downslope of the dump and the open pit would effectively act as a settlement basin for any sediment load within runoff water before it is introduced to Minto Creek.

Chemical stability of the dump is not a concern for closure. Seepage from the dump is expected (by design) through the toe of the waste rock berm, but the organic/clay nature of the overburden material is not expected to contribute a significant chemical load to this seepage.

5.1.2.2. Closure Measures

Initial reclamation of this unit will involve the placement of a 25 cm layer of overburden on the toe berm. This material will cover the uppermost 75% of the slope, leaving the furthest

downslope area of the toe berm (where it contacts the original ground surface) uncovered to allow moisture seepage as per the construction design. This will avoid raising the phreatic surface inside the dump.

Revegetation test plots will be established on the toe berm in 2007, and ultimate revegetation seed mixtures and fertilization requirements for the overburden dump will depend on trial and natural revegetation success.

Materials from the dump will be utilized as a growth medium on other sites at closure, with the remaining materials in the dump will be subject to in situ closure methods. The following section lists the closure measures related to both physical stability and geochemical stability that are planned for this portion of the ice-rich overburden dump. It is presented as an itemized list for ease of reference, as this will form the basis for the costing and scheduling.

Physical Stability

i. Recontour overburden surface after reclamation activities completed on other sites
   - *Dozer x 30 hrs*

ii. Revegetate based on success of test plots.
   - *6.7 ha for seeding/fertilizing, re-seeding 3 ha, plant seedlings on 6.7 ha*

Chemical Stability

No specific closure measures required.

5.1.3. Ore Stockpile Pads

Ore to be milled will be stockpiled on constructed pads in various locations on the site during active mining activities. The pads will require reclamation at final closure. Specific stockpile pads will include:

- High grade sulphide ore stockpile pad (located south of the mill); and
- Low grade sulphide ore stockpile pad (located between the pit and the main waste rock dump.)

5.1.3.1. Closure Issues

Physical stability of the ore stockpile pads is the primary concern for closure. The low grade sulphide stockpile pad will be constructed from waste rock according to design criteria set out in EBA's Waste Rock Stability Evaluation, Minto Project, Yukon (1996) which addresses physical stability design considerations such as maximum credible earthquake criteria, therefore the likelihood of failure will be low.

Geochemically, runoff from the low grade sulphide pad (constructed from oxidized materials) would have the potential to carry a minor metal (primarily copper) load. Acid-base accounting testwork to date on oxidized waste rock materials overlying the orebody indicates that there is a very low potential for acid generation and metal leaching (Mills, 1997.)

5.1.3.2. Closure Measures

Progressive reclamation measures will not apply to these stockpiles, as they will typically see material handling activities thought the entire mine life. All stockpile pads will be recontoured, covered with overburden and seeded upon final reclamation. To discourage runoff from compromising the physical stability of downslope reclamation efforts (overburden placement and revegetation), the 5.2 hectare area of the low grade ore pad adjacent to the main dump will be graded slightly to the north (towards the hillside) prior to covering and a rip rap lined collection ditch will be constructed to convey this runoff over the high wall and into the pit.

The following section lists the closure measures related to both physical stability and geochemical stability that are planned for the ore stockpile pads. It is presented as an itemized list for ease of reference, as this will form the basis for the costing and scheduling.

<u>Physical Stability</u>

iv. Roll crests of pads and recontour.
- *Dozer x 60 hrs for area of 8.6 ha*

v. Construct runoff collection ditch for low-grade ore pad.
- *Dozer x 10 hrs, Hoe x 16 hrs*
- *Haul and place rip rap, 275 m x 3 m x 0.5m = 415 m3 x $13/m3*

vi. Haul and place overburden on surface and prepare for seeding.
- *Hoe x 15 hrs; Haul Trucks x 20 hrs, Dozer x 10 hrs (8.6 ha x .25 m cap = 21,500 m3)*

vii. Revegetate based on success of test plots.

- *8.6 ha x $1971/ha for seeding/fertilizing, re-seeding 4 ha, plant seedlings on 8.6 ha*

Chemical Stability

iii. Continued acid-base accounting test work as per Water Use and Quartz Mining Licence requirements during operations.

- *Ongoing operational cost, not included in closure costing.*

iv. Monitor pad seeps below to check on loading from pad seepage.

- *Pad seep survey, monitoring based on findings*

5.1.4. Contractor's Shop and Work Area

The mining contractor's area, constructed on site adjacent to the toe of the waste rock dump, will serve as the base of operations for the mining contractor during active mining activities. At closure, the buildings in this area will be dismantled and removed, and any scrap will be hauled to the on site permitted Solid Waste Facility.

5.1.4.1. Closure Issues

Physical stability will not be a concern at closure for this area. This is a low elevation pad that will only require proper erosion control. The chemical stability of the remaining soils will be ensured through an investigation for contaminated soils during the environmental site assessment at closure, and any contaminated materials will be hauled to the on site Land Treatment Facility.

5.1.4.2. Closure Measures

The following section lists the closure measures related to both physical aspects and geochemical stability that are planned for the contractor's shop and work area. It is presented as an itemized list for ease of reference, as this will form the basis for the costing and scheduling.

Physical Stability

i. Remove salvageable equipment and dismantle buildings; haul off site

- *Hoe x 20 hrs for area of 2 ha*

- *Tractor Trailer and lowbed x 20 hrs*

ii. Haul scrap to site waste management facility

- *Haul truck x 20 hrs*

iii. Footings pushed in and buried with fill

- *0.25 ha x 1 m deep = 2,500 m3*

iv. Recontour and cover in 0.25 m overburden for seeding

- *Dozer x 35 hrs, hoe x 20 hrs, haul trucks x 40 hrs*

v. *Revegetate based on trial success*

- *8.6 ha x $1971/ha for seeding/fertilizing, re-seeding 4 ha, plant seedlings on 8.6 ha*

Chemical Stability

i. Site will be assessed for contaminated soils

- *Part of environmental site assessment at closure*

ii. Contaminated soils moved to land treatment facility on site

- *Cost based on volumes at closure, estimate 25 m^3*

5.2 OPEN PIT AND HAUL ROADS

Figure 5-1 shows the location and layout of the open pit and haul roads at the end of mine life. Figure 5-4 summarizes the reclamation measures for each of these components, and the specific measures are discussed in greater detail below.

5.2.1. Open Pit

The open pit will encompass the drainage channel for Minto Creek and therefore will be diverted along the south side of the pit during operations. It is anticipated that this diversion will run adjacent to the access ramp and the flow will re-enter the original Minto Creek channel on the east side of the pit.

5.2.1.1. Closure Issues

The pit will be excavated according to MintoEx's Open Pit Design Plans (2006). With respect to physical stability of the pit, at closure the north wall of the pit will be benched in competent bedrock, and the south wall will be a continuous slope composed of ice-rich permafrost. The exposed south wall of the pit will have been covered with a thermal insulating medium during operations to prevent thawing and destabilization and this covering will remain at closure.

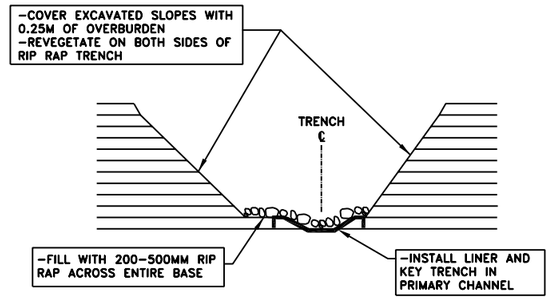
Acid-base accounting indicates that the open pit wall rocks are slightly acid consuming or neutral and this will be confirmed by work done during the life of the mine through the Water License ABA Test Program. The open pit will act as a very large settling pond for all runoff from the overburden and waste rock dumps. Water quality will be monitored at the mill water pond channel as required, see section 7.4 for the monitoring locations and schedule.

OPEN PIT
–FLOOD PIT TO 791.5M LEVEL

HAUL ROADS
–RECONTOUR AS PER FIGURE 14

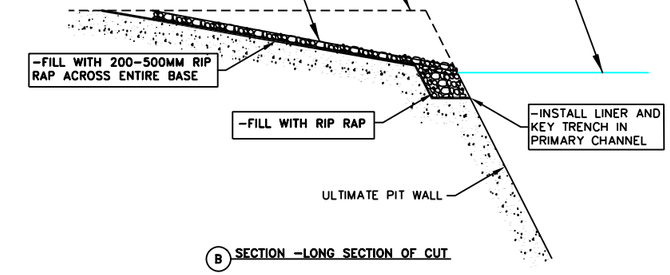
–REDIRECT MINTO CREEK INTO SOUTHWEST WALL OF PIT VIA LINED CHANNEL AFTER PIT FILLS TO 791.5M

–REMOVE CMP FLUME



A SECTION – CROSSECTION OF CUT

MINTO CREEK ENTRANCE CHANNEL



B SECTION –LONG SECTION OF CUT

MINTO CREEK ENTRANCE CHANNEL

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TITLE	FIGURE 5-4: RECLAMATION MEASURES FOR OPEN PIT AND HAUL ROADS
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5.2.1.2. Closure Measures

Prior to flooding, any accessible benches in the pit will be scarified to encourage natural revegetation, but no reclamation work will be done on the open pit high walls beyond the operational measure of thermal stabilization previously mentioned. Boulders, up to 1 m in size, will be placed on all potential access routes to prevent uncontrolled access to the pit.

At closure, the diversion of Minto Creek around the pit will be maintained but will terminate in the pit instead of flowing back into the creek channel, to begin the pit flooding process. This diversion will persist while an armoured entry channel is constructed that will ultimately lead the Minto Creek flow into the open pit. The temporary southern pit diversion will be abandoned.

This channel will be excavated in an area of continuous permafrost. The channel will be excavated to a slope of approximately 5.5 to 1, and will terminate at the 791.5 m elevation. The main channel will be armoured with 1 metre of rip rap, and the excavation slopes will be covered in 25 cm of overburden and vegetated with willows to stabilize the future riparian zone. Entrainment of Minto Creek into the pit via the constructed channel will not occur until these slopes are sufficiently stabilized and revegetated and the pit is completely flooded.

The open pit will be flooded to the 791.5 m elevation at the end of the life of the mine. Flood water will flow from the open pit at the low spot on the final access ramp to the mill pond and then Minto Creek. The time required to flood the open pit is estimated to be 5.5 years based on mean flows. Approximately *55* % (10.6 ha) of the open pit walls will remain exposed above water.

The following section summarizes the closure measures related to both physical stability and geochemical stability that are planned for the open pit. This will form the basis for the costing and scheduling.

<u>Physical Stability</u>

i. Remove pumping/piping systems, general cleanup
   - *Labour x 80 hrs, support equipment $1000*

ii. Construct creek entrance channel into pit
   - *Hoe x 20 hrs, haul truck x 20 hrs, dozer at 150 hrs*

- *HDPE liner installation, 150 m2*
- *Haul and place rip rap , 150 m3*

iii. Reroute diversion into pit

- *Hoe x 20 hrs*

iv. Secure pit access with boulders

- *Hoe x 20 hrs, haul truck x 20 hrs*

Chemical Stability

i. Continued acid-base accounting test work as per Water Use and Quartz Mining Licence requirements during operations.

- *Ongoing operational cost, not included in closure costing.*

ii. Monitor pit discharge water quality as part of post closure monitoring program

- *Monthly during active closure, semi-annually to annually in post-closure.*

5.2.2. Haul Roads

The haul roads on the site will radiate out from the open pit to the mill, the ore stockpiles, the waste rock dump and the ice-rich overburden dump. Figure 5-5 shows typical road reclamation measures that will be employed at final closure. These measures will apply to haul roads, site roads and the main access road alike.

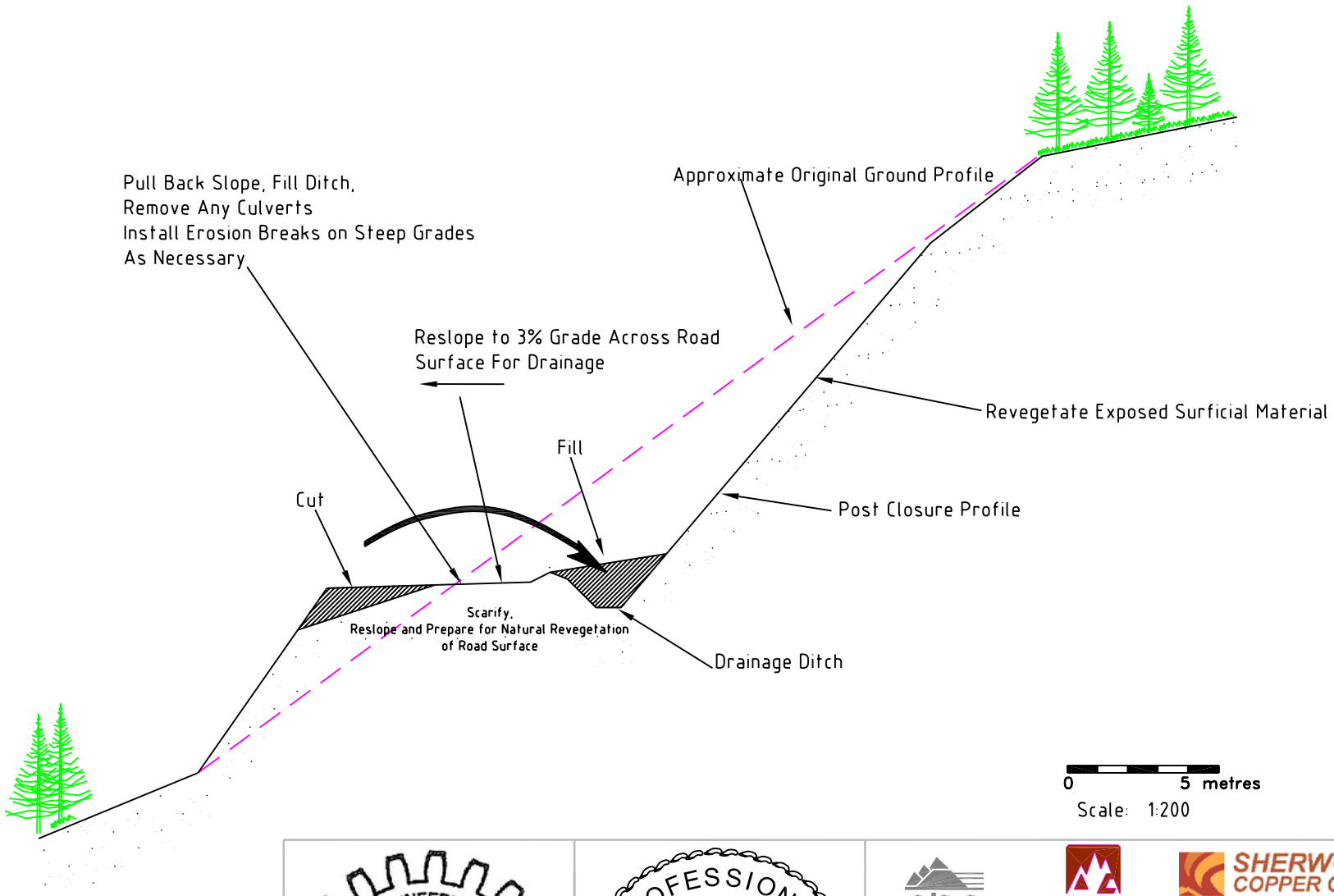
5.2.2.1. Closure Issues

The primary consideration for the physical stability of the haul roads at closure will be slope stability where culverts have been removed and drainages channels have been established through the road alignments.

Geochemically, the road materials have not been observed to contribute to chemical loading of runoff, but the understanding of this potential will be refined through adaptive management during operational water quality monitoring. Physical stabilization measures such as erosion control and revegetation of the haul roads will contribute to the mitigation of any potential geochemical concerns at closure.

5.2.2.2. Closure Measures

These roads will be subject to standard road decommissioning and reclamation measures at closure, including culvert excavation, drainage recontouring, slope stabilization and surface scarification. Regrading/contouring the roads will ensure that runoff sheds off the road surface. The road surfaces are not expected to require seeding, only surface scarification to encourage natural revegetation. Should runoff from haul road bed materials present a geochemical concern, seeding and fertilization may be required.



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TITLE Figure 5-5: Haul Road and Site Road Typical Reclamation Cross-Section

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The following section summarizes the closure measures related to both physical stability and geochemical stability that are planned for the haul roads. This will form the basis for the costing and scheduling.

Physical Stability

i. Excavate and remove culverts
   - *Labour x 40 hrs, hoe x 20 hrs, haul truck x 20 hrs*

ii. Recontour slopes and surfaces
   - *Dozer at 150 hrs*

iii. Scarify road surfaces
   - *Dozer x 150 hrs*

iv. Stabilize slopes
   - *Erosion barriers: 5 x 400 m^2 = 2000 m^2*

Chemical Stability

i. Continued testing and monitoring of runoff quality
   - *Ongoing operational cost, not included in closure costing.*

5.3 TAILINGS AREA AND DIVERSION STRUCTURES

The tailings from the Minto milling process will undergo a filtration process before being conveyed to the tailings deposit area for spreading and compaction. The company's Tailings Management Plan provides further detail on the tailings handling procedures, and will be submitted to EMR in conjunction with this Plan. The general location of the tailings area and diversion structures is shown in Figure 5-1 and proposed reclamation measures for the tailings area and diversion structures are presented in Figure 5-6.

5.3.1. Closure Issues

The Minto tailings deposit will be located on a bench opposite (to the south) of the mill and upslope from the Minto Creek channel, and will be constructed to the specifications provided in the Tailings Management Plan. As such there should be no physical stability concerns with the tailings deposit.

At closure, tailings deposits often require an engineered cap consisting of clay or synthetic liners to prevent precipitation infiltration into the tailings and subsequent leaching of chemical tailings constituents into the receiving environment. As the Minto Project tailings will be filtered and mechanically spread and compacted and will have a very low moisture content, the deposit will have a low permeability factor. Infiltration of precipitation is not expected, as the deposit will effectively 'shed' direct precipitation. Design components (diversion berms and ditches and finger seepage drains) will intercept and divert surface runoff from upslope and seepage from below the deposit respectively. These flows (which will report to the dam reservoir during operations) will be regularly monitored in addition to the monitoring at the established final complicance point as part of the post-closure monitoring program (see Figure 7-1). Previous testwork has indicated no acid-rock drainage/metal leaching potential within the tailings (Mills, 1997) and there are no expected geochemical concerns with the tailings area.

N

Mill Site

Minto Creek

Access Road Platforms
- progressively reclaimed and revegetated during operations

758.5

776.5

770.5

782.5

788.5

High-Grade Ore Stockpile Pad

Tailings Area

791.5

782.5

792.0

Tailings Area - 25% Surface of Final Lift
- recontoured if necessary
- haul and place overburden (50cm cover)
- revegetated based on trial plots

794.5

797.5

Tailings Area Surface
- progressively reclaimed during operations

South Diversion Ditch

Road

A'

A

Surface Water Diversion Berm

800.5

806.5

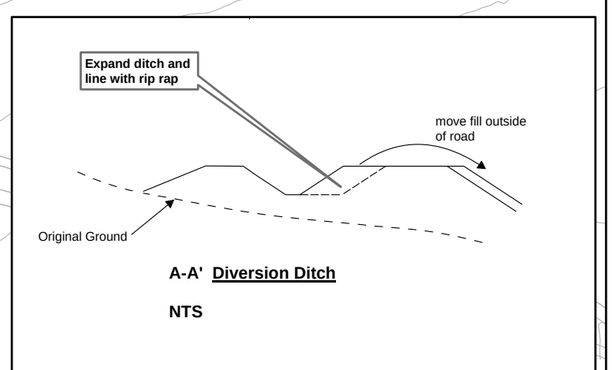
818.5

830.5

South Diversion Ditch
- south diversion ditch widened
- lined with 0.5m thick >200mm rip rap

Old Airport\Road

842.5



A-A' Diversion Ditch

NTS

Minto Mine Project

Detailed Decommissioning and Reclamation Plan

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Legend

- Access Road
- Road
- Exploration Road / Trail
- Transmission Line
- Contour
- Site Feature Profile Contour
- Water Course
- Areas of Construction

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Base data obtained from Yukon Engineering Services
Nov3_06_status_plan.dwg

Projection: UTM Zone 8 NAD83
Units: Meters
NTS: 115I/11

Figure 5-6

Reclamation Measures for Tailings Area and Diversion Structures

Scale: 0 25 50 100 150 m

ebo

ACCESS CONSULTING GROUP

Drawn by: HD	Checked by: RM	Date: October 2006

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5.3.2. Closure Measures

Reclamation measures at the tailings facility will focus on erosion control of the tailings surface and on the toe of the fill platforms used for access around the toe of the tailings area. As the tailings will be constructed from the lowest section of the tailings basin upwards, mine operators will progressively reclaim and revegetate the tailings facility concurrent with the placement of tailings materials during the life of the mine. This will include covering the tailings with fill or overburden material to prevent aeolian erosion and ex-situ deposition.

The access road and rock fill platforms will be progressively recontoured as the tailings basin increases in size. The repose will be 4:1 for the length of the tailings face (top to bottom), with small sections of step-like platforms that form a 1:1 repose on the downside edge of each platform. Prior to the placement of each new platform, the existing slope will be recontoured (crest rolled back) and covered with a layer of overburden approximately 25 cm in thickness. Figure 5-3 details these progressive reclamation measures. The initial growth media placement on the tailings facility will be followed by the establishment of revegetation trial plots.

Section 9.3 – Site Zonation of the IEE highlighted the specific vegetative characteristics of the tailings disposal area:

> *"Willow/sedge communities occurred in the Minto Creek valley, adjacent to the creek. This region was usually poorly drained and prone to flooding. A moderate to dense overstory of willow occurred. Groundcover was dominated by sedge species and moss; grasses and horsetail were common and sphagnum moss was often present. Riparian vegetation occurred along the creek drainage. Associated species included scrub birch, shrubby cinquefoil, nagoonberry, sedge, grass, horsetail, coltsfoot, tall lungwort and sphagnum moss.*
>
> *Black spruce communities occurred on north aspect slopes in the Minto Creek valley. These communities have a sparse tree layer dominated by black spruce and a shrub understory of scrub birch, willow, Labrador tea and shrubby cinquefoil. The herb layer for these communities consisted of bog blueberry, crowberry, red bearberry, cloudberry and lousewort. The moss groundcover layer in these areas was extensive and was usually dominated by sphagnum moss and feathermoss."*

In recognition of this assessment, seed mixtures compatible with the willow/sedge (mix #1) and black spruce (mix #2) communities as shown in Table 4-1 will be used for initial seeding of the test plots in the tailings area, however the ultimate revegetation seed mixtures and fertilization requirements for the tailings facility will depend on revegetation trial and natural revegetation success.

At final closure, approximately 25% of the total deposit surface area will require reclamation, with the balance having been previously reclaimed during operations. Little recontouring of the thickened tailings material will be required as the repose will be approximately 1:40. The remaining surface of the tailings deposit will be covered with overburden growth media 50 cm thick and seeded.

Reclamation of the filter building is covered in Section 5.5 under Mill and Ancillary Facilities reclamation measures.

The main diversion structure – the south diversion ditch – conveys the flow from the main tributary channel previously running through the area of the future tailings deposit into the mill water pond. This ditch is presently constructed to convey a 1 in 200 year flood event, so will require widening at closure to accommodate Probable Maximum Flood (PMF) calculated flows.

The following section summarizes the closure measures related to both physical stability and geochemical stability that are planned for the tailings facility and diversion structures. This will form the basis for the costing and scheduling.

