

## Conveyor gallery



September 2011 – Uneven roof line indicates structure is moving



September 2011 – Damaged support frame and concrete support pier

## *Exterior “Flues” (series of ductwork)*

- Contain arsenic trioxide and insulated with asbestos
- Evidence of corrosion and weather damaged and risk of collapse



# Giant Mine Remediation Project



Canada

## ***Roaster Complex - Interior Highly Contaminated with Arsenic, Asbestos and other hazardous materials.***

- Asbestos insulation in poor condition, fallen off on pipes, ceilings, etc.

- Abandoned duct network containing arsenic trioxide.
- Surfaces Contaminated with arsenic dust



## *Roaster Complex - Continuously Deteriorating Increasing Risks of Exposure*



- Deterioration of interior ceilings and walls



- Deterioration of exterior



- Gaps identified in roof structures

*Openings in Structures/deterioration = Increased exposure risks to hazardous materials.*

# Giant Mine Remediation Project



Canada

## *Roaster Stack*

- Stack reported to contain ~14 tons of Arsenic Trioxide
- Deterioration and shifted steel plates at top of stack



## Underground Stabilization



- 2011 risk analysis identified that underground improvements were necessary to address potential bulkhead or crown pillar failures
- Improvement activities include
  - Drilling crown pillars to determine actual thickness
  - Backfill drifts and construct new drift plugs

## C-shaft and other cladding



**FIGURE 1 – FALL 2011 SCENARIO**

Reference No.	Site Component	Task Details	Part of EA Scope?
<b>SSP Tasks – LUP and WL</b>			
1	Baker Creek Improvements	Maintenance and monitoring of existing raised banks and riprap.	✗
		Final grading and seeding of the cover of Jojo Lake Tailings (as per AANDC Inspector's directive dated May 30, 2011).	✓
2	B1 Pit Wall Stability	Seasonal maintenance and monitoring of the flood protection berm between Baker Creek Reach 3 and B1 Pit .	✗
3	C-Shaft Securing	Remove cladding, secure conveyances and remove ropes.	✗
4	A1 Pit Ditch	Repairs to A1 Pit ditch to prevent further erosion with ongoing monitoring and maintenance.	✗
5	Building Cladding	Secure the cladding on the Mill, Warehouses 3 & 4 and other buildings.	✗
6	C1 Pit Channel Stability	Geotechnical drilling investigations along C1 pit to determine underground (i.e. crown pillar) stability.	✗
7	Roaster Complex Demolition	Demolition of roaster complex, including flues	✓
8	Risk Review of Baker Creek	Geotechnical drilling	✗
9	Underground Stabilization	Geotechnical drilling	✗
		Backfill/Stability Work depending on outcome of geotechnical drilling.	✓
10	Mill Conveyor	Encapsulate and remove sections of the conveyor.	✓
<b>Design Support Drilling and Soils Testing LUP</b>			
11	Freeze Optimization Study	Drilling around Arsenic Chamber 10	✗
12	Design Support	Geotechnical drilling and soils testing is required throughout mine site on an ongoing basis to support design.	✗

