

Unexpected Events at Closed ARD Sites

BC MEND Conference- Vancouver
December 2013

Glencore Zinc Canada Closed Sites



Closure Dates

<u>Site</u>	<u>Location</u>	<u>Closure Date</u>
Heath Steele/ Stratmat	Miramichi, NB	1999/ 1995
Normetal	Normetal, PQ	1980
Geco/ Willroy	Manitouwadge, ON	1995/ 1977
Mattabi/ Lyon Lake	Ignace, ON	1988
Errington	Sudbury, ON	Circa 1950
Matagami Closed Sites	Matagami, PQ	Various
Brunswick Mine 6/12	Bathurst, NB	1983/2013
Blue Hill	Blue Hill Maine	1977

All are old mines and strongly acid generating

Normetal Background

- Former Kerr Addison site, zinc, lead producer
- Closed in 1980, sold to another company in 1985 after partial reclamation
- Received a letter from the Province of Quebec in 1998 after changes to the Mining Act ordering us to reclaim the site
- Reached an agreement with Ministry of Natural Resources; reclaim site \$20 million and maintain for 5 years then MNR would give us a release from the site
- Now in the process of handing site back to MRN

Normetal Before



Normetal Project

- Excavate eroded tailings from site and move to tailings basin
- Re-grade tailings basin and banks
- HDPE cover on tailings followed by bio-solids and vegetation
- Construct toe drains to collect seepage from tailings
- Construct diversion ditches and discharge ditches from toe drains