Physical Stability

i. Haul and place overburden cover, 0.5 m thickness
   - *8.0 ha x 10,000 m2/ha x 0.5 m thick = 40,000 m3*

ii. Revegetate based on trial success
   - *8.0 ha for seeding/fertilizing, re-seeding 4 ha, plant seedlings on 8.0 ha*

iii. Widen south diversion ditch and re-line and armour
   - *Hoe x 30 hrs*
   - *Supply install HDPE liner, 500 m x 6 m = 3000 m2*
   - *Haul and place rip rap liner, 500 m x 6 m x 0.5 m deep = 1500 m3*

Chemical Stability

i. Monitor diverted seepage and runoff water quality as part of post closure monitoring program

- *Monthly during active closure, semi-annually to annually in post-closure.*

5.4 MAIN WATER DAM

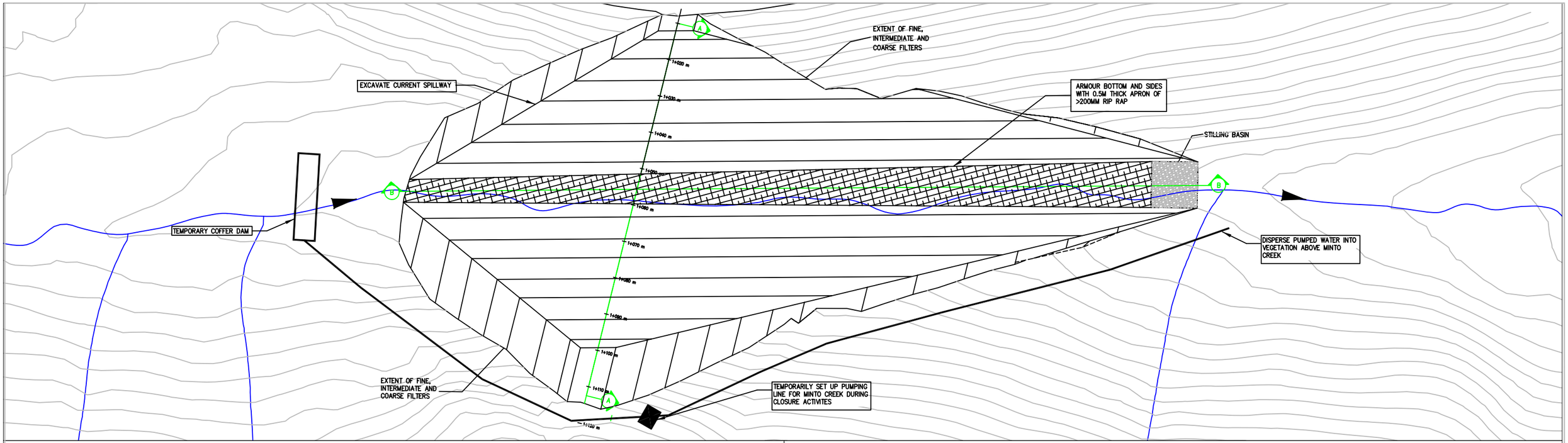
The location of the main water dam relative to the other site development is shown in Figure 5-1. The water dam on Minto Creek will provide 7 years of water retention for mill processes and various site uses during operations. Upon completion of the dam construction, areas in the immediate vicinity that have been disturbed will be re-contoured and seeded. Figure 5-7 shows the planned measures for main water dam reclamation.

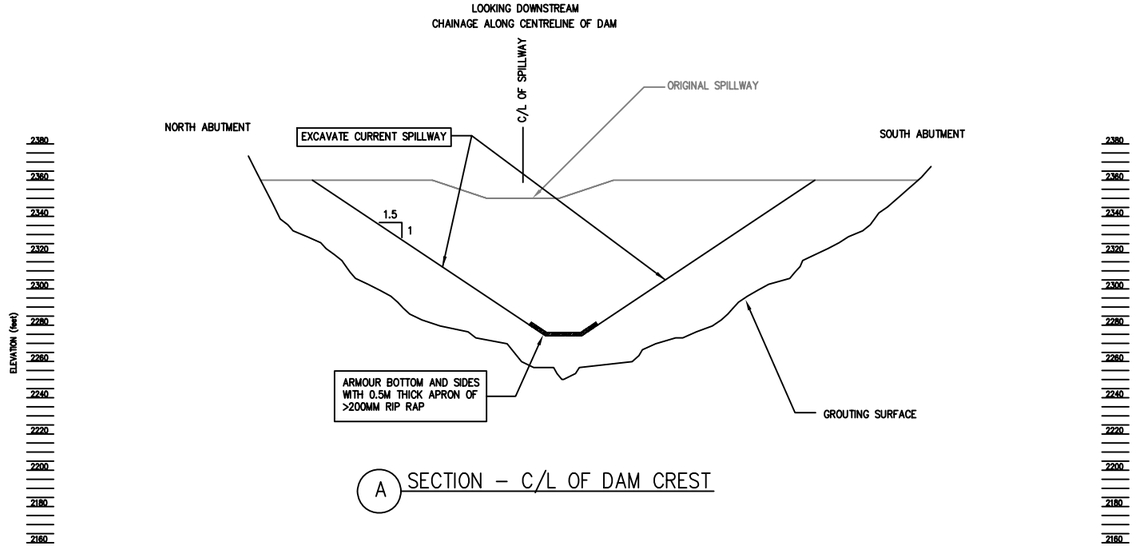
5.4.1. Closure Issues

Physical stability of the structure will be ensured during operations by regular geotechnical inspections. With the goal of a walk-away closure scenario for the project in place, physical stability concerns post closure will be minimized upon the cessation of mining activities by decommissioning the dam so that no water remains impounded. The reclamation goal for the main water dam will be to return the Minto Creek channel as close to the original alignment/elevation as possible, while maintaining engineering design for probable maximum flood capacity.

5.4.2. Closure Measures

Decommissioning of the main dam will begin with the drawdown of the reservoir by pumping into the Minto Creek channel. Once drained, a temporary coffer dam will be constructed upstream of the dam area to facilitate a ‘pump around’ system. This system will be in place for the duration of the dam decommissioning activities, and will mirror the dam/pump setup used for the dam construction.





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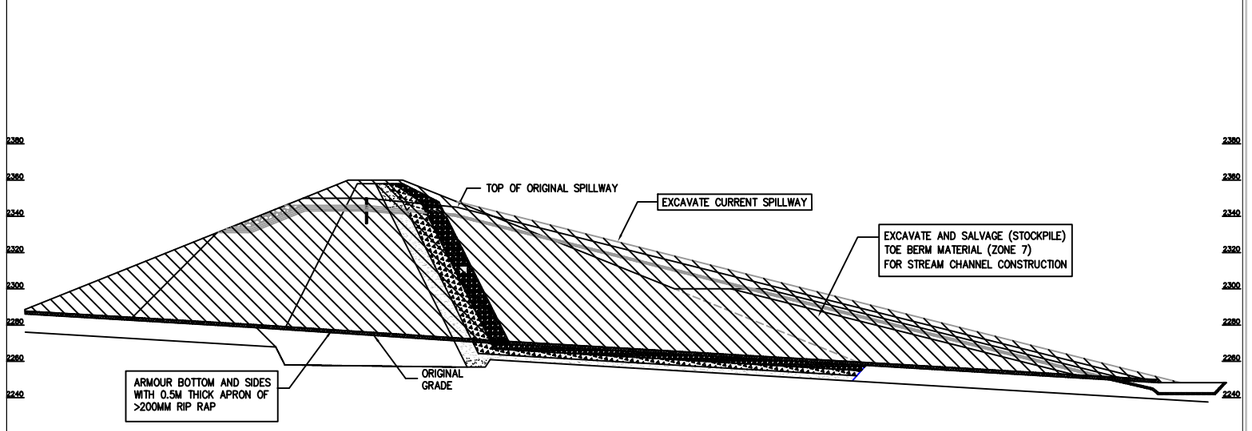

B SPILLWAY SECTION

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ACCESS CONSULTING GROUP

SHERWOOD COPPER CORP.
Minto Explorations Ltd.

TITLE	FIGURE 5-7: RECLAMATION MEASURES FOR MAIN WATER DAM
PROJECT	MINTO MINE
DATE: October 2006	ACCESS JOB NO. MIN-05-01
DWN. CSF	CHKD.
	REVISION NO.: 1

The filling and operation of the dam will lead to the deposition of a layer of fine-grained sediment in the basin above the dam. At closure, this sediment will be tested and covered with fill material from the dam breaching by dozer pushing. Prior revegetation studies of exposed lakebeds created by dams suggest that natural revegetation, albeit slow because of albedo-related high soil temperatures and lower moisture content, would eventually establish on these fine grained soils (Grapel and Hebert, 2006). Bioengineering efforts, such as live willow plantings, may expedite the stabilization of these soils and assist with the establishment of pioneer species that would lower the albedo and retain more moisture. However, it is expected that covering with fill material and using revegetation and bioengineering efforts will return quicker stabilization of these materials.

The breaching of the dam will be commenced after the downstream shell rip rap materials have been removed and stockpiled. The stream channel will essentially be re-established by pushing the materials and spreading in the valley bottom upstream of the dam. A channel will be established (approximately 15 feet wide) and the channel bottom and sides (approximately 10 feet up slope on each side) will be armoured using the stockpiled shell rip rap. These dimensions and materials will fulfill the requirements for PMF design as prescribed in the letter entitled Revised Hydraulic Design for Overflow Spillway at Minto Tailings/Water Dam (Hayco, 2006).

The disturbed slopes above the channel will be covered in overburden, seeded and stabilized with erosion control matting. Live willow plantings will be employed along the channel to enhance succession and stability of growth medium.

The following section summarizes the closure measures related to both physical stability and geochemical stability that are planned for the main water dam. This will form the basis for the costing and scheduling.

<u>Physical Stability</u>

i. Dismantle and remove reclaim system, including pumps, buildings and pipeline.
   - *Labour x 48 hrs, tradesmen x 270 hrs*
   - *Hoe x 120 hrs, haul trucks x 100 hrs*

ii. Recontour pipeline alignment
   - *Dozer x 16 hrs*

iii. Pump down reservoir
- *Labour x 48 hrs*

iv. Characterize sediments
- *Consultants/technicians x 60 hrs, analytical costs*

v. Remove and stockpile the rip rap material from the downstream shell of the dam
- *Dozer x 100 hrs*

vi. Breach dam, relocate and recontour materials, re-establish the stream channel close to the elevation of the original creek channel;
- *75,000 m^3 on unit cost basis*

vii. Armour new channel and stabilize slopes
- *Haul and place rip rap from stockpile, 150 m x 15 m x 0.5 m depth = 1,125 m^3*
- *Haul and place overburden on slopes, 150 m x 20 m x 0.25 m depth = 750 m^3*
- *Place erosion barrier blanket for stabilization, 150 m x 20 m = 3000 m^2*

viii. Revegetate based on trial success
- *Channel slopes: 0.3 ha for seeding/fertilizing, re-seeding 0.2 ha, plant seedlings/shrubs on 0.3 ha*
- *Recontoured sediments/dam materials: estimate 3 ha for seeding/fertilizing, re-seeding 1.5 ha, plant seedlings/shrubs on 3.0 ha*

Chemical Stability

i. Water quality will continue to be monitored at the discharge from the site W3 weir as required for post closure monitoring (Section 7.4.)

5.5 MILL AND ANCILLARY FACILITIES

This section addresses the decommissioning measures for the mill and the facilities in the immediate vicinity that support the milling activities. These include:

- mill and mill reagents;
- concentrate shed;
- filter building;
- fuel storage area and generator buildings; and
- mill water pond

The general location of the milling area is shown in Figure 5-1, and general closure issues and measures are presented for these facilities and are shown in Figure 5-8. Specific decommissioning activities are also outlined in sections 5.5.3 to 5.5.9 for the mill and the ancillary structures.

5.5.1. Closure Issues

Concern regarding physical stability of these structures at closure will be mitigated for the most part by their disassembly and removal from the site. Of these facilities, only the mill water pond closure measures require significant engineering design and earthworks to mitigate physical stability issues.

Chemical stability issues for this area and facilities would arise primarily from contamination of surrounding soils by fuel, chemicals or concentrates. Such instances will be documented through an environmental audit, conducted upon the completion of milling activities.

N

Fuel Storage Area
- remove bulk fuel storage and piping facilities
- fold and bury liner
- recontour and revegetate

Generators
- remove for salvage

Overall Mill Site Area
- haul any contaminated soil to land treatment facility
- haul and place overburden cap
- recontour/roll crests
- dress with 25cm overburden
- revegetate

Mill Building and Reagents
- dismantle building
- remove salvagable equipment
- haul scrap to solid waste facility
- load and return unused reagents/chemicals

Camp

Filter Building and Concentrate Shed
- dismantle building
- remove salvagable equipment
- salvage and remove powerline and poles
- haul scrap to landfill
- demolish concrete and cover structures

Minto Creek

Mill Water Pond

(See Figure 5-9)

Minto Creek

Tailings Overflow Pond
- recontour
- revegetate

Minto Mine Project

Detailed Decommissioning and Reclamation Plan

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Minto Explorations Ltd.

Legend

- Access Road
- Road
- Exploration Road / Trail
- Transmission Line
- Contour
- Site Feature Profile Contour
- Water Course
- Areas of Construction

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Base data obtained from Yukon Engineering Services
Nov3_06_status_plan.dwg

Projection: UTM Zone 8 NAD83
Units: Meters
NTS: 115I/11

Figure 5-8

Reclamation Measures for Mill and Ancillary Facilities

Scale: 0 25 50 m

ebo

ACCESS CONSULTING GROUP

Drawn by: HD | Checked by: RM | Date: October 2006

Our File: D:\Project\AllProjects\Minto\gis\mxd\ClosurePlanSept06\Fig5_8_MillAncillFacilities.mxd

5.5.2. Closure Measures

A salvage program will be employed before the end of mine life to minimize in-situ final disposal of mill and ancillary facility scrap. It is expected that removal of the mill and ancillary facilities will be done by auction or contractor for salvage value.

Contaminated soil will be remediated on site at the site's approved Land Treatment Facility, and mill reagents and chemicals will be removed from site. Propane storage tanks and hardware items will be returned to the supplier.

The reclaim line and all above ground power cables and overhead power line gear will be salvaged. Buried services such as piping and wiring will remain buried. Concrete footings will be semi-demolished by drilling and blasting as required and will be covered with fill and recontoured to establish final drainage runoff patterns. Culverts will be removed and the entire area will be covered in 1 metre of overburden and revegetated. Non-salvageable materials will be buried in waste rock in the waste rock dump.

The following section summarizes the closure measures related to both physical stability and geochemical stability that are planned for the mill and ancillary facilities. This will form the basis for the closure costing and scheduling.

Physical Stability

i. Remove salvageable equipment from mill, filter building, generators, concentrate shed, and fuel storage area
   - *labour x 1044 hrs, tradesmen x 1220 hrs*
   - *support equipment x $2,500*

ii. Dismantle buildings
   - *Labour x 1360 hrs, tradesmen x 800, hoe x 200 hrs*

iii. Concrete footing demolition/collapsing
   - *Blaster x 80 hrs, hoe x 40 hrs, dozer x 40 hrs*

iv. Scrap haul to solid waste facility
   - *Hoe x 60 hrs, haul trucks x 120 hrs*

v. Test soils for contamination and haul to land treatment facility
   - *Part of closure site assessment/audit, costs dependant upon findings and volumes*

vi. Fold and bury liner for fuel storage area
- *Hoe x 20 hrs, dozer x 100 hrs*

vii. Re-establish Minto Creek channel through mill water pond and mill pad area
- *Remove upstream culvert: hoe x 10 hrs, labour x 10 hrs*
- *Construct channel and line with rip rap: hoe x 100 hrs, dozer x 20 hrs, 5,000 m^3 rip rap x $13/$m^3$ to haul and place in channel*

viii. Push fill to bury footings and recontour area and slopes for final drainage
- *Dozer x 100 hrs*

ix. Haul and place 1 m deep overburden cap and contour for seeding
- *5.0 ha x 1 m depth = 50,000 m^3*

x. Revegetate based on trial success
- *5.0 ha for seeding/fertilizing, re-seeding 2.5 ha, plant seedlings/shrubs on 4.0 ha*

Chemical Stability

i. Environmental audit/site assessment prior to closure activities to identify contamination sources
- *Conducted by consultant, sampling and reporting included*

ii. Mill reagents returned to suppliers or removed as waste as appropriate, based on storage condition
- *Costs dependant upon stock/condition at closure*

iii. Contaminated soils excavated/removed to land treatment facility based on findings of environmental investigation
- *Costs dependant upon findings*

iv. Water quality will continue to be monitored at the mill water pond channel outlet as required for post closure monitoring (see section 7.6 Compliance Monitoring and Reporting)

5.5.3. Mill Building

Closure measures for this site include removal of the salvageable mill components, such as the ball and SAG mill and milling-related equipment stored here. Any recyclable materials will be shipped to an appropriate recycling facility and all wastes will be disposed of in an appropriate disposal area, either the site solid waste management facility or an approved off site disposal

facility. The concrete mill foundations will then be partially demolished and pushed in, covered with fill and overburden and revegetated.

The toe slopes of the fill at both the mill and the campsite pads will be recontoured to assume a more rounded slope, limiting erosion as much as possible. The angle and subsequent stabilization/revegetation measures will be contingent upon reclamation research findings from variable slope trial plots.

5.5.4. Generator Buildings

The generator buildings will be removed from the site after the power hookups are disassembled. Site reclamation after the building removal is covered in section 5.5.8.

5.5.5. Concentrate Shed

The concentrate shed will be dismantled and removed for sale or salvage at the end of mine life. The remaining concrete footings will be partially demolished by blasting. The very southwest corner of the foundation may require complete demolition to facilitate the excavation of the reclaimed drainage channel for Minto Creek in the vicinity of the mill water pond (see section 5.5.7 Mill Water Pond). This section of the foundation would be pushed into the interior of the remaining footings area, and all footings will be collapsed inward and buried with fill prior to surface reclamation.

5.5.6. Tailings Filter Building

The tailings filter building and associated tailings handling infrastructure (conveyors, etc.) will be dismantled and removed for sale or salvage at the end of mine life. Any recyclable materials will be shipped to an appropriate recycling facility and all wastes will be disposed of in an appropriate disposal area, either the site solid waste management facility or an approved off site disposal facility.

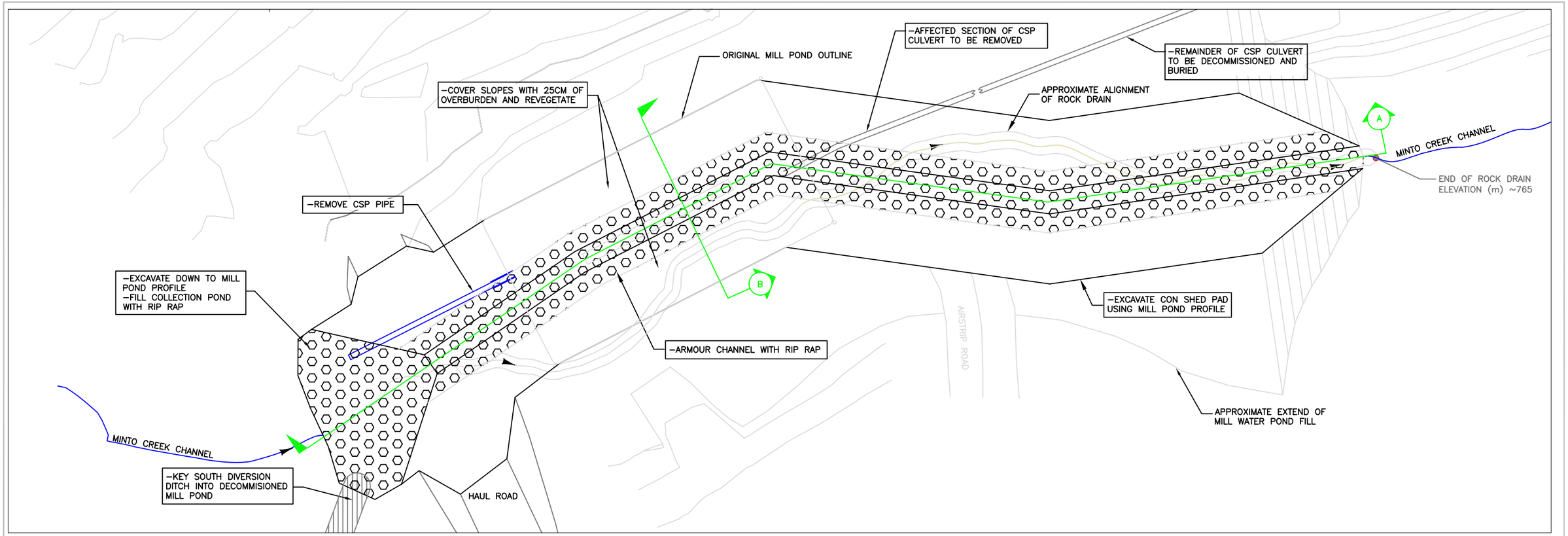
5.5.7. Mill Water Pond

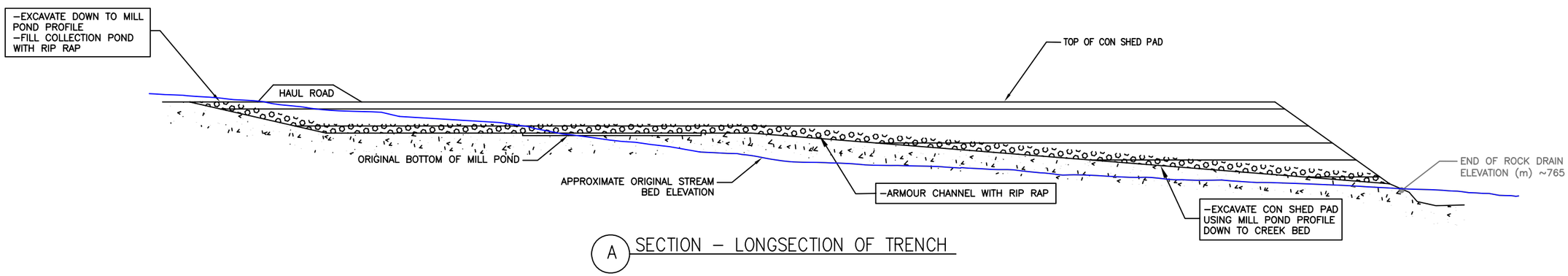
The mill water pond is a lined pond, constructed according to EBA's Final Preliminary Design – Mill Water Pond, Minto Property, Yukon Territory (1997). Together, the mill water pond and the

main dam impoundment will retain the water needed for the reclaim water system. This system provides make up process water for milling activities, supplementing water from the pit dewatering wells and mill groundwater well.

Figure 5-9 shows the planned reclamation activities for the section of Minto Creek presently entering and exiting the mill water pond. The existing culvert upstream of the mill water pond will be excavated and removed. In order to withstand the probable maximum flood flow, a conveyance channel will be constructed through the present alignment of the mill water pond, with the same dimensions as those utilized for the main dam spillway construction.

Water quality will be monitored at the mill water pond discharge as required. See Section 7.4 for the post closure monitoring schedule.





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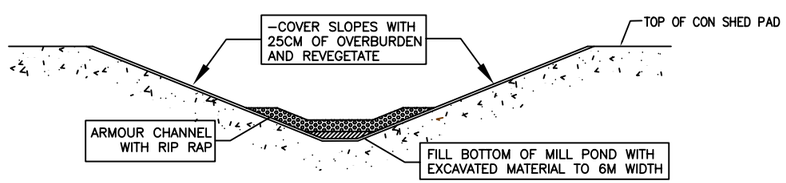

MILL POND SECTION B

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PROFESSIONAL ENGINEER YUKON J. RICHARD TRIMBLE TERRITORY

eba | ACCESS CONSULTING GROUP | SHERWOOD COPPER CORP. Minto Explorations Ltd.

TITLE	FIGURE 5-9: RECLAMATION MEASURES FOR MILL WATER POND		
PROJECT	MINTO MINE		
DATE: October 2006		ACCESS JOB NO.	MIN-05-01
DWN. CSF	CHKD.	REVISION NO.:	1

5.5.8. Fuel Storage Area

The following bulk fuel storage tanks will be removed from the site after the piping/delivery systems have been removed by qualified contractors:

- 2 x 1.5 million L
- 1 x 55,000 L
- 2 x 90,000 L

The area will be subject to environmental investigation and characterization at closure that will prescribe the extent of the closure measures for the removal of any fuel-contaminated soils. Any such materials will be hauled to the site land treatment facility for treatment.

The fuel storage area HDPE liner will be folded into the recessed area and buried with local fill. Final grading will establish ultimate drainage patterns and the pad will be covered in 1 m of overburden and revegetated.

5.5.9. Mill Reagents and Chemicals

Unused mill reagent supplies will be returned for credit once the mill has been shut down. It is anticipated that all reagent product will be properly contained/stored so as that there no product will be considered special waste. A closure inventory/investigation of reagents and hazardous materials on site will be conducted upon the cessation of mining activities and the implementation of the closure plan. Should some product's containment be deemed suspect upon the closure inspection, that volume of materials will be added to an inventory of special wastes, stored under the Company's Special Waste Permit # 43-040, and removed from the site for disposal in a permitted facility by a licenced contractor with other special wastes on site.

