

Environmental Management of Closed Sites in Xstrata Zinc Canada

Xstrata Zinc Reclamation Sites



Reclamation Sites

<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	11995/ 1977
Mattabi	Ignace, ON	1988
Errington	Sudbury, ON	Circa 1950
Matagami Closed Sites	Matagami, PQ	Various
Brunswick Mine 6	Bathurst, NB	1983

Xstrata Zinc Canada Closed Sites

Major issues at reclamation sites:

- Collection and treatment of acid mine drainage drainage
- Maintain safety of tailings dams
- Long term sludge management
- Public safety and accessibility
- Near surface crown pillar and pit wall stability issues
- Contaminated soils and groundwater
- Non point seepage of ARD to environment
- Changing regulatory framework
- Succession planning

Xstrata Zinc Reclamation Sites

Risk Management Programs

- Documented monthly dam safety surveillance
- Annual independent dam safety inspections
- Third party dam safety reviews every 5 to 10 years as directed by DSI
- Annual review of site operation, surveillance and monitoring manuals
- Quarterly review for the action plans resulting from audits and inspections
- Comprehensive safety management systems for both employees

Reclamation Sites Consultant Management



Consultants are used for many tasks at closed sites;

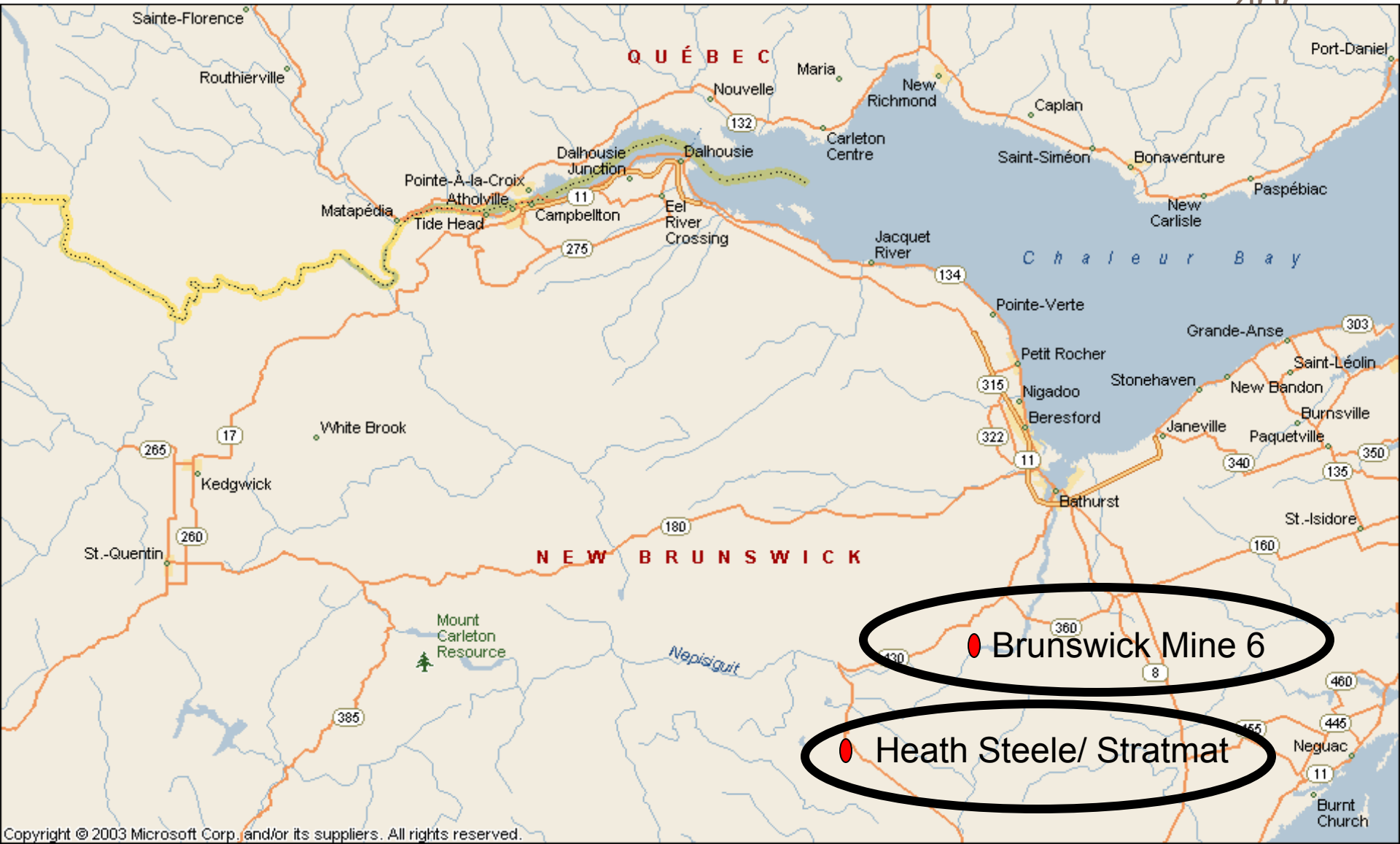
- Tailings dams inspections
- Risk assessments, audits
- Engineering, all disciplines, as required
- Specialized maintenance; electrical, mechanical, welding
- Environmental studies and evaluations
- Surveying
- Earthworks and excavations
- Labor during shut downs and major repairs



