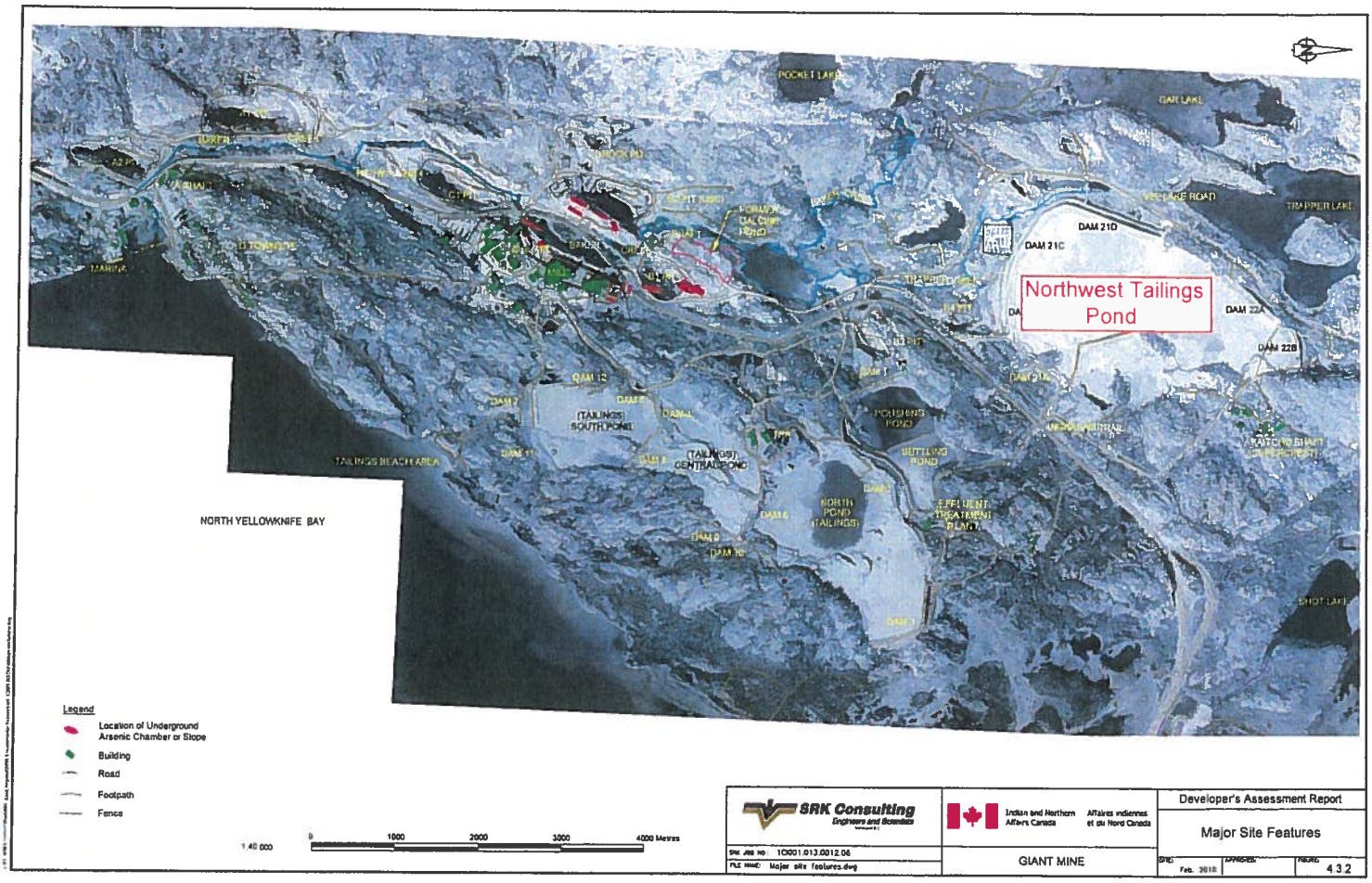


SRK Consulting Engineers and Scientists	Indian and Northern Affairs Canada / Affaires indiennes et du Nord Canada	Developer's Assessment Report
Proj. No: 1C001.013.0012.06	GIANT MINE	Major Site Features
File Name: Major site features.dwg	Date: Feb. 2015	Figure: 4.3.2

Giant Mine Mill Conveyor Demolition

1.0 Rationale for Demolition

The mill conveyor is a large wood structure housing a steel conveyor system constructed in the late 1940s that was used to transport ore from the screen house to the mill until 1999. Durring it's service life steel elements were added during rehabilitations efforsts. Since 1999, the conveyor structure has been unmaintained and a recent evaluation indicates that there has been structural degradation of the conveyor gallery structure and support elements. Figures 1, 2 and 3 illustrate the observed structural shifting and damage to the support structure.