It is expected that the inventory of hydrocarbon products at the Minto site will be consumed as part of the interim closure. Fuels and lubricants will be required during the two-year period for implementation of the interim closure measures after mine shutdown. The inventory remaining on site once all activity has ceased will be removed from the site by one of three methods:

- returned to the original supplier for credit wherever possible;

- sold to a third party user; or
- trucked to an authorized disposal agency to be recycled or destroyed.

It should be noted that the operation of diesel powered vehicles and any electrical generators used on site will provide the Company with a method of reducing remaining inventory of diesel fuel as the mining operations cease. Gasoline will be similarly removed, and any remaining inventories of diesel and gasoline will be returned to suppliers or sold based on its' wide spread local use.

The propane supplier will remove propane tanks. Associated fuel delivery lines at the camp will be removed and disposed of in a manner similar to that of the gasoline and diesel fuels.

Other hydrocarbon products that may be present at the mine site are primarily hydraulic fluids, lubricating oils, greases, antifreeze and solvents packaged in either 1000 litre bulk cubes, 200 litre drums or smaller packaging. In most cases the remaining inventory of these materials will be returned to the original suppliers for reuse or sold to other third party users in the local area. In certain circumstances, specialized products may have to be disposed of through a licenced waste disposal firm. It is anticipated that such material will be small in volume.

During the final site assessment, petrochemical contaminated soils will be identified and processed for remediation. Any fuel storage areas and refueling stations, once decommissioned, will then be assessed for soil contamination. The affected soils will be treated at the company's permitted Land Treatment Facility.

5.6 MAIN ACCESS ROAD

The main access road to the property was constructed in 1996 and 1997. This road was constructed to facilitate traffic from 26-ton ore concentrate trucks. The road was constructed by cut and fill methods with a road width of 8 meters and associated ditch drainage and culvert installations. Figure 2-2 Project Area Overview shows the alignment of the main access road.

5.6.1. Closure Issues

The Company expects that the determination of the closure fate of the main access road will be made in consultation primarily with the Selkirk First Nation and secondarily with local trappers, the community, and government regulators. The closure plan presents three options for road reclamation.

1. No road deactivation;
2. Road deactivation from Minto Creek to the mine site; or
3. Deactivation of the entire road.

In making a final decision about closing the main access road, consideration will also be given to the potential requirement for equipment access. Despite the identified closure timing and schedule, final access road removal (if selected) would only be undertaken once it is concluded that the site is stable.

The primary consideration for the physical stability of the main access road at closure will be slope stability where culverts have been removed and drainages channels have been established through the road alignments. Siltation of streams could occur during culvert removal and bank stabilization work. There are no chemical stability concerns associated with the main access road.

5.6.2. Closure Measures

Should a deactivation option be selected for the road, it will be subject to standard road decommissioning and reclamation measures at closure, including culvert excavation, drainage recontouring, slope stabilization and surface scarification. This will include conducting culvert

removal work in the later summer/early fall when flows are low or non-existant. Culvert removals and bank recontouring works at locations where there is still flow will include pump around or flow diversions to ensure that work is done in the dry and the silt loads are not added to stream systems. Regrading/contouring the roads will ensure that runoff sheds off the road surface. The road surfaces are not expected to require seeding, only surface scarification to encourage natural revegetation.

Closure objectives for the site access roads include slope and drainage stabilization, erosion prevention and revegetation. Actual decommissioning measures will include recontouring, scarification, and removal of stream culverts. On steeper slopes, erosion barriers will be placed at frequent intervals to ensure stability.

A number of culverts will be removed upon final closure of the road. Of key importance is the removal of culverts at stream crossings which are fish bearing. At these stream crossings, the roadbed would be cut down to the culvert and original streambed elevation with side slopes brought back to 2:1. Material removed during culvert removal will be spread loosely on adjacent road surface to promote revegetation. The stream channel would be stabilized and slopes revegetated.

The Big Creek Bridge and all culverts will be removed once all heavy equipment has been removed from the mine and closing reclamation has essentially been completed in the upper Minto Creek basin.

Experience shows that vegetation will have re-established itself in the 30 m wide cleared right-of-way in the 7 years of life of mine and only remedial revegetation work will likely be required. The preferred methodology is to encourage natural revegetation to occur, after first preparing the road surface by recontouring and scarifying.

Figure 5-5 depicts the typical treatment of the access road for final closure. The following section summarizes the closure measures related to physical stability that are planned for the main access road, assuming entire deactivation. This will form the basis for the costing and scheduling.

Physical Stability

i. Excavate and remove culverts
   - *Labour x 180 hrs, tradesmen x 40 hrs, hoe x 140 hrs, haul truck x 100 hrs*

ii. Recontour and stabilize slopes and re-establish drainages
   - *Dozer at 70 hrs, 1000 m^2 erosion control blanketing*

iii. Revegetate slopes in drainage areas
   - 2 ha *for seeding/fertilizing, re-seeding 1.0 ha, plant seedlings/shrubs on 1.0 ha*

iv. Scarify road surface
   - *Grader x 150 hrs*

v. Remove Big Creek bridge
   - *Remove decking and span: labour x 50 hrs, crane x 40 hrs, hoe x 40 hrs, lowbed truck x 20 hrs*
   - *Cut off piles: labour x 50 hrs*
   - *Recontour banks if necessary: hoe x 30 hrs, dozer x 30 hrs*

vi. Reclaim barge ramps
   - *Remove gravels and recontour and scarify areas: hoe x 20 hrs, dozer x 30 hrs*

Chemical Stability

Chemical stability is not a concern for the reclamation of this component.

5.7 MISCELLANEOUS SITES AND FACILITIES

This section addresses the decommissioning measures for miscellaneous facilities and sites around the property. These include:

- mine camp and related infrastructure;
- airstrip,
- exploration sites and trails;
- land treatment facility;
- solid waste facility
- explosives plant site; and
- site roads.

General closure issues and measures are presented for these areas and closure measures are shown in Figure 5-10 Summary of Reclamation Measures on page 88. Specific decommissioning activities are also outlined in sections 5.7.3 to 5.7.8.

5.7.1. Closure Issues

Any concern that may exist regarding the physical stability of these structures/areas at closure will be mitigated for the most part by either:

a) disassembly and removal from the site; and/or
b) recontouring and revegetation of the area.

Chemical stability issues for this area and facilities would arise primarily from contamination of surrounding soils by fuel, chemicals or other wastes. Such instances will be documented through an environmental audit, conducted upon the completion of milling activities.

5.7.2. Closure Measures

The salvage program before the end of mine life will minimize in-situ final disposal of any scrap generated in the decommissioning of these facilities. It is expected that removal of these facilities, namely the camp and explosives plant site, will be done by auction or contractor for salvage value.

Any contaminated soils identified will be remediated on site at the site's approved land treatment facility, and any recyclables and/or special wastes will be removed from the solid waste facility. Closure plans will be submitted to YG Environment prior to the final decommissioning of the land treatment facility and the solid waste facility.

Buried services such as piping and wiring will remain buried. Concrete footings will be semi-demolished by drilling and blasting as required and will be covered with fill and recontoured to establish final drainage runoff patterns. Culverts will be removed and pertinent areas will be covered in 0.25 metres of overburden and revegetated.

The following section summarizes the closure measures related to both physical stability and geochemical stability that are planned for these miscellaneous sites and facilities. This will form the basis for the closure costing and scheduling.

Physical Stability

i. Remove salvageable equipment from camp and explosives plant area
   - *Labour x 800 hrs, tradesmen x 50 hrs*
   - *support equipment*

ii. Dismantle buildings
   - *Labour x 1400 hrs, hoe x 150 hrs*

iii. Scrap haul to solid waste facility
   - *Hoe x 20 hrs, haul trucks x 40 hrs*

iv. Reclaim septic system
   - *Labour x 10 hrs, hoe x 2 hrs*

v. Scarify airstrip to promote natural revegetation
   - *Grader x 20 hrs*

vi. Recontour areas and site roads, cover in overburden 0.25 m thick
   - *5.2 ha x 0.25 m = 13,000 m^3*

vii. Revegetate based on trial success
   - *5.2 ha for seeding/fertilizing, re-seeding 2.5 ha, plant seedlings/shrubs on 4.0 ha*

Chemical Stability

i. Environmental audit/site assessment prior to closure activities to identify contamination sources

- *Conducted by consultant, sampling and reporting included*

ii. Contaminated soils excavated/removed to land treatment facility based on findings of environmental investigation
   - *Costs dependant upon findings*

iii. Closure plans submitted for waste facilities
   - *2 plans prepared by consultant*

iv. Special wastes and recyclables removed from site
   - *Costs based on materials stored at facilities at closure*

5.7.3. Mine Camp and Related Infrastructure

In 1999 the Company completed construction of a camp for mine staff that included living quarters for 42 persons - a seven-unit accommodation/kitchen/diner/changehouse complex. In 2006, the camp was expanded by the addition of trailers and other construction to provide capacity for 140 persons, including an office complex. The facility provides a potable water supply (drilled groundwater well, 1998), gas-fired heat, a local power supply, and sewage disposal to two adjacent septic fields. Several structures behind the facility house the fuel supply to the furnaces, relay power from a diesel electrical generator, and pump fresh water.

Closure measures for the campsite include disassembly of the camp trailers and related infrastructure. All salvageable material will then be removed from the site. The remaining campsite landing will be recontoured for erosion stabilization, covered in 0.25 m overburden, and revegetated.

Upon closure the septic tanks would be pumped out and the waste will be hauled to an approved disposal facility, as during operations. The remaining tanks will be crushed and covered with local soils. The remaining infrastructure (i.e. piping and related materials, including the septic field) for the two systems would remain buried.

5.7.4. Airstrip

During the period of inactivity (1997-2005) the airstrip saw substantial colonization by natural vegetation. Upon final closure, the airstrip will be scarified and allowed to revegetate naturally.

Seeding will not be required, as there is minimal erosion potential with the airstrip. The airstrip makes up approximately 2.4 ha of the total 29.2 ha area of all the miscellaneous sites.

5.7.5. Exploration Sites and Trails

Current exploration activities being conducted on the site are operating under a Class III Mining Land Use Authorization, and are subject to specific closure measures by Minto Explorations Ltd. These measures will be implemented as required by the exploration crew, and are not subject to closure planning in this plan.

An old exploration trail system exists around the height of land surrounding the general mine area. These trails primarily follow the local ridges navigating the highest elevations of the Minto Creek catchment basin. These trails have provided access for mineral exploration activities and are characterized by intermittent trenching lines, drilling pads, and various forms of non-hazardous debris related to these exploration activities. The trail system is also used by a local trapper who has a small cabin along the ridge immediately to the north of the mill and campsite.

The exploration trails are outside of the immediate mine site and have seen only minimal use in recent years. The trails are narrower than the main access road and generally follow topographic contours (i.e. were not constructed using cut and fill techniques). They will be left to allow for natural vegetation to continue, which should continue to be successful due to the proximity of the seed source and the minimal compaction during original construction and subsequent use. Some limited recontouring and stabilization may be required in a few locations where potential erosion is a concern.

5.7.6. Land Treatment Facility

The land treatment facility (LTF) for the site is located near the airstrip in an area originally excavated from bedrock for an equipment laydown area. This facility is permitted by Yukon Government, Department of Environment, Environmental Programs Branch under Permit # 24-204 to treat a maximum volume of 700 m^3 of hydrocarbon contaminated soil. Contaminated soils from fuel/oil spills during operations will be treated at the site to appropriate levels of remediation before being used as industrial fill as per the permit requirements.

The closure of this facility is subject to the submission of a formal Closure Plan to YG, along with sampling results which demonstrate the final concentrations of contaminants in the soil being treated. It is expected that upon final closure of the entire site, dismantling and decommissioning activities may reveal or result in soil contamination requiring the relocation to the LTF and an undetermined number of months of treatment to achieve desired remediation levels. As such, the LTF Closure Plan and final sampling results will be prepared and submitted some time after final closure of the mine site has begun.

Generally, once the desired contaminant levels have been reached in the final volumes of treated soil, and the Closure Plan has been approved by YG, the soils will be spread over the site, recontoured in place and revegetated. If required, additional overburden may be hauled and used as cover material and growth media for revegetation.

5.7.7. Solid Waste Facility

Under Commercial Dump Permit # 81-005, issued to Minto Explorations Ltd. by Yukon Government, Department of Environment, Environmental Programs Branch, MintoEx has established a Solid Waste Facility adjacent to the Land Treament Facility near the airport that includes:

- a burning pit for wood and paper waste;
- construction waste disposal area;
- metal and rubber tire disposal areas; and
- incinerator ash disposal in old exploration trenches.

This facility will receive construction and operational waste throughout the operation of the mine, as permitted by the authorization, and will be covered by fill and compacted in ‘lifts’ as per common landfill practice.

Scrap equipment will be stored in various lay down areas (known as "bone yards") located on site and along the access road, including primarily scrapped equipment stored to be utilized on the mine site as a source of spare parts or good recyclable scrap material. At mine closure, salvageable material from these sites will be sold as scrap and removed from the site. Material that has no scrap value will be disposed of in the solid waste facility. Prior to disposal in the

landfill, all of this material will be examined to ensure that all hazardous materials have been removed.

Hazardous materials so removed will be shipped off site to a licenced waste disposal site, along with other stored hazardous or special wastes, permitted under the company's Special Waste Permit # 43-040.

At final closure, the submission to YG of a formal Closure Plan for the solid waste facility will be required, documenting the conditions and materials at closure. Preceding the final facility reclamation, tires and salvageable scrap metal will be hauled off site for salvage/recycling and once the closure plan is approved by YG, the facility will be covered by two compacted layers of 200 mm thick compactable soil material obtained from local borrow sources. The cover material will be graded to prevent pooling of precipitation runoff and to encourage the shedding of water. The site will then be revegetated.

5.7.8. Explosives Plant Site

The ANFO explosives (ammonium nitrate – fuel oil) production area is comprised of the production plant and AN bag storage and powder magazine storage areas, located near the drainage boundary southwest of the main mine site (see Figure 5-1).

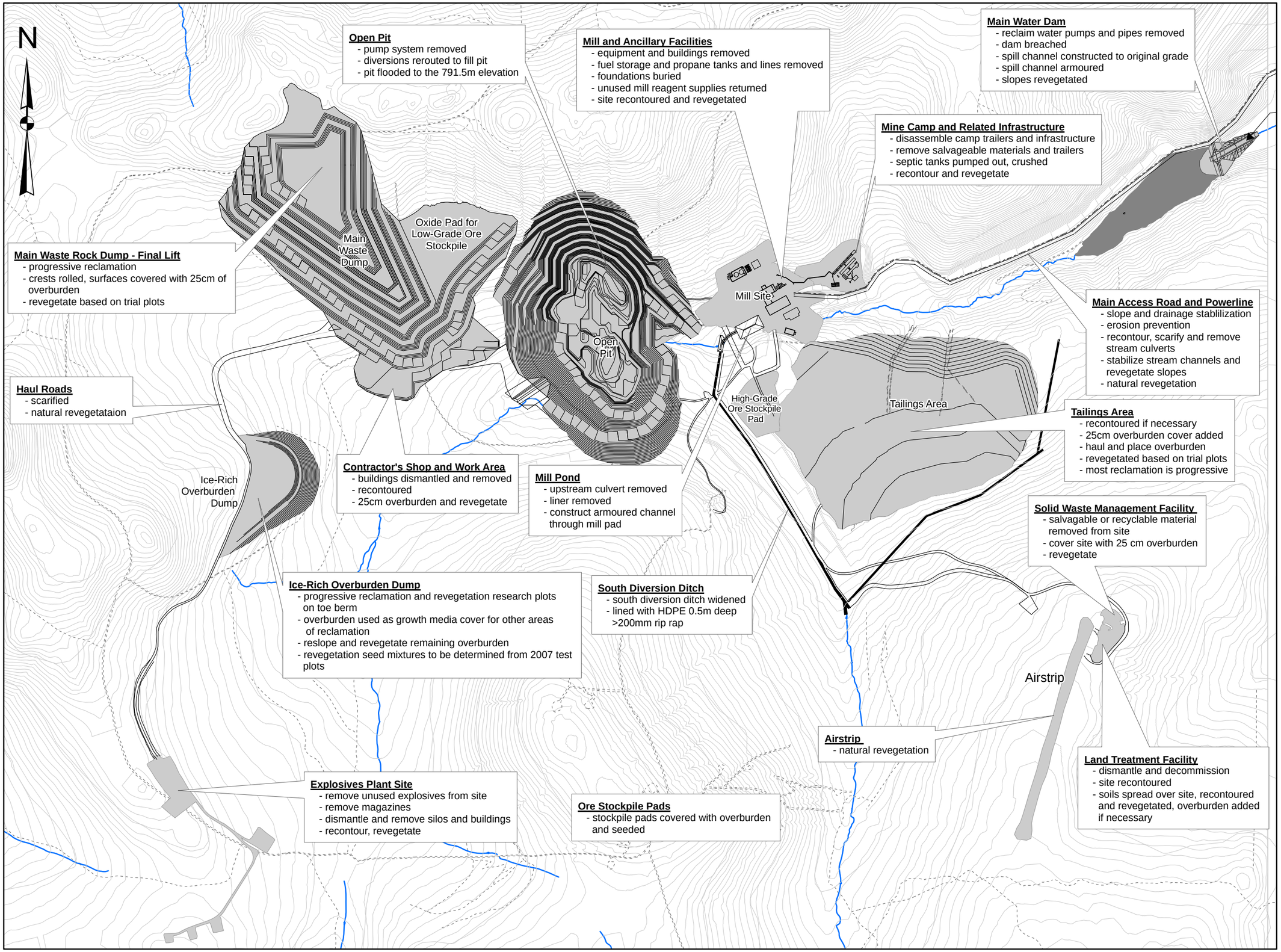
At closure, unused explosives that remain on site will be returned for credit and the explosives magazines and other equipment will be returned to the explosives supplier. The septic system at the site will be pumped and decommissioned (destroyed) by excavator. Any fuel-contaminated soils will be excavated and hauled to the land treatment facility for treatment. The disturbed areas will be recontoured if necessary and covered with overburden growth media and revegetated. Seed mixtures and fertilization specifications will be based on both revegetation trials and natural revegetation observations and success.

5.7.9. Mine Roads

All mine roads will be subject to typical road reclamation measures, as per haul roads and main access road. These measures are laid out in Figure 5-5.

5.8 SUMMARY OF CLOSURE METHODOLOGY

Figure 5-10 presents an overview of the closure and reclamation measures for the all mine development components over the entire site.



Minto Mine Project

Detailed Decommissioning and Reclamation Plan

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Minto Explorations Ltd.

Legend

- Access Road
- Road
- Exploration Road / Trail
- Transmission Line
- Contour
- Site Feature Profile Contour
- Water Course
- Areas of Construction

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Original Drawing by HATCH
ACAD-Overall for Reclamation.dwg, Drawn by D.L.N Feb. 06

Projection: UTM Zone 8 NAD83
Units: Meters
NTS: 115I/11

Figure 5-10

Summary of Reclamation Measures

Scale: 0 50 100 200 300 400 m

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Drawn by: HD/RG	Checked by: RM	Date: October 2006

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6.0 IMPLEMENTATION SCHEDULE

The mine life is expected to be approximately 7 years. Approximately one year will be required for site preparation, construction of the mill and ancillary facilities and for mine pre-production development. Production will start in year 1 and will continue to the middle of year 7. Reclamation of the disturbed areas will be done on the basis of distinct phases, initially to match the overall mining schedule and after closure to reflect the reclamation and monitoring effort required. This 'phased' approach to reclamation planning will assist the company in achieving the overall objectives of progressive and final reclamation at the site.

Year 1 – First Year of Production

Phase I will commence during the latter part of construction and continue through into the first year of production. Progressive reclamation priorities will be:

- cuts and fills along the access road to control erosion;
- disturbed areas near water courses along the access road; and
- other disturbed areas suitable for reclamation e.g. borrow sources for dam construction.

Year 2 to Year 7 - Operations

Phase II of the reclamation program will be initiated once the mine is in full production and continue until the end of the life of the mine. A moving three-year plan will be formulated each year outlining progressive reclamation objectives and refining reclamation studies. This will include:

- the area of disturbed land at the beginning of the period;
- the area of additional lands to be disturbed during the period;
- the area of disturbed land to be prepared, seeded and/or planted and fertilized;
- the area of remaining disturbed land at the end of the period;
- ongoing progressive reclamation of waste rock dumps, tailings area, overburden dump and fill slopes;
- ongoing evaluation of test plots and reclamation trials;
- the initiation of additional reclamation research as required;

- the undertaking of larger scale progressive reclamation of abandoned or phased out areas; and
- ongoing monitoring results and analysis.

Year 7 – Mine Closure and Commencement of Reclamation

Final preparation for closure will be done in the middle of year 7 and closing reclamation will commence in the second half of year 7, the final year of production. No ore will remain on the mill stockpile or on the low grade sulphide stockpile. All concentrate spills around the concentrate storage area will be recovered and blended into the mill feed with no further cleanup required after the mill has been shut down. Levels of fuel, reagents, explosives and other operating supplies stored on site will be reduced to minimum levels.

Year 8-10 – Active Decommissioning

It is anticipated that 3 years will be required to fully implement and complete all aspects of the decommissioning and reclamation works. The work would be conducted seasonally during the ice-free period (May-September). During the first year of closure, the majority of site decommissioning works would be initiated.

As one of the first steps in decommissioning the site, an environmental site assessment/audit will be done to identify any closure issues not addressed at the time of writing this plan.

Decommissioning and final closure of the main property access road will be the last closure measure to be fully completed.

Year 11-22 – Closure Monitoring

A program of post closure monitoring and inspection will be carried out during the implementation of closure measures and for a 12-year period following closure. The details of the post closure-monitoring program are discussed in Section 7.4. The program would continue until it is demonstrated that closure objectives have been met and performance in the long term is assured.

7.0 POST CLOSURE SITE MANAGEMENT

The closure phase of the Minto mine will commence with the cessation of economic mining of the open pit and the milling of ores and stockpiles from the ore zone. Once all mineable ore reserves have been processed, the mill and concentrator will be flushed and the tailings management facility will be decommissioned and water retaining structure removed. During the active decommissioning phase which is expected to last approximately 3 years, the number of personnel required will vary depending on site activities, however it is expected that as the major decommissioning and reclamation tasks are completed the number of site personnel required will decline.

It is expected that a Water Use Licence will be required for the decommissioning phase of the operation as water use will continue on a limited basis and wastewater will be released from the water dam in a controlled fashion. Decommissioning of the Big Creek Bridge along the main access road will be subject to community consultation and this activity may also require a Water Use Licence. The continued need for a Water Use Licence following the decommissioning phase will be dependent on site conditions, performance of closure measures in achieving stated objectives and legislated requirements. Post closure management and monitoring of the site will be guided to some extent by water licence, quartz mining licence or other permit requirements, the performance of physical structures remaining on site and the ability of achieving and demonstrating long-term compliance with existing waste discharge standards.

Once overall closure performance has been demonstrated for all aspects of decommissioning, the necessity of maintaining licences or permits would be re-examined. At that point a Certificate of Closure, under the Quartz Mining Act would be requested. The following section provides a general outline of the site management approach that will be taken at the Minto mine during the closure phase.

7.1 ORGANIZATION, SITE ACCESS & SECURITY

A number of personnel will be required on site to implement the various decommissioning and closure tasks. Generally these tasks entail closure of mine workings, regrading of waste rock and overburden piles, decommissioning of the tailings management facility, removal of the

water retaining dam, salvage and removal of infrastructure, equipment and reagents, decommissioning of access roads and reclamation and revegetation of disturbed lands. These activities would be undertaken on a seasonal basis and directed by an onsite manager responsible for decommissioning and reclamation of the Minto mine.