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ZINC

New Brunswick Closed Sites



● Brunswick Mine 6

● Heath Steele/ Stratmat

Heath Steele

- Former underground/ open pit zinc lead mine, closed in 1999, located in central New Brunswick
- Facilities: Run off collection facility with 9 pump stations. 15,000 L/min water treatment plant and fresh water pump house. 4 contaminated water dams. 3 tailings dams. 2 open pits, 1 fresh water dam
- Three full time employees





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Stratmat

- Former underground/ open pit zinc lead mine closed in 1995, located in New Brunswick, 10 km from Heath Steele
- Facilities; Groundwater interception ditch and pump station. Open pit acts as a buffer storage pond at the site. There is a retention dyke around open pit to provide storage for a 1:100 year return event. ARD is pumped to open pit and then pumped to Heath Steele for treatment
- No employees, site managed by Heath Steele

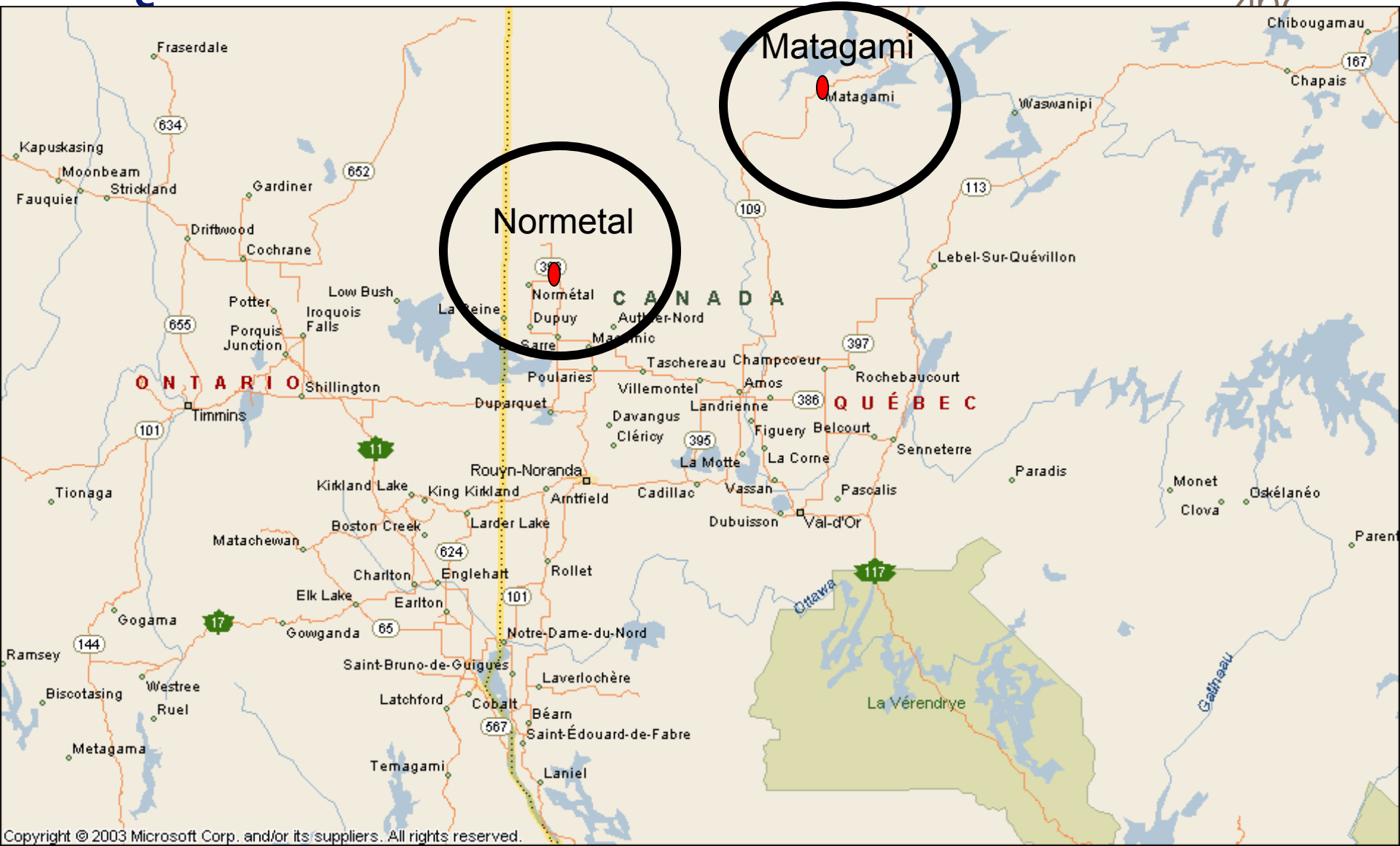


Brunswick Mine 6

- Former open pit lead zinc mine, closed in 1983, located in northern New Brunswick, 10 km from Brunswick Mine 12
- Facilities: 3 pump stations, 6 major ditches. ARD collected and pumped to Brunswick for treatment
- No employees, managed by existing Brunswick Mining employees



Quebec Closed Sites



Normetal

- Former Kerr Addison underground Zn-Cu mine located in Normetal Quebec, closed in 1980.
- The site was partially reclaimed when it was sold to a junior company in 1985. The site degraded to the point where the Province of Quebec sent a letter to the company in 1998 requiring a new closure plan.

Normetal

- Facilities: 3 tailings dams
- Employees: None







Matagami Closed Sites

- Sites include Norita, Isle Dieu, Garon Lake, Radiore and Orchan. These are all small former satellite mines located next to Matagami Lake Mine in Matagami, Quebec
- Facilities:
 - Pump station in Orchan open pit to collect ARD and pump to Matagami Lake for treatment.
 - Limestone trench at Garon Lake and Radiore to treat ARD contaminated groundwater leaving the site
 - Norita, Isle Dieu and Radiore are care and maintenance only.