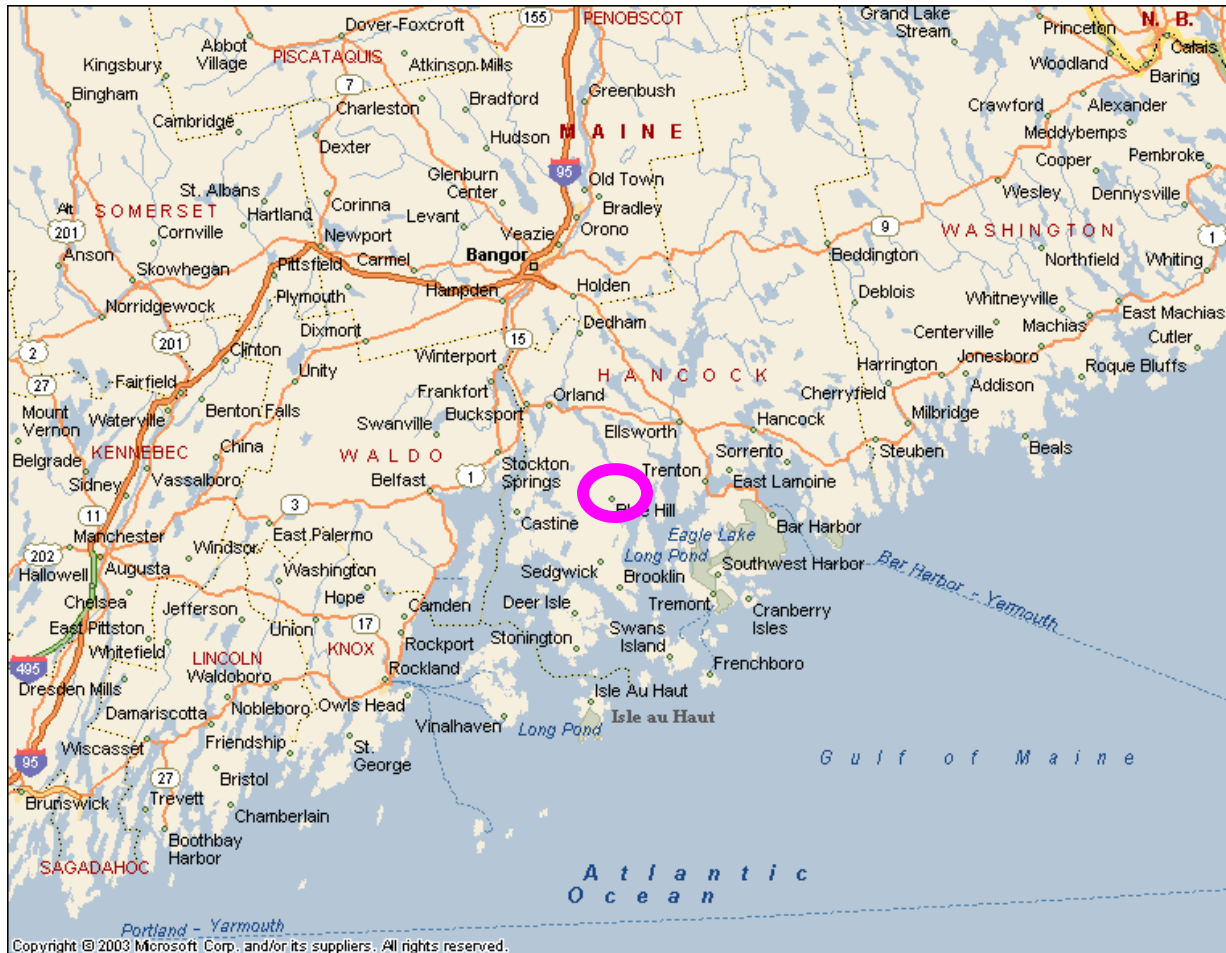
Unexpected Events

- Letter from MNR informing us we were still responsible for site 13 years after sale of site to third party
- Local farmer harvesting hay from site, damaging cover
- Village never accessed \$70,000 fund initiated for them to do eco friendly projects on site
- Construct ATV trails on tailings to reduce damage from ATV traffic
- MNR gave permission for a third party to explore the site including drilling on HDPE liner