The deteriorating condition of the mill conveyor is a significant hazard to on-site workers as the failure of one of more of the support legs could result in an uncontrolled collapse of the structure. An uncontrolled collapse may result in immediate physical harm to any workers within the fall path of the structure. An uncontrolled collapse could also result in significant damage the agacent structures to which the converyor is attached (ie Mill Complex or Screen House). Another safety consideration is that the mill conveyor structure acts as a fire continuation pathway between the C-Complex and the Mill Complex. To address these risks, plans to demolish the mill conveyor starting the week of March 12, 2012, if a permit is issued, with a target completion date of April 30, 2012.

2.0 Demolition Methodology

The work entails the complete demolition of the mill conveyor but not the adjoining structures (Figures 4a and 4b). Specifically, the work will include but not be limited to the following:

- Asbestos siding removal
- Roof/cover removal
- Dismantling / removal of the steel conveyor system
- Complete demolition of the wood and steel structural elements
- Stock piling of steel, rubber and wood on site for future disposal
- Disposal of abated asbestos material

Once demolition is completed, the City Building Inspector will be contacted to arrange a final inspection.

3.0 Mitigations of Environmental Risks Associated with Demolition

Appropriate mitigative measures to protect the environment have been and will be undertaken as part of the demolition project. The mitigations include the following:

- Completion of a survey to remove any birds or animals living near or on the mill conveyor.
- Double bagging of asbestos materials and disposal in the Northwest Tailings Pond (as shown on the appended map titled *Major Site Features* prepared by SRK Consultants and taken from the Developer's Assessment Report).
- No PCB materials will be encountered.
- None of the demolition work interferes with the arsenic trioxide chambers.

4.0 Mitigations of Human Health and Safety Risks Associated with Demolition

Appropriate mitigative measures to protect the health and safety of people the environmental have been and will be undertaken as part of the demolition project. The mitigations include the following:

- All site services have been disconnected from the mill conveyor as follows:
  - There are no City of Yellowknife municipal services connected to the Conveyor Gallery (or present on the Giant Mine Site)

- There are no Northland Utilities or NTPC Electrical Services connected to the conveyor Gallery.
- Deton'Cho / Nuna Joint Venture has reconfigured Giant Mine Site electrical & communications systems to be out of the way of the demolition work.

- Site Safety and Contractor Safety Plans will be developed prior to work starting.
- Workers will be appropriately certified, as applicable, in fall arrest and equipment operation prior to work starting.
- Workers completing asbestos abatement work have the all necessary asbestos abatement qualifications and will complete the abatement work in a manner consistent with the requirements of the Authority Hazing Jurisdiction.