Matagami Closed Sites

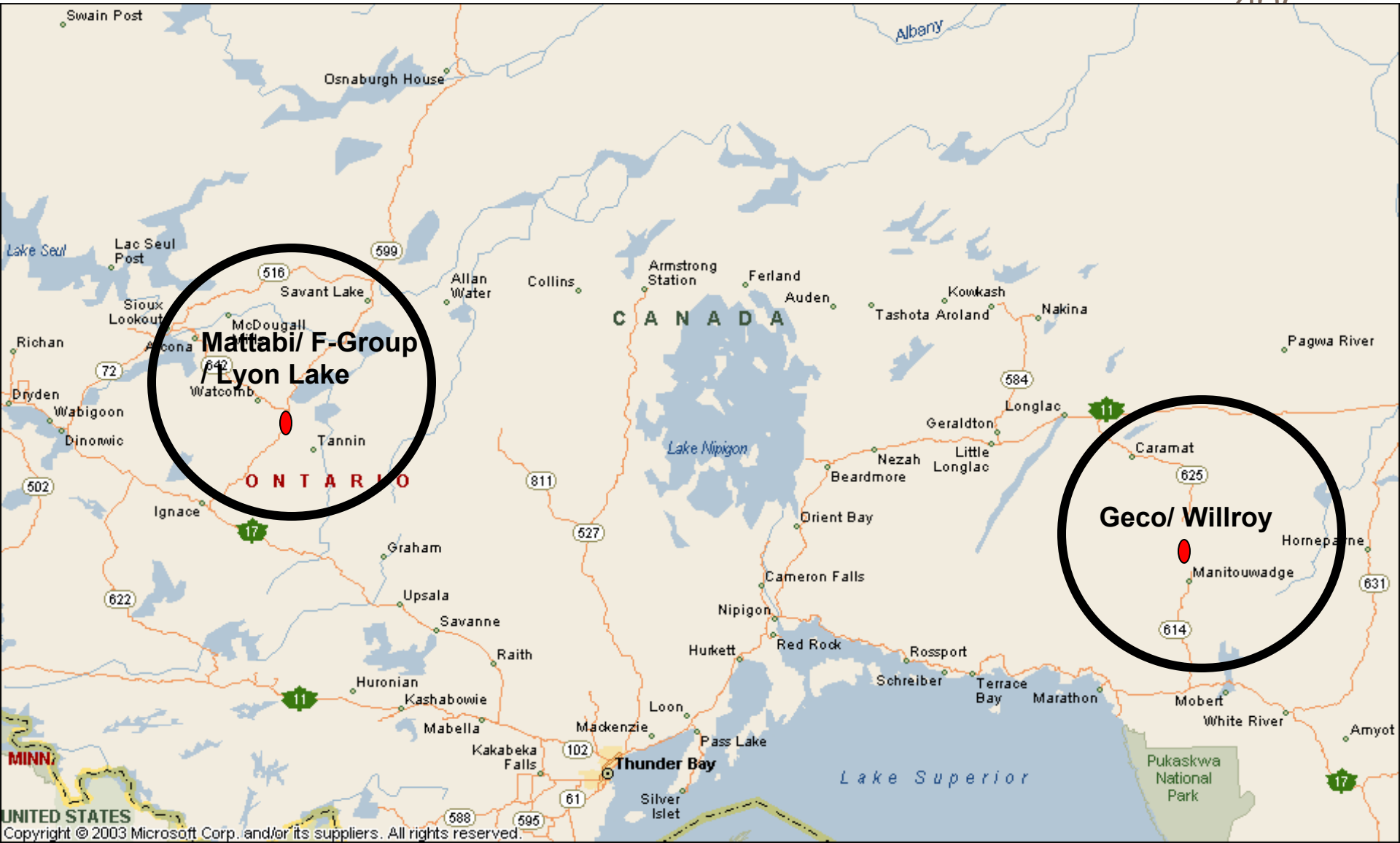
- No employees, site managed by existing Matagami Lake employees





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Ontario Closed Sites



Geco

- Former underground zinc/ copper mine, closed in 1995, located in Manitouwadge, Ontario
- Facilities: 5 pump stations and 2 collection ditches direct ARD to contaminated water holding pond, then to a new 15,000 l/min treatment plant, tailings dam
- 3 full time employies on site







Willroy

- Former Lac Minerals site (closed in 1977) inherited by Noranda as part of an exploration agreement, located 5 km from Geco in Manitouwadge, Ontario
- There was an agreement that states Xstrata will treat water from the Willroy site at Geco and invoice the owner of the site for treatment costs
- No employees, site managed by Geco
- Facilities: 3 pump stations, 2 diversion ditches. ARD from Willroy site collected and pumped to Geco for treatment





Mattabi/ Lyon Lake

- Former open pit/ underground lead/ zinc mine, closed in 1988, located 70km North of Ignace, Ontario
- Facilities: 3 pump stations to direct ARD from site to the open pit, 1 pump barge in open pit to pump ARD to new 15,000 L/min treatment plant followed by a polishing pond
- 2 full time employees