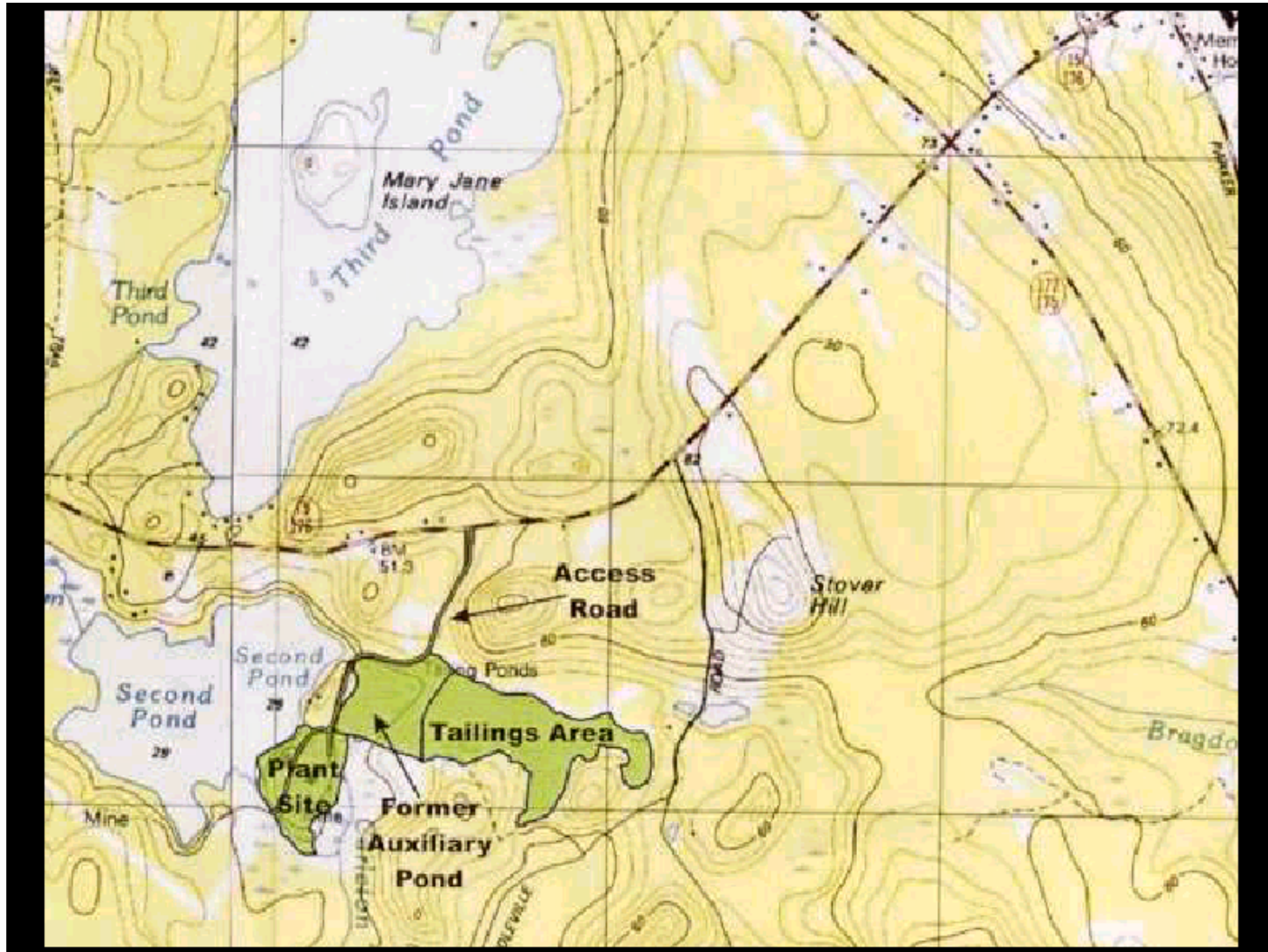
Normetal After



Kerramerican Blue Hill Mine



Blue Hill Site



Blue Hill History

- Underground zinc mine began operation in 1971 as a joint venture (60/40) between Keradamex (a wholly owned subsidiary of Kerramerican) and Black Hawk Mining
- Mining ceased in 1977 for economic reasons
- Site closure completed by 1984

Regulatory Overview

- 1985- Maine DEP approved 1984 closure
- **1999- Maine DEP notified Kerramerican that corrective action was necessary at Blue Hill site, and that Kerramerican was a PRP**
- 2000- Kerramerican entered into voluntary negotiations with Maine DEP to investigate and remediate the site
- 2002- Maine DEP approves Remedial Investigation
- 2003- Maine DEP approves Feasibility Study
- 2004- Kerramerican submits Remedial Action Plan to Maine DEP, revises plan based on DEP comments

Risk Transfer Concept

- Wind-up Kerramerican corporate entity, exit Maine
- Cap all environmental costs, eliminate future cost overrun and tort liability risks
- Transfer liability, management, remediation and long-term care responsibilities to EMSOURCE, U.S.-based environmental risk transfer company

Liability Transfer

- Regulatory release for Kerramerican, assignment of responsibility to EMSOURCE via Consent Decree
- Contractual transfer of environmental liabilities to EMSOURCE
- Insurance protection for cost overruns, unknown conditions, legal defense, and 3rd party claims
- Kerramerican preserves right to pursue contribution from Black Hawk and Dennison

Agreement with EMSOURCE

- EMSOURCE assumes site liabilities (Consent Decree liabilities and third party claims related to environmental conditions)
- EMSOURCE assumes project ownership, procures environmental insurance policy to cover cost overruns and respond to 3rd party claims related to environmental conditions
- Kerramerican pays expected cost of remedy plus O&M, DEP oversight, insurance premium and EMSOURCE liability assumption/project ownership fee

Blue Hill Plant Site 2011



Geco- Fox Creek Crown Pillar Background

- Crown pillar was to be mined in early 1990's
- Series of chimney caves occurred prior to mining resulted in collapse of much of the crown pillar in 1994
- Emergency remediation program started in January 1994 to pump backfill into the stope
- CMS performed after filling indicated fill was near top of cave zone