During site decommissioning, it is anticipated that at least a portion of the existing camp accommodations would remain on site to support site personnel. It is anticipated that during the initial post closure phase, site security requirements will continue with a caretaker remaining on site following seasonal closure of the site. A site inspection schedule will continue for the period of closure implementation (3 years) and then move into a post closure monitoring period (12 years) for a total of 15 years. Security personnel will no longer be required once decommissioning and reclamation activities are completed on the property. Table 7-1 provides a summary of the personnel requirements by year for decommissioning and reclamation works. Once the majority of physical reclamation works are performed on the site, the number of employees or contractors required will be reduced. The Company is committed to having Selkirk First Nation members employed during implementation of the Plan and will continue to work with Selkirk to optimize long term closure monitoring requirements.

Prior to undertaking closure activities, as part of a comprehensive environmental site assessment, areas of suspected oil, chemical, or other contaminant spills will be tested to confirm locations and quantities requiring clean-up. This site assessment will review previous operational reports and procedures and identify areas of potential concern or contamination. Follow-up testing would be undertaken and plans refined for remediation.

The main access road, barge landings and property security gate will be maintained during implementation of the post closure phase. Site access along the main road, barge support and Big Creek bridge will be required for personnel and truck haulage requirements to and from the site. The security gate and fencing would be maintained while the main access road is in use. Decommissioning and reclamation of various property haul and site access roads will be completed once closure measures have been completed at each facility and site access is no longer required.

Once decommissioning activities are completed on-site, and following a period of post closure monitoring, a determination will be made to permanently close the main site access road. This determination will be done in conjunction with Selkirk First Nation. Closure of the main access road is expected to be consistent with the plan's closure philosophy; however, it is recognized that the performance of physical reclamation of the site must be assured before a final determination of the main access road closure is made.

The level of access road decommissioning will be discussed first with the Selkirk First Nation. As the access road lies within Selkirk First Nation Category A settlement lands, they should determine the appropriate course of action for potential road deactivation. Government regulators and the local trapper will also be consulted regarding decommissioning plans for the road.

Table 7-1 Site Decommissioning and Reclamation Seasonal Personnel Requirements

Personnel	Closure Period Year 1	Closure Period Year 2	Closure Period Year 3	Post Closure Year 4 to 15
Project Manager	1	1	1	
Construction Supervisor/Engineer	1	1	1	
Environmental Monitoring *	1	1	1	1
Equipment Operators	12	4	2	
Equipment Mechanics/Welders/ Fabricators/Electricians	5	5	1	
General Labourers	5	3	2	
Catering Staff	2	1		
Total Seasonal Personnel	27	16	8	1
Part Time Off Season Site Security/Caretaker *	1	1	1	1

Note: Some personnel may be contractors.

* Denotes Selkirk First Nation Band member

7.2 SUPERVISION AND DOCUMENTATION OF WORK

All decommissioning and reclamation works will be properly supervised to ensure that works are constructed according to their design, and that this work is properly carried out and documented. The project manager or the construction supervisor would supervise all closure works. Daily inspection procedures would be completed to document work progress, deficiencies and completion. Existing plans for spill response or other site internal procedures for fuel handling, waste disposal, fire control and suppression, health and safety and environmental management systems would be used, developed and followed as necessary.

Environmental inspections and tests conducted prior to the implementation of closure measures would be used to confirm areas requiring clean up.

For the water retaining dam and tailings management facility, detailed plans for all earthen works would be prepared and submitted to the YWB and YG Energy Mines and Resources for review prior to construction. These plans would be submitted in a timely manner to facilitate agency review and Board approval prior to implementation. A competent engineer following standard quality control and assurance procedures would inspect and document this construction work. As-built plans and drawings would be completed and the results of the closure work completed on the removed water dam and tailings management facility documented in a final as-built report. This report would be submitted to the Yukon Water Board and regulatory agencies upon completion of closure activities.

For the Big Creek bridge removal and Minto Creek culverts, plans for all restorative works would be prepared and submitted to the YWB prior to construction. A competent environmental practitioner following standard quality control and assurance procedures would also design, direct and document this restoration work. A summary report of the works would be prepared. This report would be submitted to the YWB and regulatory agencies upon completion of closure activities.

Upon completion of the decommissioning and reclamation works, a final site plan report (summary text and drawings) would be prepared which would outline the facilities or works remaining on the site following closure. This plan would identify the location of buried concrete

structures or scrap and landfill disposal areas. It is expected that this plan would accompany an Application for a Certificate of Closure under the Yukon Quartz Mining Act.

7.3 MINE RECORDS

As noted in the previous section, all decommissioning and reclamation works would be documented. Mine records comprising the extent of open pit workings would be retained by Minto Ex. Other site records, files and plans would be archived. Where plans or drawings are required for mine safety reasons, these plans would also be submitted to government mine safety offices. As-built reports for structures completed for closure and the final site closure report would be retained for record and submitted to government agencies and boards.

7.4 COMPLIANCE MONITORING AND REPORTING

Environmental compliance monitoring, internal monitoring of earthworks and independent geotechnical inspections are presently ongoing at the property. The environmental monitoring at the Minto mine employs several types of scheduled periodic inspections to ensure that the facility is meeting environmental performance objectives and complying with appropriate regulatory standards. These inspections entail:

- scheduled inspections of the waste rock and overburden storage areas, tailings management facility, water retaining dam and mine components to monitor environmental performance;

- scheduled water quality sampling and flow measurements of effluent streams and local receiving water streams;

- scheduled receiving water programs for benthic invertebrates, stream sediments and fish to monitor downstream environmental quality;

- scheduled piezometric monitoring of water levels in wells and the spillway structure at the water retaining dam;

- annual summer inspections by a qualified geotechnical engineer of tailings management facility, diversion channel, waste rock and overburden storage areas, and water retaining dam for structural stability; and,

- scheduled environmental tours and audits of the property by Minto Ex staff to look for environmental hazards and site stability. Minto Ex will endeavor to invite various Government agencies' representatives as part of the environmental inspections.

At present, the site personnel (mine engineer and environmental monitor) undertakes the scheduled environmental monitoring and inspection programs with the exception of the annual geotechnical inspection and the benthic invertebrates, stream sediment and fish monitoring programs, which are conducted by qualified professionals. All results from the licenced compliance monitoring programs are reported to the YWB, and YG EMR as monthly or annual reports.

During the active closure phase environmental and physical compliance monitoring and inspections will continue according to the present water use licence or quartz mining licence monitoring programs utilizing site-based personnel. A summary of the current monitoring activities under the present environmental and physical compliance and inspection program is shown in Table 7-2 (as the first 5-year period after milling cessation), with monitoring station locations and descriptions. Figure 7-1 provides the station locations for the environmental and physical monitoring programs.

It is expected that the amount of environmental and physical monitoring and inspection (frequency and quantity) will decline once all closures measures have been implemented. The approach to closure monitoring has been to continue with the present licence monitoring and inspection programs until decommissioning and reclamation measures have been completed and then reduce the frequency of site monitoring and the number of monitoring stations over time as satisfactory closure performance is confirmed. Revisions to the current water licence requirements will be required upon closure to authorize them.

The schedule for monitoring programs planned for the 15-year period immediately following cessation of active mining and milling operations are presented in Table 7-2. For the first 5

years following the cessation of mining, routine environmental monitoring will be completed to demonstrate the effective of closure measures and their performance. Thereafter (year 6 to 10) monitoring frequencies would be reduced to periodic inspections, with a further reduction of frequency for years 11 to 15. The purpose of these periodic inspections would be to ensure that waste discharges remain compliant, downstream receiving waters meet current CCME Guidelines for the Protection of Freshwater Aquatic Life, and physical structures are performing as designed. Should these inspections identify issues of concern, then plans would be developed to address the concerns.

Based on the results of site monitoring for the 15-year period and in discussion with the Selkirk First Nation and appropriate regulators, the need for and the frequency of additional site monitoring will be determined at that time. If the results from monitoring indicate that the site is stable with acceptable geotechnical and environmental performance, then Minto Ex would propose to decrease the frequency of monitoring further. If the results from monitoring indicate there are concerns with either geotechnical conditions at the site or with environmental issues, then the site would continue to require more frequent monitoring than otherwise proposed and possibly additional remedial work would be required.

As previously mentioned, the Company is interested in having the Selkirk First Nation participate actively in both the closure activities and in post-closure monitoring. Minto Ex will work directly with the First Nation in this regard.

Table 7-2

Minto Mine - Detailed Decommissioning and Reclamation Plan

Closure Period and Post-Closure Monitoring Schedule

		UTM LOCATION (m) ZONE 7		YEAR 1-5 FREQUENCY						YEAR 6-10 FREQUENCY					YEAR 11-15 FREQUENCY				
SITE	**DESCRIPTION**	**Northing**	**Easting**	**Surface Water**	**Ground water**	**Sediment**	**Benthos**	**Flows**	**Other**	**Surface Water**	**Ground water**	**Sediment**	**Benthos**	**Other**	**Surface Water**	**Ground water**	**Sediment**	**Benthos**	**Other**
	Receving Water Stations																		
W-2	Mainstem Minto Creek directly u/s Access Road Crossing	392616	6948477	W		A	BA	DCR, W		Q		BA	BA		A		A	BA	
W-3	Mainstem Minto Creek 50 m d/s toe of Dam (Final Point of Discharge)	386747	6945682	W		A	BA	DCR, W		M		BA	BA		Q		A	BA	
W-6	Tributary to Minto Creek	387544	6946420	Q		A	BA	Q		Q		BA	BA		A		A	BA	
W-7	Tributary to Minto Creek	387504	6946069	Q		A	BA	W		Q		BA	BA		A		A	BA	
W-10	Mainstem Minto Creek (south fork at headwaters)	383348	6943654	M				M		Q					A				
	Mine Site Stations																		
W-11	Waste Rock Dump Seepage	384106	6944887	M						SA					A				
W-12	Discharge from Open Pit	384819	6944991	M						SA					A				
W-13	Mill Water Pond Discharge	385111	6945061	W2						SA					A				
W-15	Minto Creek, downstream of the overburden dump, just upstream of Open Pit	384286	6944754	M						SA					A				
W-16	Main Water Storage Pond Discharge (or Main Water Storage Pond if not discharging)	386538	6945573	W*							NLA					NLA			
W-17	Main Water Storage Pond Dam Seepage	386615	6945645	M*							NLA					NLA			
W-18	Low-Grade Ore Pad Seepage	384214	6945071	M						SA					A				
W-21	Dam Piezometers	386552	6945525		M*						NLA					NLA			
W-22	Tailings Seepage/Runoff	385707	6945071	M						SA					A				
	Physical Inspection Elements																		
	Water Dam	-	-						A*					NLA					NLA
	Tailings Area	-	-						A					A					A
	Diversion Ditches	-	-						A					A					A
	Waste Rock Dump	-	-						A					A					A
	Ice-Rich Overburden Dump	-	-						A					A					A
	Environmental Inspection Elements																		
	Revegetation Inspection	-	-						A					A					A
	Wildlife Use Survey	-	-						A					A					A

*** Unless structure has been decommissioned/reclaimed**

Frequency Description

W	Weekly
W2	Every 2 Weeks
M	Monthly
Q	Quarterly
SA	Semi-annually
A	Annually
BA	Bi-annually
NLA	No longer active
DCR	Daily Continuous Record during open season

Minto Mine Project

Detailed Decommissioning and Reclamation Plan

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N

Main Waste Dump

Oxide Pad for Low-grade Ore Stockpile

Open Pit

Ice-rich Overburden Dump

Explosives Yard

Mill Site

Camp

Septic Line

Mill Pond

High-Grade Ore Stockpile Pad

Tailings Deposit

Finger Drains

Finger Drains

Main Water Dam

Impounded Water Surface

Access Road and Power Transmission Line

Minto Creek

South Diversion Ditch

Diversion Berms

Old Airport Road

Solid Waste Facility

Land Treatment Facility

Airstrip

W-3

W-10

W-11

W-12

W-13

W-15

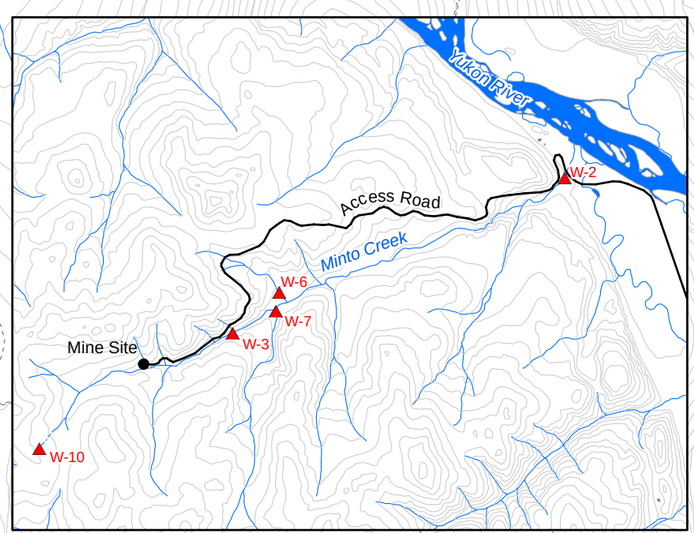
W-16

W-17

W-18

W-21

W-22



Legend

- Water Quality Surveillance Program Sites
- Physical Monitoring Program Sites
- Access Road
- Road
- Exploration Road / Trail
- Transmission Line
- Contour
- Site Feature Profile Contour
- Water Course
- Intermittent Water Course
- Areas of Construction

Original Drawing by HATCH
ACAD-Overall for Reclamation.dwg, Drawn by D.L.N Feb. 06

Projection: UTM Zone 8 NAD83
Units: Meters
NTS: 115I/11

Figure 7-1

Monitoring Station Locations - Active and Post-Closure

Scale: 0 100 200 400 m

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Drawn by: HD	Checked by: RM	Date: October 2006

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Environmental monitoring and inspections conducted during the post closure period (years 4-15 after cessation of mining) will be undertaken by periodic visits to the site. Access to the property for post closure monitoring would be via ATV, snowmobile, and/or helicopter if the road is decommissioned.

During the post closure period, reporting on all environmental and inspection programs carried out on the property will continue. These reports will be filed with the YWB, and YG EMR in accordance with conditions contained in the Water Use Licence, and Quartz Mining Licence and other operating permits and approvals as may be.

Minto Ex personnel responsible for the management of the Minto mine would continue to meet with regulatory agencies, Selkirk First Nation, and the community on an as-needed basis to appraise interested parties of decommissioning activities and the results of post closure monitoring.

It is expected that a review of the environmental performance of the mine following closure would be made with YG EMR and or other interested parties. Once this review is completed, Minto Ex would apply to the Minister of YG EMR for a Certificate of Closure for the Minto mine under the Yukon Quartz Mining Act Mine Production Regulations. The Certificate of Closure will confirm that Minto Ex has fulfilled their closure obligations for the site.

7.5 LONG TERM MAINTENANCE

Provisions for maintenance of reclamation tasks such as erosion control and maintenance seeding have been included as part of the long-term closure requirements. Based on physical inspections and monitoring, maintenance works will be planned for and conducted as required to meet closure performance standards and objectives.

7.6 TEMPORARY CLOSURE MONITORING PROGRAM

As the project has not yet been completely constructed and start-up of the mill has not yet occurred, Minto Ex's priority will be to maintain the existing site infrastructure to enable timely start-up and or resumption of operations. This includes regular and routine maintenance of the access road barge landings, access road, Big Creek bridge crossing, access road culverts, mill building, water dam and site camp. Water Use licence QZ96-006 contains a temporary closure monitoring schedule that the company will follow. Table 7-3 provides a summary of inspection and maintenance activities for use during any temporary cessation of construction activities.

Table 7-3 Surveillance Program During Temporary Cessation of Construction Activities

Project Component	Area of Interest	Timing/Frequency	Actions
Barge Landing	Access to Yukon River	Twice Annually	As required, granular upgrade to landing site.
Access Road and Surface Drainage	Entire Route	Twice Annually	As required, surface grading and granular amendments, ditch and culvert maintenance.
Precautionary Signage	Entire Site	Twice Annually	As required, repair and replace.
Mill and Camp Site	Buildings, Equipment, and Infrastructure	Twice Annually	As required, repair and replace.
Water dam and waste rock storage	Physical stability	Twice Annually	As required, repair and replace.
Water Use Licence	Water Quality Monitoring	Twice Annually	Undertake temporary closure monitoring and submit to the YWB pursuant to Water Use Licence QZ96-006
Water Use Licence	Annual Report	Annually	Prepare and Submit to the Yukon Water Board pursuant to Water Use Licence QZ96-006

8.0 CLOSURE COSTS

The estimated costs to implement the decommissioning and reclamation measures described in this report, are presented in Tables 8-1 through 8-12. Table 8-1 presents the summary of cost estimates for various mine components including:

- Waste Rock And Overburden Dumps;
- Open Pit and Haul Roads;
- Tailings Area and Diversion Structures;
- Main Water Dam;
- Mill and Ancillary Facilities;
- Mill Pond;
- Access Road;
- Miscellaneous Components;
- Reclamation Research and Revegetation; and
- Post Closure Management and Monitoring.

The salvage value of certain components of the mine is expected to offset some of the costs of implementing this closure plan. We have not estimated the value that can be gained after expenses for the facilities and equipment at the site. Progressive reclamation will account for a large part of the reclamation effort and expenditure for the project, and these measures have not been costed here as they are operational costs.

As shown in Table 8-1, a closure cost range of **$4,086,308** to **$4,278,810** is estimated for final closure, based on three separate scenarios for road decommissioning. All costs are in constant 2006 dollars.

The costs have been developed using current unit rates for available Yukon contractors' equipment. The costs are representative of third party contractor rates, not in house. The unit costs have been applied to levels of effort in sufficient detail to allow thorough scrutiny by the reader. Where possible, the experience of mine personnel has been used to develop accurate

estimates for the level of effort required to undertake reclamation components. As such, equipment rates have been used where the level of effort is well understood, and in other cases, unit area or volume rates have been employed.

- Table 8-1 provides a summary of all cost estimates;
- Table 8-2 sets out unit rates used in the calculations;
- Tables 8-3 to 8-10 provide closure cost estimates for the specific site development reclamation components;
- Table 8-11 provides closure cost estimates reclamation research and revegetation activities; and
- Table 8-12 outlines costs associated with the site management during closure implementation and presents post closure costs for compliance monitoring and maintenance for the entire projected 15 year active closure and post closure monitoring life.

The closure measures presented in this plan have been prepared at a conceptual level of engineering. It is recognized that a certain level of detailed engineering will be required for major closure activities including, dam removal, and conveyance or diversion ditches. The approach is to ensure that closure measures are sound and have undergone review before detailed engineering is undertaken. Detailed engineering is planned for major works prior to implementation.

For the purposes of closure costing an estimate of 7% of the capital cost of each closure measure was used for typical engineering, procurement and construction management (EPCM). In addition, an additional 10% contingency allowance has been added to the overall closure cost estimate.

Table 1
Summary Table of Estimated Closure Costs

Item	Description	Cost
1	**Overburden & Waste Rock Dumps**	$149,105
2	**Open Pit and Haul Roads**	$139,207
3	**Tailings Area and Diversion Structures**	$265,420
4	**Main Water Dam**	$523,824
5	**Mill & Ancillary Facilities**	$758,675
6	**Mill Pond**	$98,066
7	**Miscellaneous Sites and Facilities**	$228,241
	Subtotal	**$2,162,537**
8	**Access Road**	
	Scenario 1 - No Access Road Deactivation	$0
	Scenario 2 - Deactivate Access Road from Minto Creek to Mine Site	$98,841
	Scenario 3 - Deactivate Entire Access Road	$157,584
9	**Reclamation Research and Site Revegetation**	
	Scenario 1 - No Access Road Deactivation	$373,148
	Scenario 2 - Deactivate Access Road from Minto Creek to Mine Site	$375,119
	Scenario 3 - Deactivate Entire Access Road	$377,090
10	**Post Closure Site Management**	
	Scenario 1 - No Access Road Deactivation	$1,179,141
	Scenario 2 - Deactivate Access Road from Minto Creek to Mine Site	$1,188,326
	Scenario 3 - Deactivate Entire Access Road	$1,192,616

Total Closure Costs (Including 10% Contingency Allowance)		
	Scenario 1 - No Access Road Deactivation	**$4,086,308**
	Scenario 2 - Deactivate Access Road from Minto Creek to Mine Site	**$4,207,305**
	Scenario 3 - Deactivate Entire Access Road	**$4,278,810**

Table 2
Unit Costs

Equipment Rates		
Equipment	**2005 All found**	
	Rates/hr	**Rate/mo**
D9H Dozer	$210	
Haul Truck D250E	$160	
Tandem Haul Truck	$100	
Cat 235 Excavator	$200	
Cat 16H grader	$171	
988B Loader	$170	
Tractor Trailer (lowbed)	$85	
30 ton Crane	$115	
Hiab Flatdeck truck	$75	
Cat 950 loader	$120	
Pickup Truck		$2,500

Personnel Rates		
Rates/hr	**Rates/hr**	**Rate/mo**
Blaster	$55	
General Labourer	$45	
Trades Labourer	$75	
Site Supervisor	$95	
Blaster	$55	
General Labourer	$45	
Trades Labourer	$75	
Site Supervisor	$95	
Design Engineer	$130	
Environmental Scientist	$85	
Project Manager		$9,700
Camp Labourer		$3,300
Site Caretaker		$6,100
Environmental Monitor		$5,000

Revegetation Rates		
Revegetation Seed Mix	$13.00	per kg
Revegetation Seed Mix - 17kg/ha	$221.00	per ha
Fertilizer	$1.00	per kg
Fertilizer - 250kg/ha	$250.00	per ha
Tree Seedlings	$1,500.00	per ha (1,000 seedlings per ha)
Seed/Fertilizer Application	$1,500	per ha
Erosion Barrier	$3	per square m
Revegetation cost per ha. Including application cost	**$1,971.00**	**per ha**

Contractor Unit Rates & Camp Costs		
Excavation of Soil	$4.50	cu.m
Supply and place Geotextile	$5.00	sq m
Haul and place soil cover	$5.00	cu.m
Haul & Place rock cover	$7.00	cu.m
Drill, Blast and Screen Rip Rap	$22.00	cu.m
Load and Haul Rip Rap	$10.00	cu.m
Place Riprap	$3.00	cu.m
Freight run to Whitehorse	$1,000.00	per load
Camp Cost	$110.00	per day per person
Power and Heat	$5,500.00	per month
Employee Transport Costs	$3,000.00	per month
Barge Operating Cost	$35,000.00	per month

Table 3
Waste Rock and Overburden Dumps, Estimated Closure Costs

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Cost
	WASTE ROCK AND OVERBURDEN DUMPS						
3.1	**Main Waste Rock Dump - Final Lift**						
	Roll crest and recontour	Cat D9H Dozer	hrs	150	$210	$31,500	$31,500
	Haul and place overburden for revegetation	Cat 235 Excavator	hrs	20	$200	$4,000	
		Truck D250E	hrs	40	$160	$6,400	
		Cat D9H Dozer	hrs	150	$210	$31,500	$41,900
	EPCM	7% of Total Cost	%		7.00%	$5,138	$5,138
	Sub-Total						**$78,538**
3.2	**Low Grade Ore Stockpile Pad**						
	Recontour Pad	Cat D9H Dozer	hrs	40	$210	$8,400	$8,400
	Construct drainage ditch into pit	Cat D9H Dozer	hrs	10	$210	$2,100	
		Cat 235 Excavator	hrs	16	$200	$3,200	
		Haul rip rap	unit rate basis	415	$10	$4,150	
		Place rip rap	unit rate basis	415	$3	$1,245	$10,695
	Haul and place overburden for revegetation	Cat 235 Excavator	hrs	15	$200	$3,000	
		Truck D250E	hrs	20	$160	$3,200	
		Cat D9H Dozer	hrs	10	$210	$2,100	$8,300
	EPCM	7% of Total Cost	%		7.00%	$1,918	$1,918
	Sub-Total						**$29,313**
3.3	**Ice-Rich Overburden Dump**						
	Ore Stockpile Pads	Cat D9H Dozer	hrs	20	$210	$4,200	$4,200
	EPCM	7% of Total Cost	%		7.00%	$294	$294
	Sub-Total						**$4,494**
3.4	**High Grade Ore Stockpile Pad**						
	Recontour Pad	Cat D9H Dozer	hrs	10	$210	$2,100	$2,100
	Haul and place overburden for revegetation	Cat 235 Excavator	hrs	15	$200	$3,000	
		Truck D250E	hrs	20	$160	$3,200	
		Cat D9H Dozer	hrs	10	$210	$2,100	$8,300
	EPCM	7% of Total Cost	%		7.00%	$728	$728
	Sub-Total						**$11,128**
3.5	**Contractor's Shop and Work Area**						
	Remove salvageable equipment	General Labour	hrs	60	$45	$2,700	
		Truck D250E	hrs	20	$160	$3,200	
		Trades Labour	hrs	48	$75	$3,600	$9,500
	Dismantle buildings	General Labour	hrs	60	$45	$2,700	
		Cat 235 Excavator	hrs	20	$200	$4,000	$6,700
	Haul buildings off site - equipment	Tractor Trailer (lowbed)	hrs	20	$85	$1,700	$1,700
	Scrap haul to landfill	Truck D250E	hrs	20	$160	$3,200	$3,200
	Bury footings - haul and place fill	Unit Basis	cu.m.	2500	$5	$12,500	$12,500
	Recontour	Cat D9H Dozer	hrs	15	$210	$3,150	$3,150
	Haul and place overburden for revegetation	Cat 235 Excavator	hrs	20	$200	$4,000	
		Truck D250E	hrs	40	$160	$6,400	
		Cat D9H Dozer	hrs	20	$210	$4,200	$14,600
	EPCM	7% of Total Cost	%		7.00%	$3,595	$3,595
	Sub-Total						**$54,945**
Total Estimated Cost in Reclaiming Overburden and Waste Rock Dumps							**$149,105**