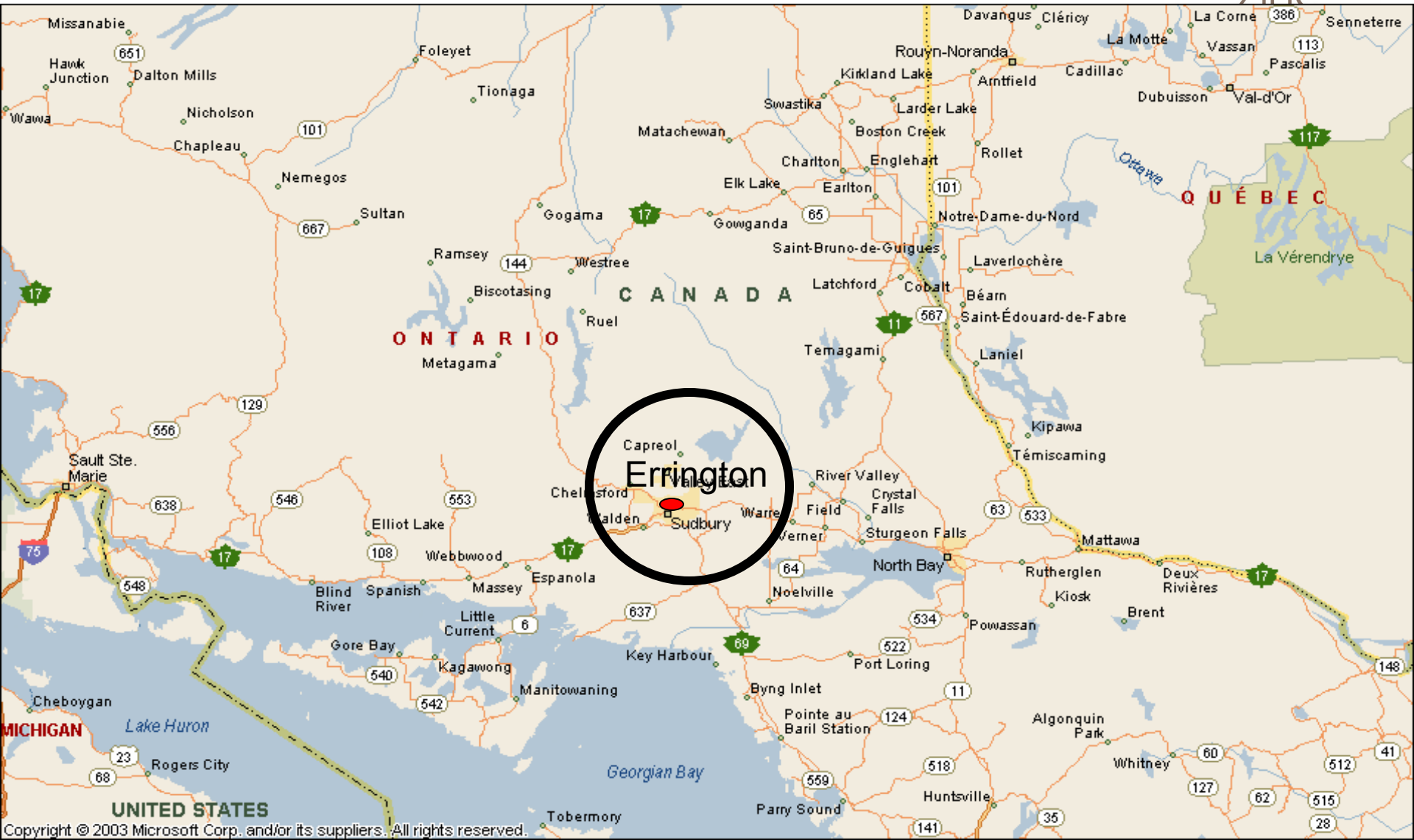


F-Group

- Small former open pit zinc mine, closed in 1984, located 3 km from Matabi
- Facilities: Grouted interception ditch to collect run off from waste rock and direct it to the open pit. Pump station and pipe line to transfer ARD from pit to Matabi pit for treatment
- No employees, site managed by Matabi



Errington



Errington Project

- Former underground Zinc mine located in Sudbury, Ontario. The site is clean and there is an ore resource that should be reviewed by the Business unit.
- Project consisted of excavating tailings and waste rock and moving to Strathcona tailings area and capping a shaft

Errington Project