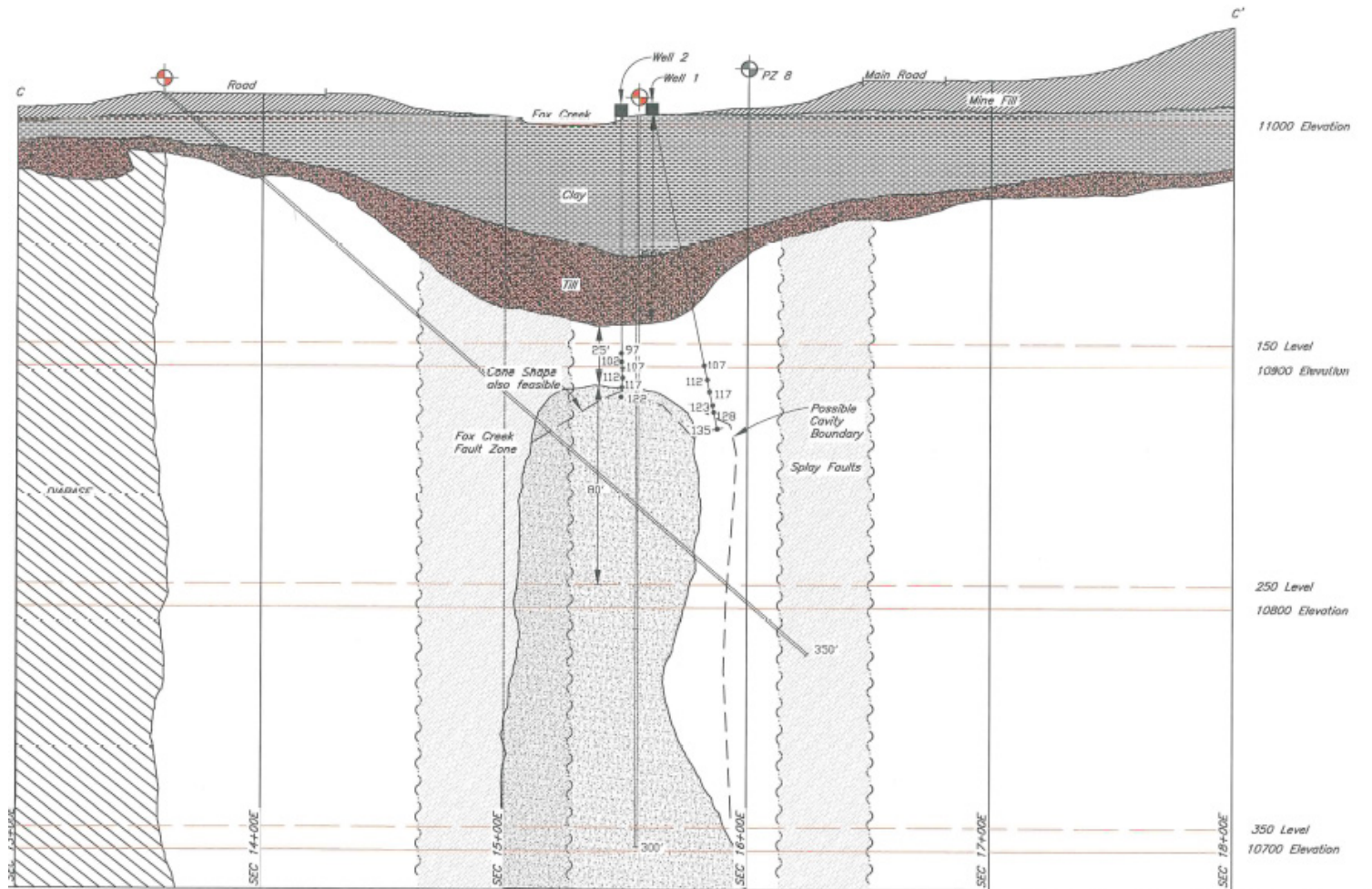
Fox Creek Crown Pillar Background -2

- Annual site risk assessment in 2004 indicated that stability of crown pillar should be investigated
- Desktop study indicated that crown pillar would fail if backfill (tech foam) failed
- Holes drilled into crown pillar in 2006 found a void in the backfill large enough to eventually cause failure and a 6 m thick crown pillar with low RQD numbers