Figure 1: Roof Line of Giant Mine Mill Conveyor

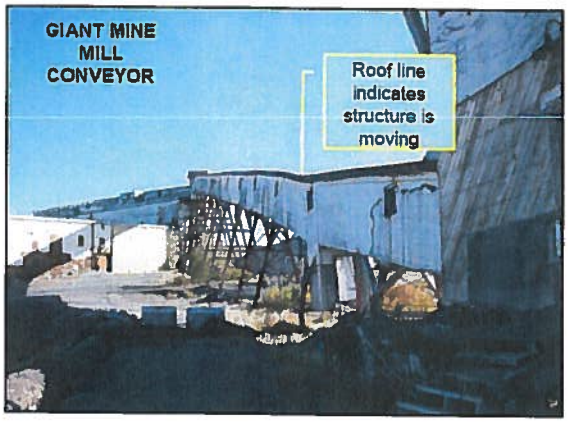


Figure 2: Rotating Support Frame

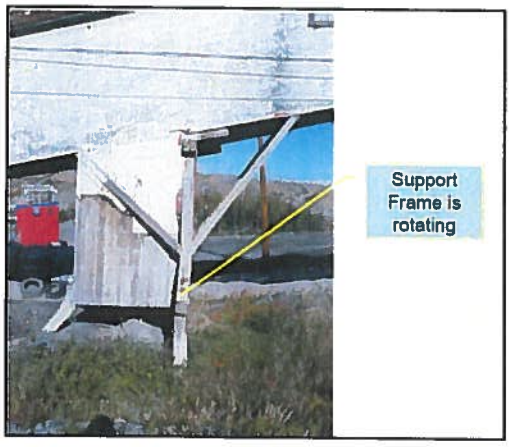


Figure 3: Damaged Support Frame

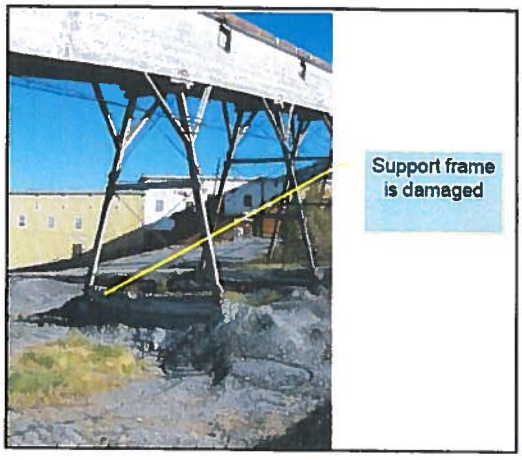


Figure 4(a): Targeted section of the mill conveyor for demolition
Courtesy of Deton'Cho/Nuna Join Venture

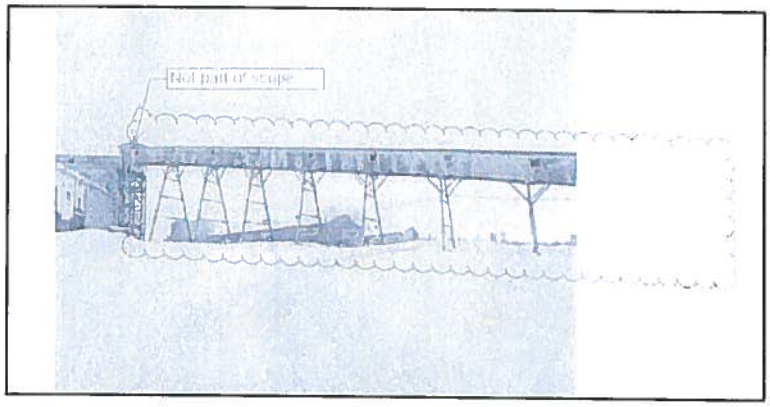
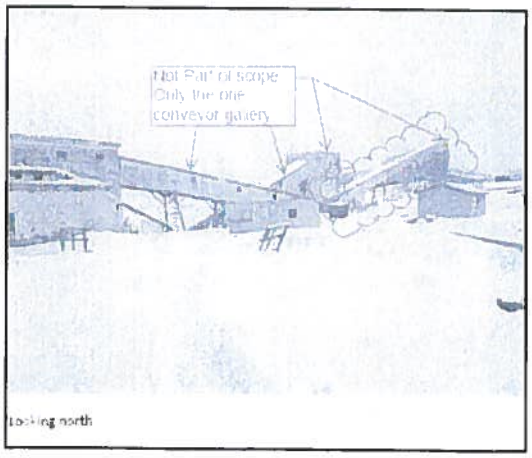


Figure 4(b): Infrastructure surrounding the mill conveyor
Target conveyor section is circled

Courtesy of Deton'Cho/Nuna Join Venture



CITY OF YELLOWKNIFE
BUILDING PERMIT APPLICATION

I/We hereby apply for a Building Permit in accordance with the provisions of the Building By-law of the City of Yellowknife.

Applicant: Adrian Paradis, A/Manager, Giant Mine Remediation Project **Phone:** (867) 669-2425

Address: 5103-48th St., Waldron Bldg., PO Box 1500, Yellowknife, NT X1A 2R3 **E-mail:** Adrian.Paradis@aandc-aadnc.gc.ca

Owner: Aboriginal Affairs and Northern Development Canada **Phone:** (867) 669-2425

Address: 5103-48th St., Waldron Bldg., PO Box 1500, Yellowknife, NT X1A 2R3 **E-mail:** Adrian.Paradis@aandc-aadnc.gc.ca

Contractor: Deton'Cho / Nuna Joint Venture - Mike Borden, Mine Manager **Phone:** (867) 669-3702

Address: 9839 - 31 Avenue, Edmonton AB, T6N 1C5 **E-mail:** mikeb@nunalogistics.com

Business Licence #: 08005701

PROJECT ADDRESS and DETAILS **Lot** N/A **Block** N/A

Address: Giant Mine Site, GNWT Reserve R662T

TYPE OF PROJECT (Check one box only):

☐ New Building	☐ Alteration	☒ Demolition**
☐ Addition	☐ Foundation	☐ Sign**
☐ Accessory Building*	☐ Temporary Bldg**	☐ Other
☐ Detached Garage	☐ Deck	

CONSTRUCTION VALUE$: $221,706.79 excluding GST **AREA:** Not applicable

PERMIT FEE $: $1509.10

*** Complete total area of project on reverse** **** See reverse side for required information**

I/We agree that the issuance of a permit is based upon plans and specifications submitted herewith and shall not prevent the City of Yellowknife from thereafter requiring the correction of errors in said plans and specifications. I/We also agree that if a Building Permit is granted in respect of these works, I/we will comply in all respects with the conditions subject to which it is granted.