**FIGURE 2 – CURRENT SCENARIO**

Reference No.	Site Component	Task Details	Part of EA Scope?
<b>Design Support Drilling and Soils Testing LUP</b>			
6 & 8 Combined	A1, B1 and C1 Pit Channel Stability	Geotechnical drilling investigations along A1, B1 and C1 pits to determine underground (i.e. crown pillar) stability.	✗
9	Underground Stability	Geotechnical Drilling	✗
11	Freeze Optimization Study	Drilling around Arsenic Chamber 10	✗
12	Design Support	Geotechnical drilling and soils testing is required throughout mine site on an ongoing basis to support design.	✗
<b>SSP WL</b>			
1	Baker Creek Improvements	Maintenance and monitoring of existing raised banks and riprap.	✗
7	Roaster Complex Demolition	Demolition of roaster complex, including flues	✓
9	Underground Stabilization	Backfill/Stability Work depending on outcome of geotechnical drilling.	✓
<b>Care and Maintenance Activities</b>			
1	Baker Creek Improvements	Final grading and seeding of the cover of Jojo Lake Tailings (as per AANDC Inspector's directive dated May 30, 2011).	✓
2	B1 Pit Wall Stability	Seasonal maintenance and monitoring of the flood protection berm between Baker Creek Reach 3 and B1 Pit .	✗
3	C-Shaft Securing	Remove cladding, secure conveyances and remove ropes.	✗
4	A1 Pit Ditch	Repairs to A1 Pit ditch to prevent further erosion and ongoing monitoring and maintenance.	✗
5	Building Cladding	Secure the cladding on the Mill, Warehouses 3 & 4 and other buildings.	✗
<b>NWTWA Section 39 / MVRMA Section 19</b>			
10	Mill Conveyor	Encapsulate and remove sections of the conveyor	✓

#	DESCRIPTION	DETAILS/ACTIVITIES	Oct – Dec 2011	Jan – Aug 2012	Sept '12 - Dec '14	EA RELATED ACTIVITIES	NON-EA RELATED ACTIVITIES	AUTHORIZED REQUIRED	NOTES	STATUS
<b>IMMEDIATE RISK MITIGATION</b>										
1	Baker Creek Improvements	Increase Bank Height					X	Possible WL for work near a creek	Increase the bank height along the C1 pit.	Complete and will address seasonal decencies and continue monitoring.
		Cover Jojo Lake Tailings/Bank (Inspectors Direction)				X		s. 37 of NWTWA	Implementation of the Inspectors May 30, 2011, Jojo Lake Directive.	Construction is complete for this season, final grading and seeding to be completed in summer of 2012.
2	B1 Pit Wall Stability	Construct Flood Protection Berm					X	Possible WL for work near a creek	Construct a flood protection berm between reach 3 and B1 Pit.	Complete. Seasonal decencies and monitoring.
3	Secure C-Shaft	Remove cladding, secure conveyances and remove ropes					X		Remove cladding along doghouse of C-Shaft for worker and public safety. Mine Health and Safety requirement.	Ongoing
4	A1 Pit Ditch Upgrade	Overflow assessment and revisions					X	Possible WL for work near a creek	Response to DFO letter of July 6, 2010.	Underway, seasonal monitoring and modifications may be required.
5	Secure Cladding	Mill, Warehouse 3 & 4					X		Worker and public safety.	Underway
6	C1 Pit Channel Stability	Geotechnical Investigation					X	LUP	Geotechnical investigations (drilling) along C1 pit to determine underground stability. See U/G stabilization in advanced remediation.	December-11
<b>ADVANCED REMEDIATION OF HIGH RISKS</b>										
7	Roaster Complex Demolition	Engineering Review					X			Issuance of contract in spring of 2012.
		Demolition of Flues				X		Possible WL	Containizer the waste from the flues.	Demo of flues to occur in the summer of 2012.
		Demolition of Roaster				X		Possible WL	Containizer the waste from the roaster.	Targeting the demolition in summer/fall of 2012.
8	Risk Review of the Plan for Baker Creek	Engineering Review of flooding risk of Baker Creek					X		Risk mitigation review of Baker Creek in the short term and long term.	Underway
		Geotechnical Investigation					X	LUP / Possible WL	Geotechnical drilling will be required to support analysis. Assume 20-30 holes along off site route.	Summer of 2012
		Analysis					X			Engineering assessment
9	Underground Stabilization	Engineering Review					X		Non intrusive	Underway
		Geotechnical Investigation					X	LUP	Phase I: December '11 / January '12 25-35 holes. Additional drilling to occur in the summer of 2012 (assume additional 10-20) holes along B1-Pit.	
		Backfill/Stability				X		LUP / WL		Status dependent on geotechnical investigation listed above.
10	Mill Conveyor	Encapsulate and remove sections of conveyor				X			Take down and secure the waste.	