Table 4
Open Pit and Haul Roads, Estimated Closure Costs

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Cost
	OPEN PIT AND HAUL ROADS						
4.1	**Ultimate Pit**						
	Remove pit pumps and pipe column/general cleanup	General Labour	hrs	80	$45	$3,600	
		Support equipment	l.s.		$1,000	$1,000	$4,600
	Construct creek entrance channel into pit	Cat 235 Excavator	hrs	20	$200	$4,000	
		Truck D250E	hrs	20	$160	$3,200	
		Cat D9H Dozer	hrs	150	$210	$31,500	$31,500
	HDPE Liner (supply install)	Unit Rate	sq. m	150	$10	$1,500	$1,500
	Haul rip rap	Unit Rate	cu.m	150	$10	$1,500	$1,500
	Place coarse rip rap in entrance and exit ramp ditches	Unit Rate	cu.m	150	$3	$450	$450
	Re-route diversion into pit	Cat 235 Excavator	hrs	20	$200	$4,000	
	Secure pit access - boulder placement	Cat 235 Excavator	5.5	20	$200	$4,000	
		Truck D250E	3	20	$160	$3,200	$7,200
	EPCM	7% of Total Cost	5.5		7.00%	$4,057	$4,057
	Sub-Total						**$62,007**
4.2	**Haul Roads**						
	Remove culverts and haul	General Labour	hrs	40	$45	$1,800	
		Cat 235 Excavator	hrs	20	$200	$4,000	
		Truck D250E	hrs	20	$160	$3,200	$9,000
	Recontour slopes	Cat D9H Dozer	hrs	150	$210	$31,500	$31,500
	Ore Stockpile Pads	Cat 16H grader	hrs	150	$171	$25,650	$25,650
	Stabilize slopes - erosion barriers	Unit Cost Basis	per sq. metre	2,000	$3	$6,000	$6,000
	EPCM	7% of Total Cost			7.00%	$5,051	$5,051
	Sub-Total						**$77,201**
Total Estimated Cost in Reclaiming Open Pit and Haul Roads							**$139,207**

Table 5
Tailings Area and Diversion Structures, Estimated Closure Costs

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Cost
	TAILINGS AREA						
5.1	**Tailings Deposit - Final Lift**						
	Haul and place soil cap	Unit Cost Basis	cu.m	40000	$5	$200,000	$200,000
	EPCM	7% of Total Cost	%		7.00%	$14,000	$14,000
	Sub-Total						**$214,000**
5.2	**South Diversion Ditch**						
	Widen south diversion ditch	Cat 235 Excavator	hrs	30	$200	$6,000	$6,000
	Haul and place rip rap liner	Unit Cost	cu.m	1500	$10	$15,000	$15,000
	HDPE Liner (supply install)	Unit Rate	sq. m	3000	$10	$30,000	$30,000
	EPCM	7% of Total Cost	%		7.00%	$420	$420
	Sub-Total						**$51,420**
Total Estimated Cost in Reclaiming Tailings Area							**$265,420**

Table 6
Main Water Dam, Estimated Closure Costs

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Cost
	WATER DAM						
6.1	**Reclaim System**						
	Remove salvageable equipment - pipeline/pumps	General Labour	hrs	48	$45	$2,160	
		Trades Labour	hrs	98	$50	$4,900	$7,060
	Remove pipeline	Truck D250E	hrs	100	$160	$16,000	
		Cat 235 Excavator	hrs	100	$200	$20,000	
		General Labour	hrs	200	$90	$18,000	$54,000
	Dismantle Building	Cat 235 Excavator	hrs	16	$200	$3,200	
		General Labour	hrs	20	$45	$900	$4,100
	Misc. Supplies & Tools	Misc.	l.s.			$550	$550
	Recontour alignment	Cat D9H Dozer	hrs	16	$210	$3,360	$3,360
	EPCM	7% of Total Cost			7.00%	$4,835	$4,835
	Sub-Total						**$73,905**
6.2	**Main Dam**						
	Pump down impounded water, over spillway	General Labour	hrs	48	$45	$2,160	$2,160
	Misc. Supplies & Tools	Misc.	l.s.			$500	$500
	Characterize sediments	Analytical Costs	l.s.			$5,000	
		Technician	hrs	60	$75	$4,500	$9,500
	Stockpile rip rap from downstream shell	Cat D9H Dozer	hrs	100	$210	$21,000	$21,000
	Breach Dam, relocate and contour materials	Unit Cost Basis	cu.m	75,000	$5	$337,500	$337,500
	Ore Stockpile Pads	Unit Cost Basis	cu.m	1,125	$3	$3,375	
		Unit Cost Basis	cu.m	1,125	$10	$11,250	$14,625
	Haul and place overburden on slopes	Cat 235 Excavator	hrs	40	$200	$8,000	
		Cat D9H Dozer	hrs	40	$85	$3,400	
		Truck D250E	hrs	80	$160	$12,800	$24,200
	Stabilize slopes with erosion barriers	Unit Cost	per sq. m	3,000	$3	$9,000	$9,000
	Misc. Supplies & Tools	Misc.	l.s.			$2,000	$2,000
	EPCM	7% of Total Cost	%		7.00%	$29,434	$29,434
	Sub-Total						**$449,919**
Total Estimated Cost in Reclaiming Water Dam							**$523,824**

Table 7
Mill & Ancillary Facilities, Estimated Closure Costs

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Cost
	MILL AND ANCILLIARY FACILITIES						
7.1	**Mill Building**						
	Remove salvageable equipment	General Labour	hrs	550	$45	$24,750	
		Trades Labour	hrs	600	$75	$45,000	$69,750
	Dismantle Building	General Labour	hrs	1000	$45	$45,000	
		Trades Labour	hrs	600	$75	$45,000	
		Cat 235 Excavator	hrs	120	$200	$24,000	$114,000
	Concrete Demolition	Blaster	hrs	40	$55	$2,200	
		Cat 235 Excavator	hrs	20	$200	$4,000	
		Cat D9H Dozer	hrs	20	$210	$4,200	$10,400
	Misc. Supplies & Tools	Misc.	l.s.			$11,000	$11,000
	Scrap haul to solid waste facility	Cat 235 Excavator	hrs	50	$200	$10,000	
		Truck D250E	hrs	100	$160	$16,000	$26,000
	EPCM	7% of Total Cost	%		7.00%	$16,181	$16,181
	Subtotal:						**$247,331**
7.2	**Generator and Filter Buildings and Concentrate Shed**						
	Remove salvageable equipment	General Labour	hrs	240	$45	$10,800	
		Trades Labour	hrs	240	$75	$18,000	$28,800
	Salvage and remove powerline and poles		l.s.			$27,500	$27,500
	Ore Stockpile Pads	General Labour	hrs	160	$45	$7,200	
		Trades Labour	hrs	80	$75	$6,000	
		Cat 235 Excavator	hrs	40	$200	$8,000	$21,200
	Concrete Demolition	Blaster	hrs	40	$55	$2,200	
		Cat 235 Excavator	hrs	20	$200	$4,000	
		Cat D9H Dozer	hrs	20	$210	$4,200	$10,400
	Misc. Supplies & Tools	Misc.	l.s.			$1,650	$1,650
	Scrap haul to solid waste facility	Cat 235 Excavator	hrs	10	$200	$2,000	
		Truck D250E	hrs	20	$160	$3,200	$5,200
	Contractor's Shop and Office Area	7% of Total Cost	%		7.00%	$6,633	$6,633
	Subtotal:						**$101,383**
7.3	**Fuel Storage Area**						
	Remove bulk fuel storage and piping facilities	General Labour	hrs	100	$45	$4,500	
		Trades Labour	hrs	100	$75	$7,500	
		Support Equipment			$2,500	$2,500	
		Cat 235 Excavator	hrs	40	$200	$8,000	
		Tractor Trailer (lowbed)	hrs	20	$85	$1,700	$24,200
	Fold and Bury Liner	Cat 235 Excavator	hrs	20	$200	$4,000	
		Cat D9H Dozer	hrs	100	$210	$21,000	$25,000
	EPCM	7% of Total Cost	%		7.00%	$1,694	$1,694
	Subtotal:		4				**$50,894**
7.4	**Mill Reagents**						
	Load and return extra reagents/chemicals	General Labour	hrs	100	$45	$4,500	
		Support Equipment			$2,500	$2,500	$7,000
	EPCM	7% of Total Cost	%		7.00%	$490	$490
	Subtotal:						**$7,490**
7.5	**Reclaim Entire Mill Site Area**						
	Test soils for contamination	Environmental Scientist	hrs	40	$85	$3,400	$3,400
	Haul any contaminated soils to Land Treatment Facility	Cat 235 Excavator	hrs	40	$200	$8,000	
		Truck D250E	hrs	40	$160	$6,400	$14,400
		Unit Rate	cu.m	8000	$5	$40,000	$40,000
	Re-contour area and slopes to bury footings and establish drainage	Cat D9H Dozer	hrs	100	$210	$21,000	$21,000
	Haul and place overburden cap	Unit Rate	cu.m	50000	$5	$250,000	$250,000
	EPCM	7% of Total Cost	%		7.00%	$22,778	$22,778
	Subtotal:						**$351,578**
Total Estimated Cost in Reclaiming Mill and Ancillary Facilities							**$758,675**

Table 8
Mill Water Pond, Estimated Closure Costs

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Cost
	MILL POND						
8.1	**Reclaim Mill Pond**						
	Remove upstream culvert	General Labour	hrs	10	$45	$450	
		Cat 235 Excavator	hrs	10	$200	$2,000	$2,450
	Construct channel	Cat 235 Excavator	hrs	100	$200	$20,000	
		Cat D9H Dozer	hrs	20	$210	$4,200	$24,200
	Haul rip rap	Unit Cost Basis	cu.m	5,000	$10	$50,000	$50,000
	Place rip rap	Unit Cost Basis	cu.m	5,000	$3	$15,000	$15,000
	EPCM	7% of Total Cost	%		7.00%	$6,416	$6,416
	Subtotal:						**$98,066**
Total Estimated Cost in Reclaiming Mill Pond							**$98,066**

Table 9
Main Access Roads, Estimated Closure Costs

Scenario 1 - No Road Deactivation	**$0**

Scenario 2 - Decommission Access Road From Minto Creek to Mine Site (11 KM)

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Cost
9.1	**ACCESS ROAD - 11 KM SECTION**						
9.1.1	**Road Surface**						
	Scarify - 11 km	Cat 16H grader	hrs	70	$150	$10,500	$10,500
	EPCM	7% of Total Cost	%		7.00%	$735	$735
	Subtotal:						**$11,235**
9.1.2	**Culverts**						
	Culvert excavation (40 small culverts)	Cat 235 Excavator	5.5	100	$200	$20,000	$20,000
	Culvert removal	General Labour	3	140	$45	$6,300	
		Haul Truck D250E	5.5	100	$160	$16,000	$22,300
	Minto Creek Culvert Removal & Streambank Restoration	Trades Labour	hrs	40	$75	$3,000	
		General Labour	hrs	75	$45	$3,375	
		Cat 235 Excavator	hrs	40	$200	$8,000	$14,375
	Recontour slopes and drainage	D9H Dozer	hrs	70	$210	$14,700	$14,700
	Stabilize slopes	General Labour	hrs	200	$45	$9,000	
	Erosion barriers	Unit Cost Basis	per sq. m	500	$3	$1,500	$10,500
	Ore Stockpile Pads	7% of Total Cost	%		7.00%	$5,731	$5,731
	Subtotal:						**$87,606**
Total Estimated Cost for Access Road Closure (Scenario 2)							**$98,841**

Scenario 3 - Decommission Entire Access Road (27 KM)

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Subtask Cost
9.2	**ACCESS ROAD - 27 KM SECTION**						
9.2.1	**Road Surface**						
	Scarify - 27 km	Cat 16H grader	hrs	150	$150	$22,500	$22,500
	EPCM	7% of Total Cost	%		7.00%	$1,575	$1,575
	Subtotal:					$150	**$24,075**
9.2.2	**Big Creek Bridge**						
	Remove bridge decking and span	General Labour	hrs	50	$45	$2,250	
		Crane	hrs	40	$115	$4,600	
		Cat 235 Excavator	hrs	40	$200	$8,000	
		Tractor Trailer (lowbed)	hrs	20	$85	$1,700	$16,550
	Cut off piles	General Labour	hrs	50	$45	$2,250	$2,250
	Re-contour	Cat 235	hrs	30	$200	$6,000	
		D9H Dozer	hrs	30	$210	$6,300	$12,300
	EPCM	7% of Total Cost	%		7.00%	$2,177	$2,177
	Subtotal:						**$33,277**
9.2.3	**Barge Ramps**						
	Remove all gravel	Cat 235	hrs	20	$200.00	$4,000	$4,000
	Re-countour areas and scarify	D9H Dozer	hrs	30	$210	$6,300	$6,300
	EPCM	7% of Total Cost	%		7.00%	$721	$721
	Subtotal:						**$11,021**
9.2.4	**Culverts**						
	Culvert excavation (40 small culverts)	Cat 235 Excavator	hrs	100	$200	$20,000	$20,000
	Culvert removal	General Labour	hrs	140	$45	$6,300	
		Haul Truck D250E	hrs	100	$160	$16,000	$22,300
	Minto Creek Culvert Removal & Streambank Restoration	Trades Labour	hrs	40	$75	$3,000	
		General Labour	hrs	75	$45	$3,375	
		Cat 235 Excavator	hrs	40	$200	$8,000	$14,375
	Recontour slopes and drainage	D9H Dozer	hrs	70	$210	$14,700	$14,700
	Stabilize slopes	General Labour	hrs	200	$45	$9,000	
	Erosion barriers	Unit Cost Basis	per sq. m.	1,000	$3	$3,000	$12,000
	EPCM	7% of Total Cost	%		7.00%	$5,836	$5,836
	Subtotal:						**$89,211**
Total Estimated Cost for Access Road Closure (Scenario 3)							**$157,584**

Table 10
Miscellaneous Sites and Facilities, Estimated Closure Costs

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Cost
	MISCELLANEOUS SITES AND FACILITIES						
10.1	**Mine Camp and Related Infrastructure**						
	Remove salvageable equipment	General Labour	hrs	704	$45	$31,680	$31,680
	Dismantle Buildings	General Labour	hrs	1200	$45	$54,000	
		Cat 235 Excavator	hrs	120	$200	$24,000	$78,000
	Scrap haul to Solid Waste Facility	Truck D250E	hrs	20	$160	$3,200	
		Cat 235 Excavator	hrs	10	$200	$2,000	$5,200
	Reclaim Septic System	Labour	hrs	10	$45	$450	
		Cat 235 Excavator	hrs	2	$200	$400	$850
	Site Clean-up Crew	General Labour	hrs	500	$45	$22,500	$22,500
	EPCM	7% of Total Cost			7.00%	$9,676	$9,676
	Subtotal:						**$147,906**
10.2	**Airstrip**						
	Scarify airstrip	Cat 16H Grader	hrs	20	$171	$3,420	$3,420
	EPCM	7% of Total Cost	%		7.00%	$239	$239
	Natural revegetation	n/a	n/a				
	Subtotal:						**$3,659**
10.3	**Exploration Sites and Trails**						
	Natural revegetation	n/a	n/a				
	Subtotal:						**$0**
10.4	**Land Treatment Facility**		8.6				
	Prepare and submit closure plan	Misc	l.s.		$2,000	$2,000	$2,000
	Characterize final soil hydrocarbon concentrations	Misc	l.s.		$3,000	$3,000	$3,000
	Recontour	Cat D9H Dozer	hrs	2	$210	$420	$420
	Haul and place overburden cap	Cat 235 Excavator	hrs	20	$200	$4,000	$4,000
		Truck D250E	hrs	20	$160	$3,200	$3,200
		Cat D9H Dozer	hrs	6	$210	$1,260	$1,260
	EPCM	7% of Total Cost	%		7.00%	$972	$972
	Subtotal:						**$14,852**
10.5	**Solid Waste Facility**						
	Prepare and submit closure plan	Misc	l.s.		$2,000	$2,000	$2,000
	Characterize final waste area	Misc	l.s.		$2,000	$2,000	$2,000
	Remove recyclables and special waste materials	Tractor Trailer (lowbed)	hrs	40	$85	$3,400	$3,400
	Recontour	Cat D9H Dozer	hrs	2	$210	$420	$420
	Haul and cover with fill and place overburden cap	Cat 235 Excavator	hrs	20	$200	$4,000	
		Truck D250E	hrs	20	$160	$3,200	$7,200
	EPCM	7% of Total Cost	%		7.00%	$1,051	$1,051
	Subtotal:		5				**$16,071**
10.6	**Explosives Plant Site**		2.5				
	Remove salvageable equipment	General Labour	hrs	100	$45	$4,500	
		Trades Labour	hrs	50	$75	$3,750	$8,250
	Dismantle Buildings	General Labour	hrs	200	$45	$9,000	
		Cat 235 Excavator	hrs	30	$200	$6,000	$15,000
	Scrap haul to Solid Waste Facility	Truck D250E	hrs	30	$160	$4,800	
		Cat 235 Excavator	hrs	10	$200	$2,000	$6,800
	EPCM	7% of Total Cost	%		7.00%	$1,964	$1,964
	Subtotal:						**$32,014**
10.7	**Site Roads**						
	Recontour	Cat 235 Excavator	hrs	30	$200	$6,000	
	Scarify	Cat 16H Grader	hrs	40	$171	$6,840	$12,840
	EPCM	7% of Total Cost	%		7.00%	$899	$899
	Subtotal:						**$13,739**
Total Estimated Cost in Reclaiming Miscellaneous Sites and Facilities							**$228,241**

Table 11
Reclamation Research and Revegetation, Estimated Closure Costs

Item No.	Work Item Description	Units	Quantity	Unit Cost	Cost	Total Cost
11.1	**RECLAMATION RESEARCH**					
11.1.1	**Test Plots and Reclamation Trials**					
	Seeding and re-seeding w/ fertilizer and labour	ha	4	$1,971	$7,884	$7,884
	Soils testing	yrs	7	$500	$3,500	$3,500
	Summer student - wages and support costs	yrs	6	$12,000	$72,000	$72,000
	Consultants - establishment, monitoring, reporting for revegetation program	yrs	7	$10,000	$70,000	$70,000
	Subtotal:					**$153,384**
11.2	**REVEGETATION ACTIVITIES**					
11.2.1	**Main Waste Rock Dump**					
	Seed and fertilize w/ labour	ha	5.5	$1,971	$10,841	
	Re-seed	ha	3.0	$1,971	$5,913	
	Re-forest	ha	5.5	$1,500	$8,250	$25,004
	Sub-Total					**$25,004**
11.2.2	**Ice-Rich Overburden Dump**					
	Seed and fertilize w/ labour	ha	6.7	$1,971	$13,206	
	Re-seed	ha	3.0	$1,971	$5,913	
	Re-forest	ha	6.7	$1,500	$10,050	$29,169
	Sub-Total					**$29,169**
11.2.3	**Ore Stockpile Pads**					
	Seed and fertilize w/ labour	ha	8.6	$1,971	$16,951	
	Re-seed	ha	4.0	$1,971	$7,884	
	Re-forest	ha	8.6	$1,500	$12,900	$37,735
	Sub-Total					**$37,735**
11.2.4	**Open Pit - Constructed Channel for Minto Creek**					
	Seed and fertilize w/ labour	ha	1	$1,971	$1,971	
	Re-forest	ha	1	$1,500	$750	$2,721
	Sub-Total					**$2,721**
11.2.5	**Contractor's Shop and Office Area**					
	Seed and fertilize w/ labour	ha	8.6	$1,971	$16,951	
	Re-seed	ha	4.0	$1,971	$7,884	
	Re-forest	ha	8.6	$1,500	$12,900	$37,735
	Sub-Total					**$37,735**
11.2.5	**Tailings Area**					
	Seed and fertilize w/ labour	ha	8.0	$1,971	$15,768	
	Re-seed	ha	4.0	$1,971	$7,884	
	Re-forest	ha	8	$1,500	$12,000	$35,652
	Sub-Total					**$35,652**
11.2.6	**Main Water Dam**					
	Seed and fertilize w/ labour	ha	3.3	$1,971	$6,504	
	Re-seed	ha	1.7	$1,971	$3,351	
	Re-forest	ha	3.3	$1,500	$4,950	$14,805
	Sub-Total					**$14,805**
11.2.7	**Mill Area**					
	Seed and Fertilize w/ labour	ha	5	$1,971	$9,855	
	Re-seed	ha	2.5	$1,971	$4,928	
	Re-forest	ha	4	$1,500	$6,000	$20,783
	Subtotal:					**$20,783**
11.2.8	**Miscellaneouse Sites (Camp, Airstrip, Waste Facilities, Explosives Site)**					
	Seed and fertilize w/ labour	ha	5.2	$1,971	$10,249	
	Re-seed	ha	3	$1,971	$5,913	$16,162
	Subtotal:					**$16,162**
11.2.9	**Access Road**					
	Scenario 1 - No Deactivation					
	No revegetation					
	Subtotal:					**$0**
	Scenario 2 - Deactivate from Minto Creek to Mine Site					
	Revegetate and fertilize banks at culvert excavations, including labour	ha	1	$1,971	$1,971	
	Subtotal:					**$1,971**
	Scenario 3 - Deactivate Entire Road					
	Revegetate and fertilize banks at culvert excavations, including labour	ha	2	$1,971	$3,942	
	Subtotal:					**$3,942**

Total Estimated Cost for Reclamation Research and Revegetation		
	Scenario 1 - No Access Road Deactivation	**$373,148**
	Scenario 2 - Deactivate Access Road from Minto Creek to Mine Site	**$375,119**
	Scenario 3 - Deactivate Entire Access Road	**$377,090**

Table 12
Site Management, Estimated Closure Costs

Item No.	Work Item Description	Equipment / Labour	Units	Quantity	Unit Cost	Cost	Total Cost
	SITE MANAGEMENT						
12.1	**Onsite Management**						
	Project Management and Engineering - Included in EPCM Costs in each Closure Component						
	Pickup truck	Light truck	monthly	30	$2,500	$75,000	$75,000
	Sundry equipment maintenance	Unit Rate	yearly	5	$5,000	$25,000	$25,000
	Power and heat	Unit Rate	monthly	15	$5,500	$82,500	$82,500
	General Administrative expenses	Unit Rate	monthly	30	$2,000	$60,000	$60,000
	Camp Costs						
	Scenario 1	Unit Rate	days	983	$110	$108,141	$108,141
	Scenario 2	Unit Rate	days	1067	$110	$117,326	$117,326
	Scenario 3	Unit Rate	days	1106	$110	$121,616	$121,616
	Subtotal:					Scenario 1	**$350,641**
						Scenario 2	**$359,826**
						Scenario 3	**$364,116**
12.2	**Transport Costs**						
	Employee transport costs	Unit Rate	monthly	30	$1,500	$45,000	
	Barge operating costs	Unit Rate	monthly	16	$35,000	$560,000	
	Subtotal:						**$605,000**
12.3	**Compliance Monitoring and Reporting**						
	Water Quality Monitoring (Post Mine Closure)						
	Ore Stockpile Pads	Misc.	monthly	30	$2,000	$60,000	
	Years 6-10 (quarterly - spring/summer/fall)	Misc.	quarterly	15	$2,000	$30,000	
	Years 11-15 (once annually - post spring freshet)	Misc.	yearly	5	$2,000	$10,000	
	Disbursements (non-labour/non-analytical)	Misc.	l.s..	15	$2,000	$30,000	
	Biological Monitoring - Closure implementation					$6,000	
	Years 1-5 (Annually)	Misc.	yearly	5	$3,000	$15,000	
	Years 6-10 (Annually)	Misc.	yearly	5	$3,000	$15,000	
	Years 11-15 (Every two years)	Misc.	l.s..			$7,500	
	Subtotal:					$3,000	**$173,500**
12.4	**Post Closure Maintenance**						
	Misc. Maintenance work related to the site after closure	Misc.	per year	5	$10,000	$ 50,000	
	Subtotal:						**$50,000**

Total Estimated Cost for Post Closure Site Management		
	Scenario 1	**$1,179,141**
	Scenario 2	**$1,188,326**
	Scenario 3	**$1,192,616**

8.1 UPDATED FINANCIAL SECURITY

YG has recently developed a policy respecting mine site reclamation and closure with one of the stated principles that "adequate security must be provided by the project proponent at each stage of mine development reclamation and closure consistent with the requirements of relevant legislation and Yukon financial security guidelines" (YG Mine Reclamation and Closure Policy, 2005). Typically requirements for mine security bonding are conditions of the Type A Water Use Licence or Yukon Quartz Mining Production Licence. Minto intends to adhere to the principles for mine reclamation and closure and security requirements in accordance with YG's policy.