Geco Site- Fox Creek



Section View of Geco Mine

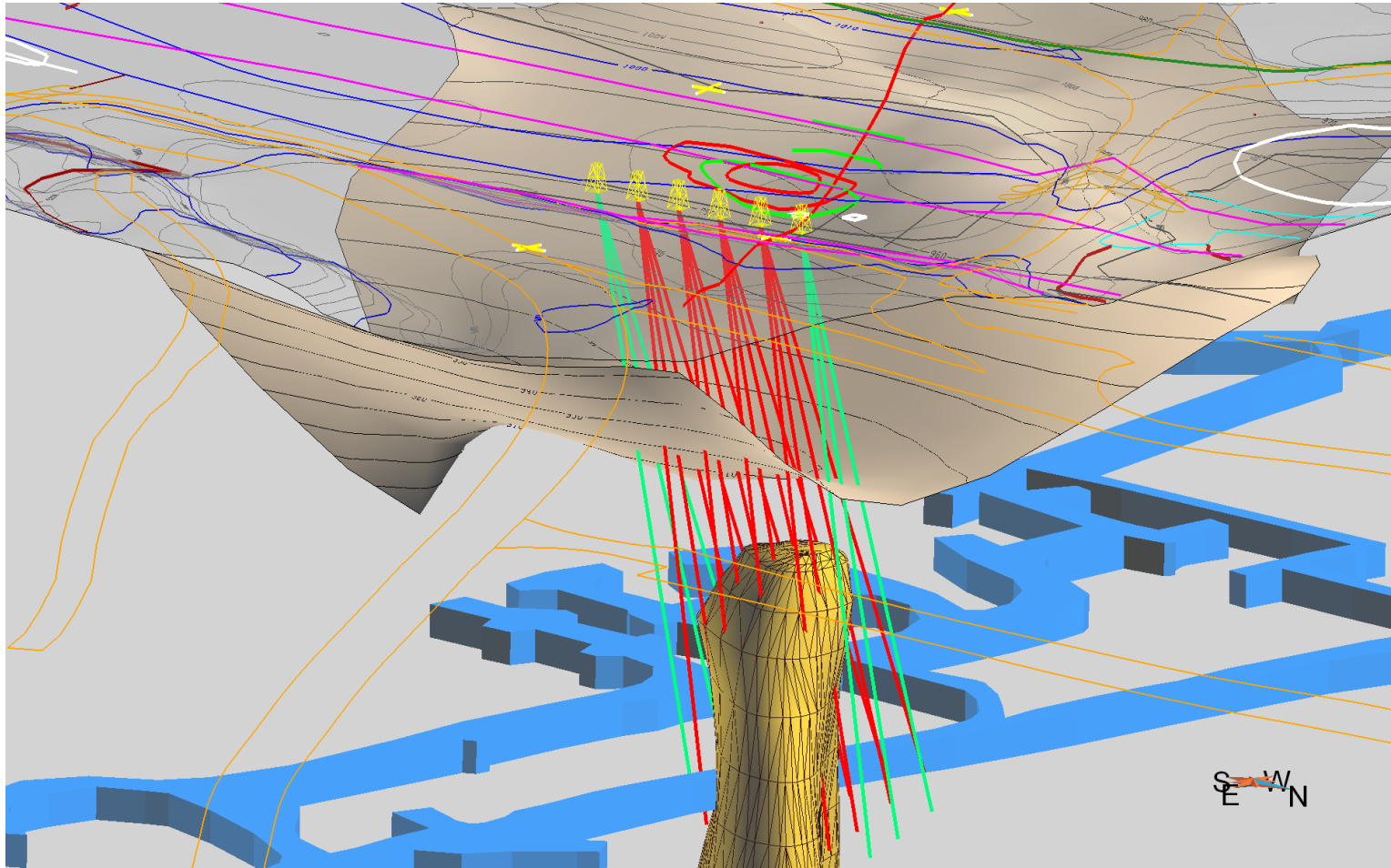


SECTION 3
FIG 2

2013 Fox Creek Remediation Program

- Drill a series of holes to define extent and size of void, crown pillar now 4 m thick
- Enlarge selected holes for introduction of backfill
- Stockpile of minus 2 inch material on site
- Batching plant on site to mix gravel with 4% cement to back fill void

Drill Program to Define Void



Filled Void

Looking Southwest