Date _____ **Signature of Applicant** _____

THIS IS AN APPLICATION ONLY

PERMIT IS NOT VALID UNTIL APPROVED

Refer to Plan Examination Sheet for conditions to approved Building Permit

FOR OFFICE USE ONLY

Development Permit# _____ **Invoice #** _____

Building Permit # _____ **Amount Paid** _____

PERMIT FEES	
Residential detached single family dwellings, duplex units and additions	$30.32 + $6.67 per $1000.00 of construction value
Residential decks, detached garages and accessory Buildings	$30.32 + $6.67 per $1000.00 of construction value
All other buildings types	$30.32 + $6.67 per $1000.00 of construction value
Sign Permit	$30.32 + $6.67 per $1000.00 of construction value
Demolition Permit	$30.32 + $6.67 per $1000.00 of demolition value
Temporary Building Permit	$30.32 + $6.67 per $1000.00 of construction value
Inspection Request (where a valid Building Permit is not in effect)	$90.95 per inspection
Re-inspection Fee	$90.95 per inspection

TOTAL AREA OF PROJECT:

Project Area: Mill conveyor is approximately 100 m long by 3 m wide (328.03 ft long x 9.84 ft wide) = 3228.96 ft²

Attached Garage Area: Not applicable = _____ ft²

Detached Garage Area: Not applicable = _____ ft²

Accessory Building Area: Not applicable = _____ ft²

Deck(s) Area: Not applicable = _____ ft²

Total Area: = 3228.96 ft²

DEMOLITION DETAILS:

Type of Structure Mill Conveyor at the Giant Mine Site

Are the services disconnected? , Water & Sewer , Electrical , Cable & Phone
Are municipal taxes & utilities paid? N/A ☐ yes ☐ no

See Section 4.0 in the attached project description.

Start Date March 13, 2012 (depending on permit issuance) Completion Date April 30, 2012 (depending on start date)

SIGN DETAILS: NOT APPLICABLE

Type of Sign _____

Start Date _____ Completion Date _____

TEMPORARY BUILDING DETAILS: NOT APPLICABLE

Type of Structure _____

Start Date _____ Removal Date _____

AECOM
17007 – 107th Avenue
Edmonton, AB, Canada T5S 1G3
www.aecom.com

780 486 7000 tel
780 486 7070 fax

March 5, 2012

Via email: henry.westermann@pwgsc-tpsgc.gc.ca

Henry Westermann
Public Works and Government Services Canada
10025 Jasper Avenue
Edmonton, AB T5J 1S6

Dear Henry:

Project No: **60212071 (201.1)**
Regarding: **Recommendation to Proceed with Site Stabilization Plan at the Giant Mine**
Document No.: **320-Eng Support-20-LET-0001-Rev2_20120305**

AECOM is developing the preliminary design for the many remedial activities that support the closure of the Giant Mine in Yellowknife, NT. Engineering assessments and investigations over the last two years have identified issues of concern that pose a risk, that if not mitigated immediately may negatively impact the environment and public safety. The current base care and maintenance program is designed to keep the "as is" Giant Mine site in regulatory compliance. The program is to respond to immediate high-risk elements at the site and the imminent time dependent failure and deterioration of underground workings and mine infrastructure.

In the last two years, mine underground instability has occurred, bulkheads that hold back the arsenic dust continue to deteriorate resulting in arsenic dust seeps underground, Baker Creek has flooded and mine infrastructure such as the roaster complex and mill conveyor show signs of movement and further deterioration. The consequence of failure would be a release of arsenic dust deeper into the mine or a release to the atmosphere. A brief summary of the current condition of the underground, Baker Creek and roaster complex follows. The summary was developed from the following studies and information sources.

AECOM – Failure Mode Effects Criticality Analysis (FMECA) – Giant Mine Remediation – Mackenzie Valley Environmental Review Board – Information Request 12 Response, June 2011.

AECOM – Giant Mine – Structural Condition of Roaster Complex, September 12, 2011.