Minto's Type A Water Use Licence (QZ96-006, Part B) outlines the requirements for security for the project as follows:

- The Licencee shall provide security in the total amount of $4,450,000 (four million, four hundred and fifty thousand dollars).

- The schedule for payment of security is as follows:

    - $50,000 within thirty days of the effective date of this licence, and

    - $750,000 (seven hundred and fifty thousand dollars) on or before the start up date, and

    - $2,550,000 (two million, five hundred and fifty thousand dollars) to be paid in twenty four quarterly installments of $106,250 (one hundred and six thousand, two hundred and fifty dollars). The first payment shall be made within three months of the start up date and subsequent payments shall be made every three months thereafter.

    - $800,000 (eight hundred thousand dollars) payable on the first anniversary of the start up date, and

    - $300,000 (three hundred thousand dollars) payable on the fifth anniversary of the start up date.

To date, the Company has posted $450,000 with YG for security bonding. An additional $200,000 is required within 6 months of further site development with an additional $100,000 required 30 days before mill start-up. This accelerated security requirement was required by YG under the YQMA and is considered a component of the $750,000 security required under the Type A Water Use Licence.

In addition, the Yukon Quartz Mining Production Licence requires that Minto submit a Closure Plan. This Plan presents detailed cost estimates in Section 8 for closure measures. Closure costs will be reviewed every two years in accordance with the Quartz Mining Production Licence.

The Company will discuss road decommissioning requirements with the Selkirk First Nation, which will ultimately refine the final closure costs associated with the access road decommissioning.

9.0 REFERENCES

Craig, D.B., Craig, J.E., Pelletier, K., Emond, D. and Copland, H., 1998. "*Reclamation Practices and Research on Mineral Exploration Properties in the Yukon Territory".* Mineral Resources Directorate, Yukon Region, Indian & Northern Affairs Canada, 36 p.

Grapel, C. and S. Hebert. 2006. *Lakebed Revegetation after the Partial Removal of the Hamilton Lake Dam on Vancouver Island, B.C.* Canadian Dam Association Bulletin, Vol. 17., No. 4. Fall 2006.

Hay & Company Consultants, 2006. *Revised Hydraulic Design for Overflow Spillway for Minto Tailings/Water Dam.*

INAC, 1992. *Mine Reclamation in Northwest Territories and Yukon*. Northern Water Resources Studies, Indian and Northern Affairs Canada.

Kennedy, C.E., Editor. 1993. *Guidelines for Reclamation/Revegetation in the Yukon*. Department of Renewable Resources, Government of Yukon, Whitehorse, Yukon.

Mills, C. 1997. *An Assessment Of The Acid Base Accounting (ABA) And Mineralogical Test Work On Eight Samples From The Proposed Minto Project, Yukon Territory. Vancouver, BC. February 1997.*

Note: Other documents reviewed include those listed in Table 1-1 Global Information List.

Minto Explorations Ltd.

Minto Project, Yukon

Detailed Decommissioning and Reclamation Plan

Appendix A

Environmental Setting

Excerpted from:

Minto Project, Yukon *Site Inspection & Compilation of Environmental Information* Prepared by Access Mining Consultants Ltd. For DIAND, Renewable Resources Waste Management Program

March 2000

4.0 ENVIRONMENTAL COMPONENTS

The following section presents a summary of environmental biophysical information for the project area. Where available, additional data has been used and incorporated to present the current knowledge of the area.

4.1 CLIMATE

A basic meteorological station was established at the mine site in 1993 (elevation: 884 m, 2900 ft). Only intermittent temperature and precipitation data is available (September–October 1993 and June-August 1994). Meteorological information for the Project area was collected manually and consisted of snow surveys and a weather station that measured precipitation and temperature. Due to the paucity of site specific climatic information, long-term synthetic data for various parameters was generated using regional information from the Pelly Ranch (Fort Selkirk) monitoring station. This information is presented in greater detail in Volume II of the Initial Environmental Evaluation prepared by Hallam Knight Piesold, (HKP, 1994).

Temperatures at the mine site are typical of northern inland climates, having low average temperatures and seasonal extreme low temperatures. Precipitation levels are described as moderate. The meteorological database for the Project area is limited. Table 1 presents a summary of key meteorological information for the Project area.

Table 1 Minto Project Area Meteorological Information

Site Elevation	716 to 793 (m)
Regional Station Used To Generate Synthetic Data	Pelly Ranch
Distance to Carmacks Climate Station [Elevation of 525 m]	80 km southeast
Distance to Pelly Ranch (Fort Selkirk) Climate Station [Elevation of 454 m]	20 km northwest
Mean Monthly Temperature Range	-30.9°C to 12.1°C
Annual Mean Temperature	-7.3°C
Orographic Factors	Long-term synthetic values for mean annual precipitation generated using an orographic factor of + 8% per 100 m elevation gain using Pelly Ranch as basis
Annual Precipitation	378 mm
Precipitation as Snow	157 mm (41.5%)
Precipitation as Rain	221 mm (58.5%)
Probable Maximum 24-hour Precipitation	183 mm
Snowmelt Periods	80% April, 20% May
Mean Annual Pond Evaporation	409mm

Note: Pelly Ranch data was chosen as the basis for analysis because of the close proximity of the meteorological station and the Project site, a reasonable correlation between station and site precipitation records, and a reasonable correlation between station precipitation and site runoff.

4.2 TERRESTRIAL RESOURCES

4.2.1 Surficial Geology / Terrain Hazards

The following discussion of terrain hazards at the Minto Project Site was taken directly from Volume II of Hallam Knight Piesold's Initial Environmental Assessment, 1994.

Surficial Geology

The Minto area is considered part of the Pelly River Ecoregion and lies within the Dawson Range on the west side of the Klondike Plateau. Erosion surfaces are dissected by narrow stream valleys. The topography is gently rolling with relief up

to 2000 ft (600 m). The ore body is located beneath a small stream valley, known as Minto Creek, and extends beneath the toe of the south-facing slope on the left hand side of the creek. The bottom of the valley in the region of the ore body is at an elevation of approximately 2650 ft (922 m). On either side of Minto Creek, the topography rises at slopes generally of approximately 20° to the rounded tops of the surrounding hills which are at a maximum elevation of 3250 ft (1131 m). The site is located within the discontinuous widespread permafrost subzone and extensive areas within the general region are underlain by permafrost. Permafrost is extensively distributed throughout the site with the majority located on north aspect slopes. Within the area of the open pit, overburden has been measured to be as thick at 280 feet (85.3 m) with permafrost extending to a depth of 60 feet (18.3 m).

The area west of the Yukon River and north of Carmacks, including the Minto area, was not covered during the last continental glaciation (Wisconsin Drift) and as a result, glacial till soils are not present. However, a study by Bostock (1970) on the glaciation of central Yukon indicates that two older drifts, the Klaza and Reid Advances may have partially encroached on the upper region of Minto Creek. Gravel deposits, terraces and few erratics indicate that glaciation extended above 3000 ft (1044 m), from south of the mouth of Dark Creek, north to Wolverine Creek. Due to the lack of glaciation, bedrock exposure is poor and generally limited to the tops of ridges where it forms blocky, castellated outcrops.

Soils in the Minto area have developed from saprolite, colluvial and fluvial parent materials. Where drainage is impeded, gleysols or gleyed brunisols tend to develop. On well drained materials, eutric or dystric brunisols predominate, although some podzols may also occur. Regosols may occur on recent fluvial deposits.

The predominant bedrock type in the development area is granodiorite; derived materials are generally coarse textured, basic, well to moderately drained, and have low inherent fertility. Organic content in soils is expected to be low except in the upper few centimeters.

Overburden within the plant site consists predominantly of micaceous, organic, silty sand and of sand and fine gravel, derived predominantly through *in situ* weathering of the upper surface of the bedrock. Bedrock is encountered at depths of 2 to 11 feet (0.7 to 3.8 m) below surface. Overburden in the vicinity of the proposed open pit has a maximum thickness of 280 feet (97.4 m). Soils consist of frozen micaceous silt and fine sand with varying amounts of organic constituents throughout. Overburden in the vicinity of the tailings storage facility also consists of frozen silts and sands and is approximately 200 feet (96 m) in thickness. Overburden material is described as consisting of 30% fine gravels, 40% coarse sands and 10% medium sands. In all cases, the overburden is covered by a moss and topsoil layer. Bedrock below these layers is granodiorite.

Debris Flow

Solifluction is slow downward movement (mud flow or creep) of water-saturated, near surface soil and surface vegetation from higher to lower elevations. Solifluction areas on the Minto Project site are underlain at shallow depth by permafrost, which retards subsurface drainage. The active layer becomes saturated with surface and shallow subsurface drainage from the adjacent slopes. When subjected to these conditions, the active layer creeps during the spring and summer months, even on very gentle slopes. This slow downslope creep of the saturated surface mantle is commonly referred to as solifluction.

Slope Stability

South aspect scree slopes in lower Minto Creek are comprised of a minimal vegetative layer consisting of grasses and some low growing shrubs such a kinnikinnick, juniper and soopalallie. Active erosion was observed in these areas. Extensive regions of burn, combined with steep slopes, thin overburden layers and solifluction may result in some north aspect slopes being unstable during the spring thaw and summer months.

Avalanche Hazard

The Minto Project is within an area that receives very low levels of precipitation. Regionally, snowfall averages 185 mm annually. The potential for the occurrence of an avalanche are very low.

Forest Fires

Due to the dry climate and frequent electrical storm events that occur in the summer months, forest fires are very common in the Minto area. Many areas are in varying degrees of seral succession of vegetation. Two burns have occurred in the Minto Creek watershed between 1950 and 1980, and two further burns since 1980.

Permafrost

The Minto Project lies in the southerly boundary of the discontinuous permafrost zone. From site investigations by Golder (1976), it was determined that permafrost is extensively distributed throughout the site with the majority located on north aspect slopes. Within the area of the open pit, overburden has been measured to be as thick as 280 feet (85.3 m) with permafrost extending to a depth of 60 feet (18.3 m). A significant percentage of the permafrost is clear segregated ice with water content close to the liquid limit and will not be suitable as construction material. Permafrost of the same sort is found within the proposed tailings and waste rock storage areas.

4.2.2 Wildlife and Waterfowl

Information on wildlife in the Project area has been gathered from various sources including the IEE for the Minto Project (prepared by Hallam Knight Piesold, 1994), YTG-Renewable Resources, and other reports on the Project and surrounding area. Additional information was provided by the SFN and other local residents, as part of data gathered from First Nation interviews.

Numerous aerial and ground surveys were conducted in 1994 by Hallam Knight Piesold. Some were conducted in association with the Yukon Territorial Government, Fish and Wildlife Branch of Renewable Resources. In general, it was noted during these surveys that wildlife distributions follow vegetation zone classifications. Three distinct habitat classifications, based on the predominant vegetation communities, exist in the Minto Project area. These include: mixed coniferous/deciduous forest zone, black spruce/willow/sedge zone, and areas of regenerative forests.

Wildlife species likely to be present within the Minto Project area are presented in Table 2. Although not all of these species were observed in the 1994 surveys it is suggested, by the availability of habitat and historical record, that these species are likely to be present at one time or another. This information was also confirmed during SFN interviews.

The Project area does not likely contain key habitat for either moose or caribou. However, moose utilization of the area has been reported. Moose may use new vegetative growth in the extensive burn areas for feeding during the growing season, and occasionally foraging on tall shrubs during the winter. The low-gradient areas near the Yukon River, including the area through which the access road passes, may also provide foraging habitat. Moose are also known to use some islands of the Yukon River for calving. YTG-Renewable Resources estimates the local density of moose to be approximately 40 moose/1000 km^2.

Migration corridors have been qualified as key habitat for woodland caribou. Populations of these ungulates in the region are represented by the Klaza and the Tatchun/Glenyon herds. Key winter range habitat has been identified for the Klaza herd in the headwaters of Big Creek, some 15 km west of the Project. The herd is consists of approximately 955 animals (1994 estimate). The results of radio collaring/tracking and home range mapping by YTG-Renewable Resources suggests that the herd does not enter the Minto Project area. However the Tatchun/Glenyon herd maintains a home range that may intersect portions of the access road.

Mule deer are designated as ‘specially protected wildlife’ due to their low abundance in the Yukon. Mule deer are commonly found in burn areas and south aspect slopes. Physical observations of Mule deer presence, in the Project area, has been limited to two groups of pellets observed in the vicinity of Minto Creek in 1994.

A population of Dall sheep inhabit the east bank of the Yukon river between Minto Landing and the Pelly River confluence. This area is considered key winter habitat for the species. It is anticipated that the Minto Project will have no significant effects upon this sheep population as no Project activities occur in this area.

Table 2 Wildlife Species in the Vicinity of the Minto Project Area

Ungulates	
Moose	*Alces alces*
Woodland caribou	*Rangifer tarandus*
Dall sheep	*Ovis dalli dalli*
Mule deer	*Odocoileus hemionus*
Carnivores and Furbearers	
Grizzly bear	*Ursus horribilis*
Black bear	*Ursus americanus*
Coyote	*Canis latrans*
Wolf	*Canis lupus*
Lynx	*Lynx canadensis*
Red fox	*Vulpes vulpes*
Wolverine	*Gulo luscus*
Marten	*Martes americana*
Least weasel	*Mustela rixosa*
Mink	*Mustela vison*
Muskrat	*Ondantra zibethicus*
River otter	*Lutra canadensis*
Beaver	*Castor canadensis*
Squirrel	*Tamiascurus hudsonieus*
Snowshoe hare	*Lepus americanus*
Game Birds	
Spruce grouse	*Dendragapus canadensis*
Ruffed grouse	*Bonada umbellus*
Sharp-tailed grouse	*Tympanuchus phasianellus*
Willow ptarmigan	*Lagopus lagopus*
White-tailed ptarmigan	*Lagopus leucurus*
Rock ptarmigan	*Lagopus mutus*
Canada goose	*Branta canadensis*
Mallard duck	*Anas platyrhynchos*
Northern pintail	*Anas acuta*
Green-winged teal	*Anas crecca*
American widgeon	*Anas americana*

Adapted from Table 10.1 (Minto Explorations Ltd. IEE, *Volume II Environmental Setting)*

Large carnivores, such as bears and wolves have been observed in the Project area. A female grizzly with two cubs has been observed in the upper Minto Creek drainage, Black bears have been sighted in the lower Minto Creek watershed during the summer months. A variety of smaller furbearers can also be found associated with the various Project area habitats. This is consistent with the observation of continued trapping in the area.

Big Game harvest levels and the trapping and outfitting concessions in the Project area are shown in Figure 8.

Waterfowl are not known to use the Project area for any length of time due to the lack of suitable habitat (i.e. wetlands). However, key habitat for waterfowl does exist in the area of the Wilczek Lakes, approximately 30 km east of the Project area (Hallam Knight Piesold, 1994).

SFN members do however confirm that a large number of waterfowl do inhabit the slough and wetland areas along the Yukon River. Other game birds are found in the Project area, with specific sightings of sharp-tailed grouse and spruce grouse. Raptors in the area primarily utilize the Yukon River Corridor, as there is a lack of suitable alpine habitat in the Project area. One pair Peregrine Falcons (listed in Canada as 'endangered') is currently known to utilize the Yukon River near the Minto Project area. The Yukon River shores are also home to eagles and osprey, with eagles nests reported near the Project area along the Yukon River.

4.2.3 Vegetation

The Minto Project lies within the Yukon Plateau (Central) Ecozone/Pelly River Ecoregion. The area forest types commonly include Black and white spruce, paper birch (cooler sites), aspen and balsam poplar (disturbed sites - pioneering species), and lodgepole pine (frequently in competition with deciduous species in burned areas). Mosses dominate coniferous forest floors, with willows and ericaceous shrubs becoming more prevalent as forest stand density decreases. Lichens tend to dominate in rocky Alpine areas. Alpine areas begin at elevations of 1350-1500 m. Sedges and tussocks occur in moist, low-gradient areas and under Black spruce, which also thrive in moist substrates.

The first 10-18 kilometers of the Project access road traverses a low gradient, moist habitat, as discussed above (associated with the ancient Yukon River floodplain). The remaining portion of the road ascends the Minto Creek drainage, terminating in the sub-alpine/alpine reaches of the

watershed. It is here that the local forests are regenerating as a result of successive forest fires. The Minto Project area has been burned by four separate forest fires over the last 40 years. The upper Minto Creek area was burned in 1980, while another fire occurred in 1995 in the lower Minto Creek area (within 300m of the confluence with the Yukon River). Figure 6 outlines the extent of burn areas as a result of various forest fires. Vegetation surveys and mapping were completed as art of the IEE (HKP, 1994). No further vegetation studies have been completed in the Project area, although MEL has initiated a test re-vegetation program as part of the company's reclamation efforts.

4.3 HYDROLOGY AND WATER QUALITY

4.3.1 Surface Water Hydrology and Water Quality

Hydrological and water quality information for the Project area has been collected by B.C. Research and Environment Canada (1975-1976). Further data was collected by Hallam Knight Piesold from 1993-1995. Additional hydrological and water quality data is now being collected by MEL as part of their Water Use Licence (QZ96-006) surveillance network. Figure 5 provides the location of these monitoring stations.

Although of limited quantity, the water quality data base appears to show some similarity across sampling events. Historical water quality monitoring data exists for Minto Creek, Big Creek, Unnamed Creek A & B, Wolverine Creek, and the Yukon River. These water samples were collected and analyzed on several occasions during 1975 and 1976 (conducted by B.C. Research and Environment Canada). Water quality data collected during the Initial Environmental Evaluation consists of several sampling occasions from September 1993 to October 1995, primarily on Minto Creek (MEL & DIAND). Further data was collected by Minto Explorations in 1998 as part of the monitoring requirements of their Water Use Licence (QZ96-006). Two water quality monitoring stations were sampled in Minto Creek during the October, 1999 inspection to document existing stream chemistry prior to full scale mine production in the area.

During the course of the environmental data compilation, little information or data was found regarding Yukon River winter ice conditions at Minto Landing, the site of the proposed winter ice bridge crossing.

4.3.1.1 MINTO CREEK

Minto Creek is an ephemeral watercourse with a mainstream length of approximately 17km. Three staff gauges were installed along Minto Creek (at Environmental Monitoring Stations W1, W2 & W3) to gather baseline hydrological information. During a fishery survey in 1994, the watercourse was divided up into seven (7) reaches (Minto Explorations Ltd., IEE Volume II). Lower reaches of the watercourse show lower flows than the upper reaches. This is presumably due to reduced runoff retention times in the upper regions of the drainage as a result of the burn areas and also due to the high streambed infiltration that occurs within the lower reaches.

Hydrological studies conducted as part of the 1994 IEE, by Hallam Knight Piesold also indicate that a significant amount of infiltration of Minto Creek flow is occurring in the upper reaches of the watershed. Up to 75% of the surface runoff may be entering the subsurface regime, resulting in a large amount of attenuation. As such, a reasonable estimate of maximum flow that would be expected at the Minto Creek crossing of the access road at km 15.7 is approximately 5 m^3/sec. This compares to a 1:100 year flood event, assuming approximately 50% surface flow is lost to upstream subsurface attenuation (Minto Explorations Ltd., IEE Volume II).

In the absence of long-term and complete records of streamflow for the study area streams, a regional hydrological analysis was completed using a combination of data collected on site and data collected at the hydrometric networks of the Water Survey of Canada (WSC) and the Water Resources Division of DIAND. Regional streamflow and precipitation records were used to generate synthetic long-term flow values (Minto Project IEE Volume II, 1994). Hydrological information gathered on Minto Creek is presented in Table 3. Table 4 presents the seasonal streamflow distributions for Minto Creek.

The existing Water Use License (QZ96-006) requires flow monitoring at a number of stations in the Minto Creek drainage. During the October, 1999 site inspection, flow monitoring station W2 was found in a state of disrepair.

Table 3 Measured Minto Creek Streamflow Data

Gauge Location	Catchment Area (km^2)	Mean Basin Elevation (m)	Flow (m^3/s)					Unit Area Flow (mm)				
			29-Sep-93	15-May-94	5-Jun-94	7-Jul-94	11-Aug-94	29-Sep-93	15-May-94	5-Jun-94	7-Jul-94	11-Aug-94
Minto Creek (Station W1)	4.75	885	0.035	0.119	0.029	0.042	0.005	0.637	2.165	0.527	0.764	0.091
Minto Creek (Station W3)	10.38	-	0.028	0.101	0.029	0.04	0.011	0.236	0.841	0.241	0.333	0.092
Minto Creek (Station W2)	42.18	775	0.06	0.312	0.061	0.095	n/a	0.123	0.639	0.125	0.195	n/a

Streamflow data adapted from Table 4.2 (Minto Explorations Ltd. IEE, Volume II Environmental Setting)

Table 4 Minto Creek Seasonal Streamflow Distributions (Measured and generated long-term values)

Environmental Monitoring Station	Years of Record	unit	January	February	March	April	May	June	July	August	September	October	November	December	Annual Total
Big Creek (WSC Site #09AH003)	1975-83, 1984-93	m^3/s	0.30	0.20	0.10	2.00	26.80	17.30	19.40	13.30	10.00	3.80	1.30	0.60	7.90
		mm	0.40	0.20	0.20	2.90	40.40	26.00	29.20	20.00	15.00	5.80	1.90	0.90	143.00
		%	0.30	0.20	0.20	2.10	28.20	18.20	20.40	14.00	10.50	4.00	1.30	0.60	100.00
Minto Creek Station W2 (measured)	1994	m^3/s	-	-	-	-	-	0.10	0.04	0.04	0.02	-	-	-	-
		mm		-	-	-	-	6.50	2.60	2.30	1.40	-	-	-	-
Minto Creek Station W2 (estimated)	1994	m^3/s	-	-	-	-	-	0.09	0.06	0.01	0.03	-	-	-	-
		mm	-	-	-	-	-	5.60	3.80	0.90	2.20	-	-	-	-
Minto Creek Station W2 (estimated)	Synthetic Long-term	m^3/s	0.00	0.00	0.00	0.20	0.09	0.06	0.09	0.06	0.04	0.00	0.00	0.00	0.05
		mm	0.00	0.00	0.00	12.00	5.00	4.00	5.00	4.00	3.00	0.00	0.00	0.00	34.00
		%	0.00	0.00	0.00	37.00	16.00	11.00	16.00	10.00	8.00	1.00	0.00	0.00	100.00

Streamflow distribution data adapted from Table 4.4 (Minto Explorations Ltd. IEE, Volume II Environmental Setting)

Table 5 presents the results of water quality analysis conducted as a part of the 1999 site inspection, as well as the water quality data from the 1998-1999 Annual Report to the Yukon Territory Water Board for water use licence QZ96-006 (for Minto Creek water quality monitoring sites W2 and W3 only). Water quality monitoring data collected at other locations in the Project area have been included in its entirety, as Appendix A. Figure 5 shows the current and historic environmental monitoring sites.

Water quality in the Minto Creek drainage is characterized as neutral to slightly basic pH, moderately hard, moderately high in total suspended and dissolved solids, and moderately to highly conductive. Concentrations of anions, nutrients, and cyanide/cyanogen-like compounds have been found to be moderate to high. Metal concentrations are generally moderately high with iron, copper, and aluminum present in high concentrations and in exceedance of the CCME Guidelines for the Protection of Freshwater Aquatic Life, particularly in the upper reaches of Minto Creek near the orebody (Minto Project IEE Volume II, 1994) (CCME, 1999)

Water quality samples were collected at Station W3 – Upper Minto Creek and the lower reach of Minto Creek, Station W2 on October 13, 1999 (Figure 5). Samples were analyzed for physical parameters, nutrients, residues, total and dissolved metals, and shipped for analysis to Norwest Labs of Vancouver the following day. Water samples taken during the October 1999 site inspection showed elevated concentrations for nutrients and metal concentrations, with cadmium, copper, iron, and selenium again exceeding CCME concentrations for the protection of freshwater aquatic life. These water quality results are consistent with previous sampling results; however, higher metal concentrations were encountered at W2 (lower Minto Creek) as opposed to W3 (upper Minto Creek).

Table 5 Minto Creek Water Quality

	Location												
	W2	W2	W2	W2	W2	W2	W2	W3	W3	W3	W3	W3	CCME Guideline
	Minto IEE*	DIAND*	DIAND*	MAR*	MAR*	ACG*	**MEAN**	Minto IEE*	DIAND*	DIAND*	ACG*	**MEAN**	
	1993-94	15-Jun-95	25-Jul-95	2-May-98	9-Aug-98	13-Oct-99		1993-94	15-Jun-95	25-Jul-95	13-Oct-99		
Physical Tests													
Conductivity (microS/cm)	185.7		174.0	127.0	247.0	220.0	190.7	239.4	337.0	297.0	300.0	293.4	
Hardness (mg/l)	93.4		114.0	65.5	145.0		104.5	113.1	173.0	176.0		154.0	
Turbidity (NTU)	18.4		5.0				11.7	33.0	0.4	1.0		11.5	
Water Analysis (mg/l)													
Total Alkalinity	86.5		85.0	54.0	123.0	97.0	89.1	105.3	148.0	132.0	112.0	124.3	
Ammonium-N	0.0052		0.002			0.001	0.0036	0.0157	0.005	0.002	0.001	0.00757	
Chloride (dissolved)	1.07						1.07	1.2	1.0			1.10000	
Fluoride (dissolved)	0.203						0.203	0.162	0.26			0.211	
Sulphate (dissolved)	13.7		15.0				14.35	20.32	35.4	21.0		25.57	
Nitrate-N (+ Nitrite-N)	0.0339		0.016	0.005	0.094	0.25	0.09848	0.0602	0.043	0.054	0.12	0.0693	
Nitrite Nitrogen	0.0029			0.008	0.001		0.00397	0.005	0.002			0.0035	0.06
pH (units)	7.8		8.0	7.6	7.7	7.8	7.8	7.9	8.1	8.1	7.9	8.0	0.0065-0.009
Phosphorus-Orthophosphate	0.0083					0.19	0.09915	0.0166	0.002		0.19	0.06953	
Total Dissolved Phosphate	0.0155						0.0155	0.0256	0.006			0.0158	
Total Phosphorus	0.0573		0.058				0.05765	0.068	0.01	0.014		0.03067	
Total Dissolved Solids	125.8			100.0	179.0	161.0	141.5	154.0				154.0	
Total Suspended Solids	42.0		20.0	150.0	1.0	31.0	48.8	85.4	248.0	5.0		112.8	
Dissolved Parameters (mg/l)													
Dissolved Organic Carbon	27.2							20.9				20.9	
Total Organic Carbon	18.9					12.1	15.5	16.1	9.1		11.8	12.3	
Total Metals (mg/l)													
Aluminum (Al)	0.948	0.084	0.901	0.8	0.2	0.35	0.6166	1.9520	0.026	0.186	0.12	0.571	
Antimony (Sb)	0.0001	0.0001	0.0004	0.2	0.2	0.02	0.0002	0.0001	0.0001	0.0004	0.02	0.0002	
Arsenic (As)	0.0009	0.0003	0.0007	**0.2**	**0.2**	**0.02**	0.0006	0.0014	0.0003	0.0004	**0.02**	0.0007	0.005
Barium (Ba)	0.0678	0.058	0.0676	0.06	0.06	0.0546	0.0613	0.1048	0.059	0.0558	0.0523	0.068	
Beryllium (Be)	0.0025	0.005	0.0001	0.005	0.005	0.0002	0.0025	0.0025	0.005	0.0001	0.0002	0.0025	
Bismuth (Bi)	0.05	0.1	0.0001	0.1	0.1	0.02	0.05	0.05	0.1	0.0001	0.02	0.05	
Boron (B)	0.107	0.1		0.1	0.1	0.04	0.0823	0.112	0.1		0.03	0.0807	
Cadmium (Cd)	**0.0001**	**0.0002**	**0.0001**	**0.01**	**0.01**	**0.0005**	**0.0001**	**0.0001**	**0.0002**	**0.0001**	**0.0005**	**0.0001**	0.000017
Calcium (Ca)	24.77	32.5	33.1	16.3	34.7	27.7	28.1783	29.28	42.0	48.0	35.8	38.77	
Chromium (Cr)	0.0026	0.001	0.0026	**0.01**	**0.01**	**0.001**	0.0021	0.0042	0.001	0.0006	0.001	0.0017	0.0089
Cobalt (Co)	0.0009	0.001	0.001	0.01	0.01	0.001	0.001	0.0016	0.001	0.0002	0.001	0.0009	
Copper (Cu)	**0.008**	0.003	**0.005**	**0.01**	**0.01**	**0.0120**	**0.007**	**0.019**		**0.004**	**0.01**	**0.011**	0.003
Iron (Fe)	**1.834**	0.087	**0.357**	**1.49**	0.17	**0.73**	**0.778**	**4.064**	0.046	0.1400	0.195	**1.1113**	0.3
Lead (Pb)	0.0022	0.001	0.0002	**0.05**	**0.05**	**0.005**	0.0011	**0.0048**	0.001	0.0002	**0.005**	0.002	0.004
Lithium (Li)			0.0016	0.01	0.01	0.003	0.0023			0.001	0.005	0.003	
Magnesium (Mg)	8.3	11.1	7.7	6.0	11.3	8.6	8.8	11.2	15.8	13.5	13.6	13.5	
Manganese (Mn)	0.066	0.0110	0.0804	0.088	0.034	0.0502	0.0549	0.2376	0.027	0.0287	0.0143	0.0769	

Table 5 Minto Creek Water Quality

	Location												
	W2	W2	W2	W2	W2	W2	W2	W3	W3	W3	W3	W3	CCME Guideline
	Minto IEE*	DIAND*	DIAND*	MAR*	MAR*	ACG*	**MEAN**	Minto IEE*	DIAND*	DIAND*	ACG*	**MEAN**	
	1993-94	15-Jun-95	25-Jul-95	2-May-98	9-Aug-98	13-Oct-99		1993-94	15-Jun-95	25-Jul-95	13-Oct-99		
Mercury (Hg)	0.00001	0.00001	0.00002				0.00001	0.00001	0.00001	0.00002		0.00001	0.001
Molybdenum (Mo)	0.0006	0.0050	0.001	0.05	0.03	0.005	0.0153	0.0014	0.004	0.002	0.005	0.0031	0.073
Nickel (Ni)	0.004	0.0010	0.0031	0.05	0.05	0.002	0.0025	0.007	0.001	0.0019	0.002	0.0033	0.025-0.15
Phosphorus			0.06	0.3	0.3	0.06	0.06			0.01	0.06	0.01	
Potassium (K)			0.98	2	2	1.0	0.99			1.00	1.1	1.05	
Selenium (Se)	0.0003	0.0005	**0.01**	**0.2**	**0.2**	**0.02**	**0.0036**	0.0003	0.0005	**0.01**	**0.02**	**0.0036**	0.001
Silicon (Si)	6.3	4.7	0.0	4.9	5.3	6.4	4.6	7.7	4.9		6.1	6.3	
Silver (Ag)	0.0001	0.0001	0.0001	**0.01**	**0.01**	**0.001**	0.0001	0.0001	0.0001	0.0001	0.001	0.0003	0.001
Sodium (Na)			4.51	3.0	7.0	5.46	4.9925			8.9	8.91	8.905	
Strontium (Sr)	0.1942	0.289	0.213	0.129	0.321	0.219	0.2275	0.206	0.334	0.266	0.282	0.272	
Sulphur (S)						4.1	4.1				11.2	11.2	
Thallium (Tl)			0.001	0.2	0.2	0.003	0.001			0.0001	0.003	0.003	
Thorium (Th)						0.005	0.005				0.005	0.005	
Tin (Sn)				0.03	0.03	0.005	0.005				0.005	0.05	
Titanium (Ti)		0.01		0.03	0.01	0.013	0.0177		0.01		0.013	0.0115	
Uranium	0.0004	0.001				0.06	0.0007	0.0005	0.0018		0.06	0.0011	
Vanadium (V)	0.015	0.03	0.003	0.03	0.03	0.003	0.0128	0.015	0.03	0.001	0.003	0.0123	
Zinc (Zn)	0.0061	0.005	0.01	0.013	0.005	0.003	0.0074	0.0108	0.005	0.005	0.003	0.006	0.03
Zirconium (Zr)						0.001	0.001				0.001	0.001	
Dissolved Metals (mg/l)													
Aluminum (Al)	0.0335	0.019	0.065			0.02	0.0344	0.0422	0.018	0.01	0.02	0.0226	
Antimony (Sb)	0.0001	0.0001	0.0005			0.02	0.0002	0.0001	0.0001	0.0004	0.02	0.0002	
Arsenic (As)	0.0004	0.0003	0.4			0.02	0.1336	0.0004	0.0003	0.0003	0.02	0.0003	
Barium (Ba)	0.0457	0.059	0.0458			0.0448	0.0488	0.0576	0.059	0.0501	0.0523	0.0548	
Beryllium (Be)	0.0025	0.005	0.0001			0.0002	0.0025	0.0025	0.005	0.0001	0.0002	0.0025	
Bismuth (Bi)	0.05	0.1	0.001			0.02	0.0503	0.05	0.1	0.0001	0.02	0.05	
Boron (B)	0.05	0.1				0.01	0.053	0.05	0.1		0.01	0.053	
Cadmium (Cd)	0.0001	0.0002	0.0001			0.0005	0.0001	0.0001	0.0002	0.0001	0.0005	0.0001	
Calcium (Ca)	24.2	32.4	19.5			27.5	25.9	28.0	42.9	29.3	35.8	34.0	
Chromium (Cr)	0.0005	0.001	0.0016			0.001	0.001	0.0005	0.001	0.0014	0.001	0.001	
Cobalt (Co)	0.0005	0.001	0.0001			0.001	0.0005	0.0005	0.001	0.0002	0.001	0.0006	
Copper (Cu)	0.0038	0.003	0.003			0.003	0.0032	0.0056	0.003	0.004	0.005	0.0044	
Iron (Fe)	0.3393	0.032	0.099			0.139	0.1523	0.7596	0.038	0.093	0.09	0.2452	
Lead (Pb)	0.0005	0.001	0.0002			0.005	0.0006	0.0005	0.001	0.0002	0.005	0.0006	
Lithium (Li)			0.0013			0.002	0.0017			0.001	0.003	0.002	
Magnesium (Mg)	8.0	11.1	7.3			8.4	8.7	10.5	16.1	12.9	13.6	13.3	
Manganese (Mn)	0.0148	0.006	0.0122			0.0087	0.0104	0.137	0.025	0.0136	0.0114	0.0468	
Molybdenum (Mo)	0.0005	0.001	0.001			0.005	0.0008	0.001	0.001	0.002	0.005	0.0013	
Nickel (Ni)	0.001	0.001	0.0023			0.002	0.0014	0.0011	0.001	0.0017	0.002	0.0013	

Table 5 Minto Creek Water Quality

	Location												
	W2	W2	W2	W2	W2	W2	W2	W3	W3	W3	W3	W3	CCME Guideline
	Minto IEE*	DIAND*	DIAND*	MAR*	MAR*	ACG*	**MEAN**	Minto IEE*	DIAND*	DIAND*	ACG*	**MEAN**	
	1993-94	15-Jun-95	25-Jul-95	2-May-98	9-Aug-98	13-Oct-99		1993-94	15-Jun-95	25-Jul-95	13-Oct-99		
Phosphorus						0.06	0.06				0.06	0.06	
Potassium (K)	0.823	1.37	1.0			1.0	1.0483	0.888	1.5	1.0	1.1	1.122	
Selenium (Se)	0.0003	0.0005	0.01			0.02	0.0036	0.0003	0.0005	0.01	0.02	0.0036	
Silicon (Si)	5.0	4.7				6.0	5.2	5.2	5.0		6.0	5.4	
Silver (Ag)	0.0001	0.0001	0.0001			0.001	0.0001	0.0001	0.0001	0.0001	0.001	0.0001	
Sodium (Na)	4.8	7.8	4.5			5.5	5.6	6.7	11.6	8.6	8.9	9.0	
Strontium (Sr)	0.1895	0.288	0.205			0.218	0.2251	0.1946	0.337	0.259	0.282	0.2682	
Sulphur (S)						4.1	4.1				11.2	11.2	
Thallium (Tl)			0.0001			0.003	0.003			0.0001	0.003	0.003	
Thorium (Th)						0.005	0.005				0.005	0.005	
Tin (Sn)						0.005	0.05				0.005	0.005	
Titanium (Ti)		0.01				0.001	0.01		0.01		0.001	0.010	
Uranium	0.0003	0.001				0.06	0.0006	0.0003	0.0012		0.06	0.0007	
Vanadium (V)	0.015	0.03	0.001			0.002	0.0153	0.015	0.03	0.001	0.002	0.0153	
Zinc (Zn)	0.0025	0.005	0.005			0.002	0.0036	0.0025	0.005	0.005	0.001	0.0042	
Zirconium (Zr)						0.001	0.001				0.001	0.001	
Cyanide (mg/l)													
Total Cyanide	0.0127	0.006	0.004				0.00757	0.0196	0.005	0.004		0.00953	0.005

*Source of information: **DIAND**=Water Resources, **Minto IEE**=Minto Explorations (IEE Volume II, 1994), **ACG**=Access Consulting Group, **Minto Annual Report**=1998/1999 Annual Report to the Yukon Territory
Note: **Bold** and shaded values represent those samples exceeding CCME Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (CCME, 1999). CCME guidelines are for total metals and some Water analysis parameters only.

Minto Project Site Inspection and Compilation of Environmental Information

Government of Canada / Gouvernement du Canada

DIAND Renewable Resources
Waste Management Program

Legend

- Existing Trails
- Watercourse
- Surface Water Quality Monitoring Station
- Ground Water Quality Monitoring Station
- B.C. Research Water Quality Monitoring Station (1976)
- Environment Canada Water Quality Monitoring Station (1975-76)

Environmental Monitoring Stations

1km 2km

Scale approx 1:55 000

ACCESS CONSULTING GROUP

DRAWN BY: LDR	CHECKED BY: DDC
DATE: 03/02/2000	

Figure 5

Yukon River

Unnamed Creek B

Minto Creek

Big Creek

EC-4

EC-6

EC-3

EC-7

EC-2

93 E

94-20

Airstrip

Meteorological Station

BCR-1 BCR-2 BCR-3 BCR-4 BCR-5 BCR-6 BCR-7 BCR-8 BCR-9 BCR-10 BCR-11 BCR-12

W1 W2 W3 W4 W5 W6 W7 W8 W9

Minto Creek (Reach 2)
- Steep Gradient (21%)
- Presumed Barrier to Fish Migration
- Approximately 2km Upstream of Confluence with Yukon River

W2
- Lower Minto Creek
- Stream Sediment & Water Samples collected (13/10/99)

W3
- Upper Minto Creek
- Below Tailings Impoundment Dam
- Water Samples collected (13/10/99)

Environmental Monitoring Station W2 – Disturbed Housing for Hydrometric Datalogger

4.3.2 Groundwater Hydrology and Water Quality

Little information exists in regards to groundwater hydrology in the Minto Creek Drainage. However, attempts to quantify groundwater quality led to the installation of a pair of two (2) inch groundwater wells. They are located within the mineral deposit area and are designated 93-E (83.4m depth) and 94-20 (36.4m depth). Comparison of water quality parameters indicate that the ground water in the area is similar in quality to the near-deposit surface watercourses, except for elevated turbidity, alkalinity, fluoride, and sulphate concentrations. Monitoring data collected at these wells is also included in Appendix B. The location of the ground water monitoring wells is shown in Figure 5.

4.4 AQUATIC RESOURCES

4.4.1 Fishery Resources

Fish species found in the Yukon River include chinook, coho, and chum salmon, rainbow trout, lake trout, least cisco, round whitefish, inconnu, Arctic grayling, northern pike, burbot, longnose sucker, and slimy sculpin. Of these species only slimy sculpins and Arctic grayling were found in Minto Creek during the 1994 fishery survey. Minto Creek has been classified as a Type II habitat by the Yukon Fisheries Protection Authorization. This habitat designation is applicable to

the lower 1.5 km portion of the watercourse as steep gradients prevent fish from further migration upstream (Volume II Minto Project IEE). Since Minto Creek is an ephemeral watercourse, freezing completely during the winter, it is unlikely that any over wintering habitat for fish exists along the creek. No fish were found in reaches above the 1.5 km mark of the creek that provides the barrier to fish migration. The location of the barrier to fish migration on Minto Creek is shown on Figure 5.

Numerous locations along the Yukon River, including the confluence of Big Creek provide spawning and rearing habitat for the aforementioned fish species, including important commercial and subsistence species such as chinook and chum (dog) salmon. These areas have been identified as a result of consultation with SFN members, government fish habitat data, and other personal communications. Figure 6 provides more information on the uses and the location of Yukon River fish and fish habitat in the Minto Project area.

4.4.2 Benthic Macroinvertebrates

Benthic macroinvertebrate samples were collected along Minto Creek on several occasions during June 1975 and September 1976 by the Department of Fisheries and Oceans and Environment Canada, and by Environmental Protection Service in 1977. The most recent sampling occurred in August 1994, by Hallam Knight Piesold. The following discussion and presentation of results has been adapted from Minto Explorations Ltd. IEE, Volume II, Environmental Setting.

Benthic invertebrate communities that develop in a particular habitat reflect the relative success of those species that have adapted to suit that particular environment. Community structures of these species change as the habitat in which they reside changes, be it as a result of seasonal hydrology or water quality fluctuations or environmental disturbances. Routine sampling can track these temporal and spatial trends in species composition and abundance. The relative sensitivity of the various invertebrate inhabitants to ambient water chemistry and the changes discussed above can also be used as indicators of water quality (Minto Explorations Ltd. IEE, Vol. II).

Sampling occurred along Minto Creek at benthic sampling stations, designated B1 to B6, which correspond to water quality monitoring stations W1, W2, W3, W7, W8 and W9, respectively (see

Figure 5). Samples were preserved, stained, and sent to Dr. Charles Low in Victoria, BC for taxonomic analysis and enumeration.

Table 6 presents the numerical, statistical, and qualitative analysis results conducted as a part of the benthic invertebrate studies.

Once taxonomic identification of the samples was determined, species abundance and number of taxa were determined for each sample. Statistical analyses such as richness, diversity, dominance, and equitability indices were generated for the data set. In addition, relative abundance values and tolerance categories were determined.

Groups/species of benthic invertebrates exhibit various tolerances to disturbance, natural or otherwise. Species with a low tolerance range are susceptible to disturbance and therefore represent the best and most immediate indicators of environmental change. Organisms in the facultative and tolerant categories are more able to exploit habitat in which seasonal fluctuations or disturbances occur. With the exception of Station B4, benthic communities in Minto Creek contain a large portion of facultative species, followed by lower percentages of sensitive and tolerant species, respectively.

In general, all sites contained a well-rounded representation of sensitive, facultative, and tolerant species (Minto Explorations Ltd. IEE, Vol. II). Dipteran taxa (flies) were well represented in the facultative category; however, the facultative species composition consisted primarily of other insects and invertebrates. Populations of copepods enumerated in Minto Creek indicate a relatively large quantity of pool habitat (high numbers, specifically standing water).

It should be noted that as portions of the Minto Creek watershed recover from previous forest fires, changes in riparian and in-stream ecosystems might occur. Subsequently, benthos populations and species distributions within the watershed may also change.

Table 6 Minto Creek Benthic Community Characteristics

	B1	B2	B3	B4	B5	B6
Density (#/m^2)						
Sensitive	1381	3489	1302	14453	2342	345
Facultative	3496	5802	1173	4673	10395	13608
Tolerant	421	36	162	1014	1277	950
Total	5298	9327	2637	20140	14014	14903
% Composition						
Sensitive	26.07	37.41	49.39	71.76	16.71	2.32
Facultative	65.99	62.21	44.47	23.2	74.18	91.31
Tolerant	7.94	0.39	6.14	5.04	9.11	6.37
# of Species	44	43	38	34	33	31
Shannon-Weiner Diversity	3.88	3.69	3.76	2.59	3.56	2.82
Dominance	0.11	0.11	0.13	0.38	0.13	0.27
Equitability	0.71	0.68	0.72	0.51	0.71	0.57
Richness	5.89	5.34	5.61	3.82	3.87	3.6
TU Diversity	0.892	0.894	0.873	0.623	0.871	0.732
Variance	0.027	0.015	0.049	0.319	0.03	0.165

Adapted from Table 7.3 Minto Explorations Ltd. IEE, Vol. II Environmental Setting

4.4.3 Periphyton

Periphytic alga are simple aquatic organisms which inhabit the substrate and water column of various water bodies. These organisms manufacture energy via photosynthesis and represent the base of the food chain within any aquatic community. As with benthic invertebrates, community species distributions and populations of periphyton can vary both temporally and spatially and as a result of seasonal hydrology or water quality fluctuations or environmental disturbances.

Information pertaining to species distribution and community structure of periphytic organisms in Minto Creek was gathered during the same period as the benthic invertebrate studies conducted in 1994. Five sites were established for periphyton sampling designated P1-P5, corresponding to water quality sampling sites W1, W2, W3, W5 and W9 on Minto Creek.

Concentrations of chlorophyll ‘a’ were determined to estimate algal biomass and therefore primary productivity in sections of the Minto Creek watershed. The highest mean concentrations of chlorophyll ‘a’ were detected in the upper reaches of Minto Creek where there is little vegetative cover and an abundance of sunlight exposure to the creek. The lowest concentrations of chlorophyll ‘a’ were detected at P3 (W3). Table 7 summarizes the results of the periphyton sampling, displaying chlorophyll concentrations calculated from the various sampling sites.

Table 7 Minto Creek Periphyton Chlorophyll 'a' Content
(micrograms/cm^2)

Replicate	Site P1	Site P2	Site P3	Site P4	Site P5
1	0.187	0.059	0.094	0.352	0.375
2	0.208	0.112	0.141	<0.01	0.181
3	0.132	0.637	0.098	0.153	1.104
4	0.059	0.077	0.073	0.092	0.0189
5	0.941	0.473	0.022	0.081	0.167
6	0.061	0.312	0.047	0.077	0.334
Mean	**0.265**	**0.278**	**0.079**	**0.126**	**0.392**
Standard Deviation	**0.045**	**0.053**	**0.206**	**0.109**	**0.142**

Note: Adapted from Minto Explorations Ltd. IEE, Vol. II, Environmental Setting, Table 8.1

Taxonomic identification and relative abundance rankings of the various alga samples has provided information on community composition and complexity. In general, samples from most of the sites on Minto Creek contained very little periphyton, indicating a relatively unproductive environment. This may be due to nutrient availability limitations and/or habitat disturbances as the result of seasonal scouring from high flow events, for example (i.e. substantial freshet). Species composition here is similar to other Southwest Yukon streams (Minto Explorations IEE, Vol. II). *Nitzschia* spp. were the most prevalent species, especially at sites P2 and P3 (downstream of the orebody).