AECOM – Giant Mine – Structural Condition of Main Conveyor Gallery, September 12, 2011.

Golder Associates – Opinion on the Stability of Arsenic Stope B2-12/13/14 and Surface Access Controls. Technical Memorandum, May 26, 2011.

Golder Associates – Investigation, Mitigation, and Monitoring of Known High Risk Underground Openings, Giant Mine Remediation Project. Technical Memorandum, December 20, 2011.

Golder Associates – Public Access Controls Above Non-arsenic Stope 2-01 Complex Near A2 Open-pit, Giant Mine Remediation Project. Technical Memorandum, February 1, 2012.

Golder Associates – Public Access Controls Above Arsenic Stope B2-08, Giant Mine Remediation Project. Technical Memorandum, February 1, 2012.

Robertson GeoConsultants Inc. – Independent Experts Panel Risk Assessment of Roaster Complex, Baker Creek, and Bulkheads Related to Arsenic Trioxide Migration, April 2010.

SRK – Crown Pillar Stability Evaluation, Arsenic Trioxide Dust Storage Chambers and Stopes, May 2005.

SRK – Site Wide Crown Pillar Stability Investigation. Memo, January 17, 2006.

SRK – Giant Mine Remediation Project – Site Wide Backfill Options Assessment, March 2009.

Underground

- High risk collapse areas have been identified through assessment and risk analysis including:
  - the crown pillars above arsenic stopes B2-08 adjacent to the Ingram Trail and B2-12/13/14 (to be fenced to prevent public access along Ingram Trail)
  - the crown pillar between arsenic stope B2-08 and non-arsenic stope B3-06
  - the crown pillar between arsenic stope C2-12 and non-arsenic stope C5-09
  - the rib pillar between arsenic stopes B2-12/13/14 and non-arsenic stope 2-02
  - inaccessible bulkheads 11, 22, 33, 35, 47, 48 and 49
  - lower arsenic drifts at arsenic stopes B2-12, B2-08, and C2-12
  - crown pillar above stope A2-01 (to be fenced to prevent inadvertent public access) and 1-18
- A sink hole at surface has developed between Baker Creek and the B1 open pit as a result of loss of underground support.
- Overburden slope movement has been measured on the northeast slope of the B1 open pit.
- Bulkheads continue to deteriorate and seep arsenic dust.

Baker Creek

- Erosion of mine tailings at Jo-Jo Lake occurred as a result of ice blockage.
- High risk areas have been identified through assessment and risk analysis including:
  - stability of east bank of Baker Creek adjacent to the C1 open pit. Seepage at the overburden / bedrock interface and bedrock fractures have been observed on the pit wall below Baker Creek
  - some inflow into the underground has occurred at the south end of the B1 open pit and the base of the north wall at the B2 open pit
  - crown pillar above stope 1-18 and A2-01 below Baker Creek
  - ice blockage in the Baker Creek channel downstream from the C1 open pit

Roaster Complex

- Exterior asbestos paneling on walls of roaster building are not securely fastened as a result of fastener corrosion
- Roof panels are corroded or missing.
- Interior catwalks are not structurally sound.
- Continued corrosion of the flues will result in a release of arsenic dust.
- Asbestos-containing pipe insulation is falling off the flues.
- Erosion is visible in the exterior and interior masonry of the stack.
- Steel cap at the top of the stack is being separated from the mounting bolts.
- A portion of the steel cap was missing from the stack.

Mill Conveyor

- Evidence of settlement of the roof line is visible.
- Exterior tar paper siding is damaged and is being wind blown off the structure leaving the underlying bare wood structure to be exposed to the weather.
- Movement of the A-frame support legs is visible. Some of the legs have twisted or moved perpendicular to the plane of defection.
- Several wooden grade level ties located between the A-frame legs have been damaged or have moved from their original position.
- Concrete foundation supporting legs have cracked which has decreased their ability to support a vertical load.
- There has been lateral movement of the elevated gallery. This indicates there is a lack of longitudinal stability of the overall structure.
- The supports are very close to an active service road, there are no means of traffic protection (vehicles, snowplough) for the A-frame legs.

A site stabilization plan (SSP) has been developed to mitigate these immediate risks at the Giant Mine. It is our recommendation to proceed with this plan as soon as possible to mitigate and control the high-risk items that are of immediate concern at the Giant Mine today.

Sincerely,
AECOM Canada Ltd.

Rudy Schmidtke, M.Sc., P.Eng.
Associate Vice President, Alberta Region Environment
rudy.schmidtke@aecom.com

RS:mw
cc: Mike Nahir, AANDC