4.4.4 Stream Sediments

Stream sediments were sampled at the lower reach of Minto Creek (Station W2) on October 13, 1999. The sediments were sampled in triplicate and shipped for analysis to Norwest Labs of Vancouver the following day. ICP semi-trace metal analysis in solids and a wet sieve analysis were conducted on the samples. Another sampling of Minto Creek sediments was conducted in 1994 during the collection of baseline information for the Minto Project IEE.

Sediments in Minto Creek consist primarily of sand with some gravels and minimal fractions silts and clays (Volume II Minto Project IEE, 1994). Results from the 1994 sediment analysis showed high levels of arsenic in the lowest reach of Minto Creek, high levels of chromium and zinc one (1) kilometer downstream of the proposed tailings dam, and high levels of copper in the vicinity of the ore body in the upper reaches of the creek. Results of the 1999 analysis, restricted to the lower reach of Minto Creek, showed similarly high concentrations of arsenic and chromium. However, only one replicate for each of chromium and arsenic exceeded CCME Sediment Quality Guidelines for the Protection of Aquatic Life, in 1999 (CCME, 1999). No stream sediments were collected elsewhere on site.

The results of this analysis and that of October 1999 are presented in Table 8.

Table 8 Results of Stream Sediment Analysis at Lower Minto Creek - Station W2

	Location						
	W2 Replicate #1	W2 Replicate #2	W2 Replicate #3	W2 Replicate #1	W2 Replicate #2	W2 Replicate #3	CCME Guidelines
Source	ACG	ACG	ACG	Minto IEE	Minto IEE	Minto IEE	
	13-Oct-99	13-Oct-99	13-Oct-99	1994	1994	1994	
Physical Tests							
Moisture %				21.00	18.10	16.30	
Particle Size							
Gravel - % (>2.00 mm)				25.00	27.50	34.00	
Sand - % (2.00 - 0.063 mm)				64.00	64.00	58.50	
Silt - % (0.063 mm - 4 um)				7.59	6.56	5.74	
Clay - % (<4 um)				1.99	1.93	1.75	
Wet Sieve for Solids (% Retained)							
10 Mesh (2mm)	86.2	57.4	62.8				
18 Mesh (1mm)	4.3	12.5	6.3				
35 Mesh (0.5mm)	3.7	14.3	8.4				
60 Mesh (0.25mm)	2.8	9.6	9.6				
140 Mesh (0.1mm)	1.5	4.4	7.2				
270 Mesh (0.053mm)	0.8	1.1	3				
Total Metals (mg/L)							
Mercury (Hg)				0.01	0.01	0.02	
Metals in Solids (micrograms/gram)							
Aluminum (Al)	13100	12600	11400				
Antimony (Sb)	<2	<2	<2	0.32	0.29	0.25	
Arsenic (As)	2	**6**	<2	4.57	4.66	4.09	5.9
Barium (Ba)	184	196	169				
Beryllium (Be)	0.3	0.3	0.3				
Bismuth (Bi)	<5	<5	<5				
Cadmium (Cd)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6
Calcium (Ca)	9590	6610	7530				
Chromium (Cr)	**37.6**	25	26.3	13.40	15.00	13.70	37.3
Cobalt (Co)	6.7	5.7	6.2				
Copper (Cu)	10.9	10.3	13	14.20	14.20	13.00	35.7
Iron (Fe)	15000	13000	14000				
Lead (Pb)	4	5	3	2.60	2.20	<2	35
Lithium (Li)	5	3.8	5.1				
Magnesium (Mg)	5290	3840	5290				
Manganese (Mn)	439	470	367				
Molybdenum (Mo)	<1	<1	<1	<4.0	<4.0	<4.0	
Nickel (Ni)	13.5	10	14.7				
Phosphorus	841	445	835				
Potassium (K)	2920	2960	2340				
Selenium (Se)	<2	<2	<2				
Silicon (Si)	447	817	114				
Silver (Ag)	<0.5	<0.5	<0.5	<2.0	<2.0	<2.0	
Sodium (Na)	1940	3130	1650				
Strontium (Sr)	78	79	59				
Sulphur (S)	100	60	140				
Thorium	<1	2	<1				
Tin (Sn)	2	2	2				
Titanium (Ti)	989	518	683				
Uranium	<5	<5	<5				
Vanadium (V)	44	30	36				
Zinc (Zn)	30.9	22.8	30.7	30.40	28.90	29.00	123
Zirconium (Zr)	9.6	6.4	8.3				

Note: **Bold** and shaded values represent those samples exceeding CCME Sediment Quality Guidelines for the Protection of Freshwater Aquatic Life (CCME, 1999). CCME guidelines are for total metals.

4.5 ARCHAEOLOGY AND TRADITIONAL LAND USE

4.5.1 General Project Area

Areas of archeological interest near Minto are represented by four sites identified during an archeological survey conducted by Sheila Greer, in 1994 (Minto Project IEE, Vol. II, 1994). Three of the sites exist on the east side of the Yukon River, outside of the mine development area, while the other is located near the mouth of Minto Creek. No sites were identified or suspected of existing along the Project access road or within the mine site area. The reader is referred to the Minto Project IEE Volume II by Hallam Knight Piesold for a more detailed discussion archeology and historical anthropology of the Minto area (1994).

Interviews of SFN members were conducted as part of the compilation of environmental information for the Project area. The Project area lies within the traditional territory of the SFN and comprises part of land claim settlement parcels R-6A (Type A settlement lands), R-44A and R-40B, specifically the upper reaches of Minto Creek.

4.5.2 Selkirk First Nation Interview Results

The SFN continues to use the Project area for various activities including fishing, hunting, berry picking, and spiritual fulfillment. As a result, their current and historical knowledge of the area the SFN represents a valuable source of baseline information.

Interviews were conducted with elders and knowledgeable band members in the community of Pelly Crossing to gather local and traditional knowledge about the Project area. The interview process was initiated by introduction of the study goals to the prospective candidate. Each person interviewed was provided a description of the Project area and given some background regarding the Minto Project itself. Upon acceptance to participate, the person would be asked a series of questions presented in a questionnaire format. A site map of the area facilitated discussion and response to interview questions.

Twelve SFN members from Pelly Crossing were interviewed, including nine elders, by Nancy Alfred, a SFN member. Table 9 provides the list of interview participants. Interview questions consisted of natural resource based questions such as knowledge of and participation in various resource extraction activities (hunting, fishing, trapping, plant and berry gathering, etc.). Other questions solicited information regarding the knowledge of temporal and spatial trends observed regarding animal, plant and fish abundances and locations. There were no significantly negative responses to the posed questions, however a general sense of concern regarding the Minto Project was expressed. The respondents use the area for subsistence and other cultural activities and are keen on seeing it remain a site of continued cultural land use.

Respondents indicated on a map of the Project area where they know of, or they have, conducted various cultural land use activities. The results of this questionnaire are summarized in Figure 6.

A copy of the original questionnaire and the associated results are included as Appendix C.

Table 9 List of Interview Participants

Kitty Johnathan	Elder
Tommy Joe	Elder
George McGinty	SFN Member
Maria VanBibber	Elder
Alex Joe	Elder
Franklin Roberts	Elder
Danny Roberts	Elder
Daniel Luke	SFN Member
Darryl Johnny	SFN Member
Annie McGinty	Elder
Mary Blanchard	Elder
Johnny Simon	SFN Member

Minto Project Site
Inspection and Compilation of Environmental Information

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General Project Area (along Yukon River)

- Good fishing from Minto landing to Fort Selkirk (primarily Arctic Grayling, Chum & Chinook Salmon, Inconnu, and Whitefish)
- Creek mouths at Yukon River good fishing areas
- Have observed cyclical rabbit populations relationship to abundance of other predatory species, affects trapping success
- Numerous species of waterfowl which are hunted along the Yukon River
- Eagles are abundant along the Yukon River
- Existence of sacred traditional area (location undisclosed)

Yukon River

Chum & Chinook Salmon, Pike, and Whitefish spawning, good fishing area

Slough/Wetland Areas appear to be drying up

Project Area (Yukon River-East)

- First Nations use of area for fishing, hunting, berry and medicinal plant gathering, and trapping (current & historic)
- Trapped species include beaver, muskrat, lynx, fisher, otter, rabbit, marten, mink, fox, wolverine, squirrels
- Forest Fire has reduced numbers of animals in the area, but returning

Minto Creek

Proposed Minto Mine Site

Chum & Chinook Salmon, and Arctic Grayling spawning

CA-14-1995

CA-16-1980

CA-15-1995

Big Creek

Minto Landing

Salmon & Grayling Fishing

Project Area (Yukon River-West)

- First Nations use of the area for fishing, hunting, and trapping (current & historic)
- Trapped species include beaver, muskrat, lynx, fisher, otter, rabbit, marten, mink, fox, wolverine, squirrels
- Forest Fire has reduced numbers of animals in the area, but returning

Dark Creek

CA-21-1994

Legend

- Klondike Highway (#2)
- Existing Trails
- Watercourse
- Forest Fire General Area

Traditional Knowledge - Historic Forest Fires

1.5km 3km

Scale approx 1:90 000

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DATE: 24/01/2000	

Figure 6

4.6 CURRENT LAND USE & CULTURAL RESOURCES

4.6.1 Land Tenure

Land tenure in the general vicinity of the Minto Project is limited to areas east of the Yukon River. Much of the Minto Landing area is held under title by the SFN. Other settlement lands and site specific land selections by the SFN are also located in the region. Several fee simple titled properties also exist in the area that are held by non-first nation persons. Figure 7 displays land tenure in the Project area. Detailed land tenure information for the Minto Landing area is provided in Figure 8.

The SFN has several tracts of settlement land adjacent to or within the Project area (Figure 7). The importance of the area for traditional and historic use is reflected in the lands chosen by the SFN. SFN concerns were addressed in September of 1997, upon the signing of a co-operation agreement with MEL. The SFN remains a strong supporter of the Project.

4.6.2 Mining

Mining in the immediate Project area is limited to the proposed Minto Project (currently in development). However, south of the Project area there is placer mining in the Big Creek watershed, and the proposed Carmacks Copper Project open pit copper mine in the Williams Creek watershed.

Mineral claims and leases were acquired by MEL from ASARCO Inc., Teck Corporation, and Falconbridge. Claim boundaries and lease numbers are shown in Figure 2.

4.6.3 Forestry

There are currently no permitted forestry activities in the Project area. Regional forest uses are limited to commercial permits to log burn-areas near Minto and harvest of fuel-wood for domestic use (DIAND-Field Operations, 2000).

MEL conducted a survey of harvest potential for fire killed fuel wood. The results of this survey indicated that there was sufficient fire killed fuel wood within the quartz claim boundaries to supply fuel wood for 100 years. This estimate was based on a volume of 725 m^3 of timber necessary to fire a one to two (1-2) million BTU per hour boiler/furnace at the mine site. The survey also suggested that a 30-year timber supply having 'good potential' exists in the area.

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Legend

- Klondike Highway (#2)
- Existing Trails
- Watercourse
- Selkirk First Nations Settlement Lands

Yukon River

R-41B

SIBBEL KACHUR LOT 1013
QUAD 115I/11

R-10B

R-11B

R-03A

R-44A

MINTO TENURE DETAIL - SEE FIGURE 8

R-43B

R-44B

R-06A

DEF Claims

Lease Plan 59454 CLSR

Lease Plan 59454 CLSR

Lease Plan 59454 CLSR

Lease Plan 59648 CLSR

Minto Creek

Minto Claims

Airstrip

Big Creek

Dark Creek

G&K KRUSE
LOT 1003
QUAD 115 I/10

G&K KRUSE
LOT 1002
QUAD 115 I/10

Minto Project Area Land Tenure

1.5km 3km

Scale approx 1:80 000

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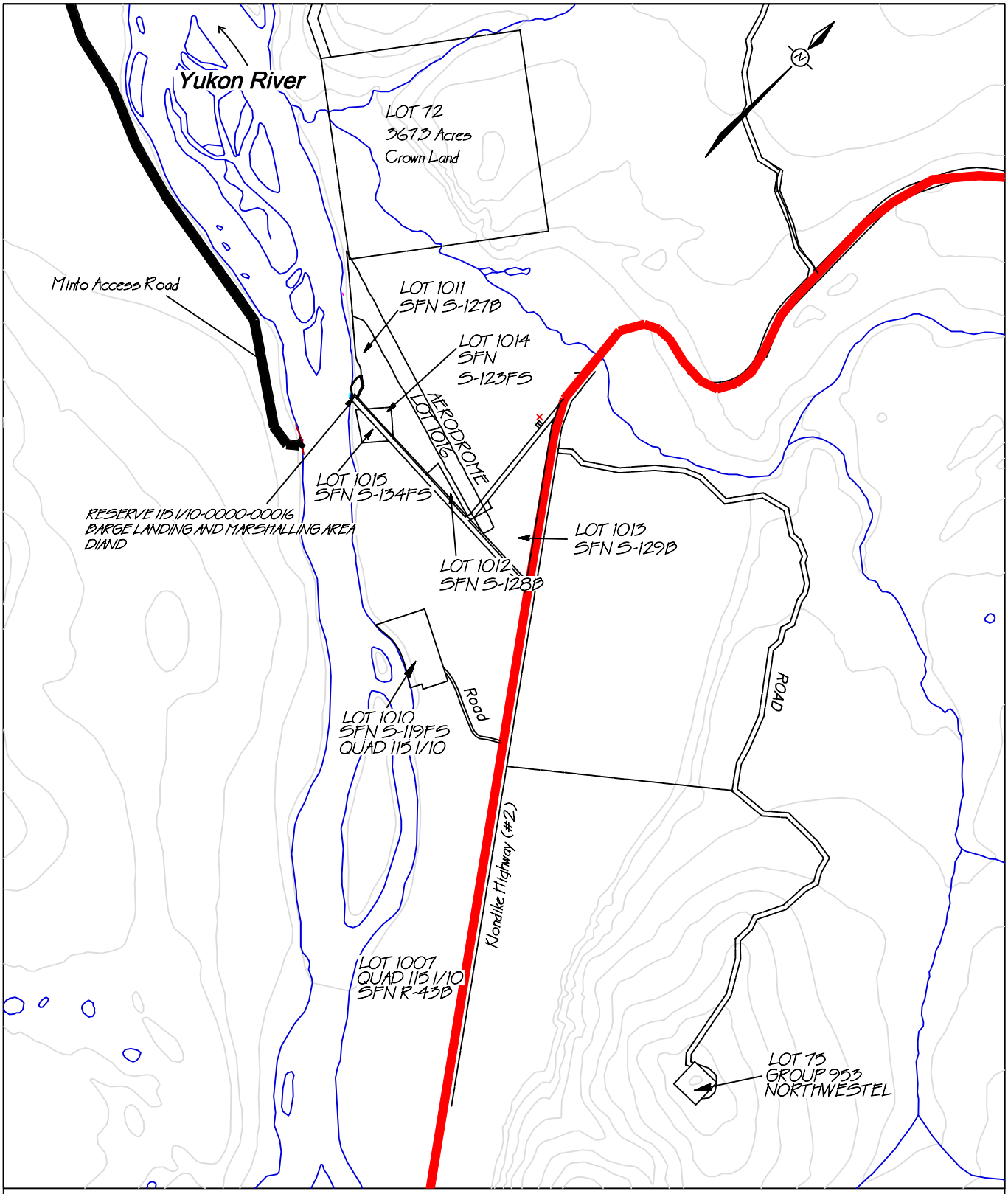
DRAWN BY: LDR | CHECKED BY: DDC

DATE: 03/02/2000

Figure 7



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Waste Management Program

Minto Project Site Inspection and Compilation of Environmental Information

Minto Landing - Land Tenure Detail

DRAWN BY: LDR	CHECKED BY: DDC	**Figure 8**
DATE: 03/02/2000		

4.6.4 Trapping and Outfitting

Trapping remains an important economic and subsistence activity for many SFN members and Yukoners in the Project area. Several Registered Trapping Concessions are held in the Project area. These include: RTC #136: Heinz Sauer, RTC#139: Danny Joe, RTC #142: OPEN, RTC #143: Johnny Sam, RTC #145: Glen and Jim Bullied, RTC #146: Geo and Ken M^{c}Ginty, RTC #147: Kathleen Sam.

Trapper access to the Project area has been identified and will be maintained, according to compensation agreements negotiated with the Project proponent.

Only two outfitting concession falls within the Project area, Registered Outfitting Concessions #13 – Held by Tim Mervyn (Mervyn Outfitting) and #14 – Held by Curt Thompson (Trophystone Safaris).

Trapping and outfitting concessions, as well as game zone locations and historical records of big game harvests in the area are presented in Figure 9.

4.6.5 Recreation and Other Land Uses

The Yukon River, in the vicinity of Minto Landing and the Minto Project access route, currently hosts recreational activities such as fishing, hunting, hiking and canoeing/rafting. The nearby Minto Resorts, owned and operated by the SFN, provides camping and other outdoor adventure excursions for visitors to the area. Minto Landing is also a starting point for tourist excursions down-river to historic Fort Selkirk. The Yukon River is also used as a transportation corridor for freight and other cargo. Land use on the western shores of the Yukon River is limited, as vehicle access to the western shore is available only in winter over river ice, or during open water by barge.

4.6.6 Cultural Land Use Activities

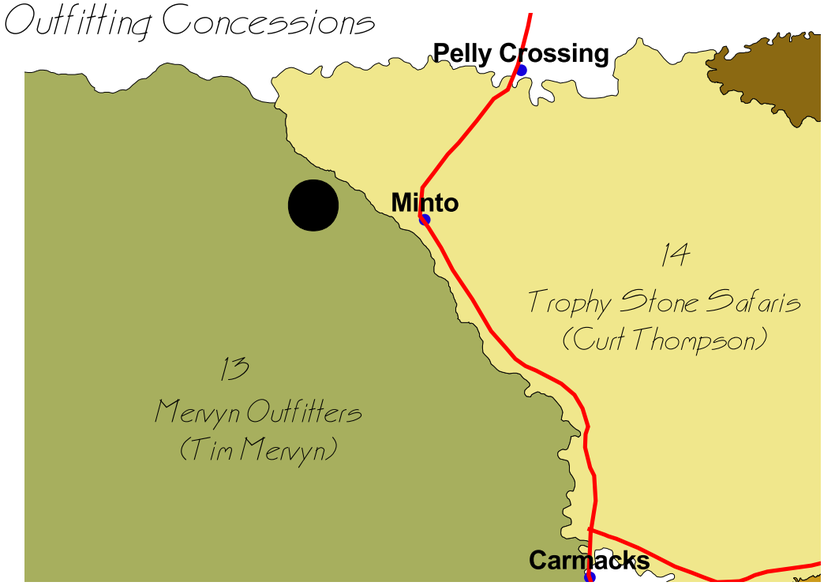
Annual salmon fishing occurs at Minto Landing and other sites along the Yukon River. Members of the SFN were seen catching chum salmon at Minto Landing during the site inspection. The Minto landing area is used for various cultural activities throughout the year, including berry

picking, trapping, hunting, and spiritual activities. Figure 6 displays the location of some of the current cultural land use activities in the area.

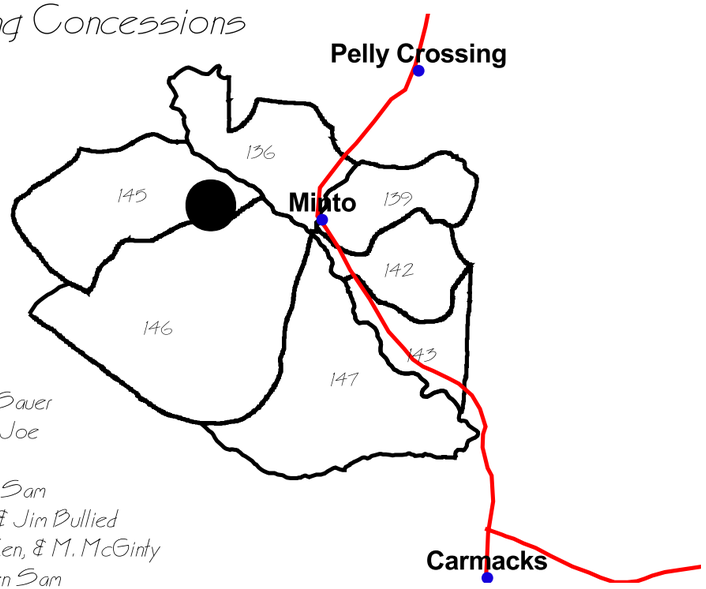
As part of the Minto mine development Project, a comprehensive cooperation agreement was signed with the SFN and MEL on September 16, 1997 (Minto Exploration Ltd., 1997).

Please refer to Section 4.5 for a more detailed discussion of cultural land use activities in the Project area.

Outfitting Concessions

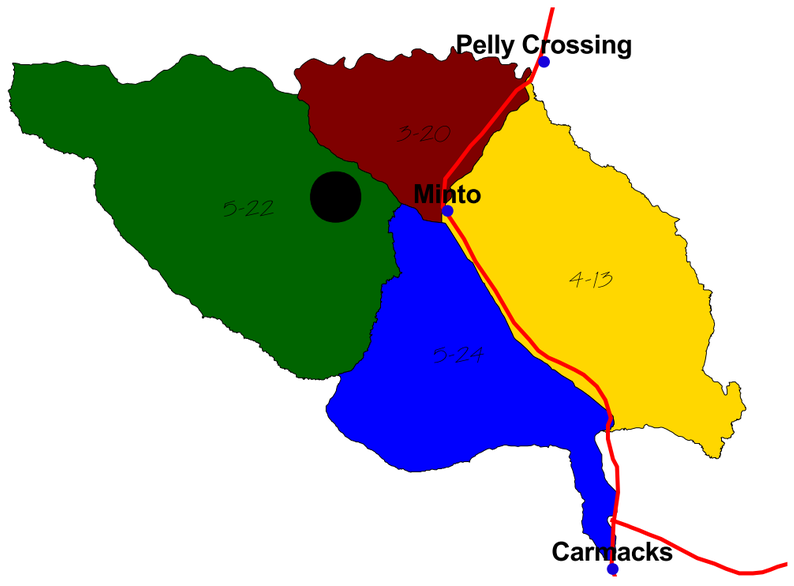


Trapping Concessions



136 Heinz Sauer
139 Danny Joe
142 open
143 Johny Sam
145 Glenn & Jim Bullied
146 Geo, Ken, & M. McGinty
147 Kathleen Sam

Game Management Zones



Big Game Harvest Levels (1980 to 1998)

Game Zone 3-20	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Black Bear	0	2	0	3	1	1	1	2	2	2	3	2	1	1	0	1	1	1	1
Grizzly	0	0	1	0	0	0	1	2	0	2	0	1	0	0	2	1	3	2	0
Caribou	0	0	0	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Moose	1	3	3	3	4	2	0	6	3	3	1	0	1	2	1	4	2	1	5

Game Zone 4-13	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Black Bear	0	2	0	1	2	2	1	1	2	2	1	0	1	0	1	0	1	1	0
Grizzly	3	0	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0
Caribou	0	0	0	0	5	0	1	0	0	1	0	0	1	1	0	0	0	0	0
Moose	1	2	1	2	4	0	1	0	0	1	5	1	2	2	1	3	1	3	1

Game Zone 5-22	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Black Bear	1	3	0	0	1	0	4	2	3	0	0	1	0	0	0	0	1	0	0
Grizzly	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	1	1	5	6	2	1	1	3	1	0	0	0	1	1	0	0	0	0	0

Game Zone 5-24	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Black Bear	1	1	0	1	1	1	0	2	0	0	0	0	2	0	0	0	2	0	0
Grizzly	0	0	0	0	2	0	0	1	0	0	1	0	1	0	0	0	0	1	0
Caribou	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Moose	2	2	8	5	0	2	2	6	1	0	0	0	0	1	1	0	0	0	1

Minto Project Site
Inspection and Compilation
of Environmental Information

Government of Canada / Gouvernement du Canada

DIAND Renewable Resources
Waste Management Program

Legend

Minto Project Location

Highway

Game Management,
Trapping, and Outfitting Concessions

10 0 10 20 30 40Km

Scale approx 1: 1 000 000

ACCESS CONSULTING GROUP

DRAWN BY: LDR | CHECKED BY: DDC

DATE: 03/02/2000

Figure 9