



Contaminated Site Remediation

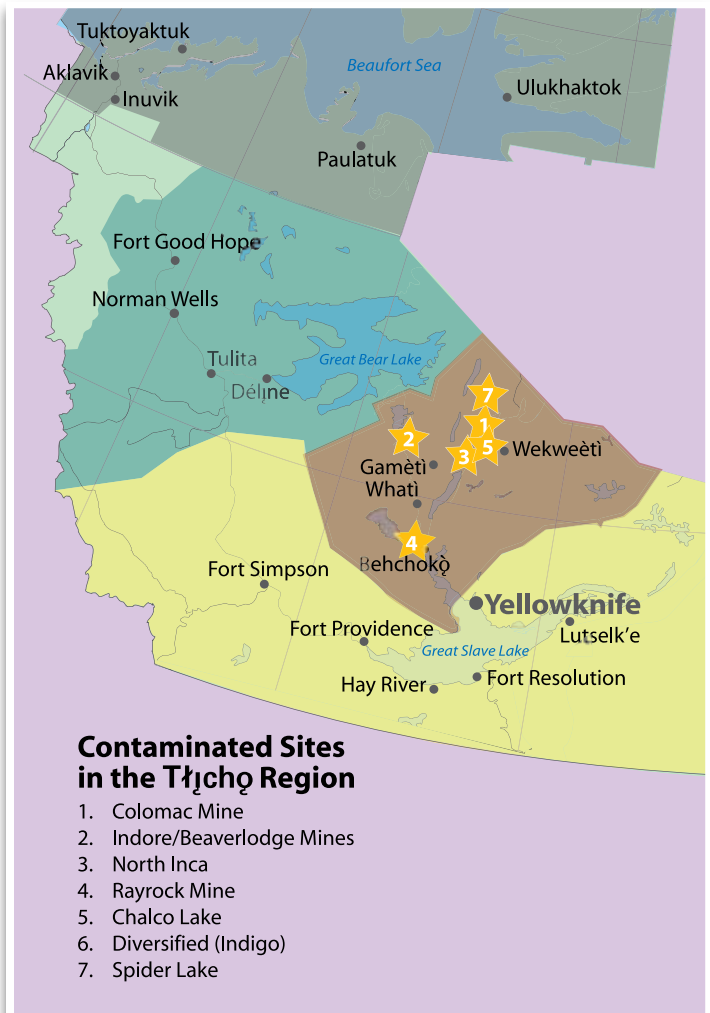
What's HAPPENING in the Tłı̨chǫ?

2009 in Review



About the Contaminants and Remediation Directorate

Indian and Northern Affairs Canada (INAC) recognizes the importance of cleaning up contaminated sites and preventing future contamination. The Contaminants and Remediation Directorate (CARD) in the NWT currently manages over 20 contaminated sites at various stages of remediation. Many of these sites became the Government of Canada's responsibility after private owners relinquished their properties according to the legislation of the day, or when companies went bankrupt. The properties then reverted to the Crown, and as representative of the Crown, INAC became custodian of these properties and related remediation activities.



10-STEP PROCESS

In 1999, the Contaminated Sites Management Working Group (CSMWG) released the document *A Federal Approach to Contaminated Sites* outlining a 10-step process for addressing a federal contaminated site. These guidelines were developed to ensure that there would be a common approach to the management of contaminated sites.

Step 1: Identify possible sites

Identify potentially contaminated sites based on activities (past or current) on or near the site.

Step 2: Perform historical review

Assemble and review all historical information pertaining to the site.

Step 3: Perform initial testing

Determine a preliminary characterization of contamination and site conditions.

Step 4: Classify site and assign priority

Classify contaminated site using the Canadian Council of Ministers of the Environment (CCME) National Classification System. Prioritize the site for future investigations and/or remediation/risk management actions.

Step 5: Conduct detailed testing

Test specific areas of concern identified in Step 3 and conduct further in-depth investigations and analysis.

Step 6: Reclassify site if necessary

Update the ranking based on the results of the detailed investigations, using CCME National Classification System.

Step 7: Develop remediation/ risk management plan

Develop a site-specific plan to address contamination issues.

Step 8: Implement remediation/ risk management plan

Implement the site-specific plan that addresses contamination issues.

Step 9: Conduct confirmatory sampling

Verify and document the success of the remediation/risk management strategy.

Step 10: Conduct long-term monitoring

If required, ensure that remediation and long-term risk management goals are achieved.

ASSESSMENT SITES

Steps 1–7

- Indore / Beaverlodge Mines
- Rayrock Mine
- Chalco Lake
- Diversified / Indigo Mine
- Spider Lake

SITES IN REMEDIATION

Steps 8–9

- Colomac Mine
- North Inca Mine

ASSESSMENT SITES

Steps 1–7

A number of contaminated sites have been identified and prioritized in the Tłıchq Region, and identification and assessment is ongoing. Site assessment involves a detailed analysis of the site to identify the nature and extent of the contamination.

INDORE/BEAVERLODGE MINES

Indore Mine and Beaverlodge Mine are located 12 km apart on Hottah Lake, approximately 100 km north of Gamètì in the Northwest Territories, Mqwhì Gogha De Njıttèè area of the Tłıchq Agreement. Indore Mine was originally staked for uranium exploration in 1950, and operated off and on until it was closed in 1956. Beaverlodge Mine is a former uranium mine which had various owners between 1943 and 1977, after which responsibility for the site reverted to the Crown.

At Indore Mine, a small quantity of tailings remain on land, along with some suspected underwater tailings. The site also has slightly elevated radioactive waste rock and sediment, a former dumpsite, a mine opening and shaft, the remains of former buildings and miscellaneous debris and materials which may contain asbestos.

At Beaverlodge Mine, the remediation will address shafts and pits, groundwater quality, radiation levels in waste rock near the pits, drums, burned remains of former buildings, and miscellaneous debris and scrap that may contain asbestos.

Community Involvement

Consultation with the Tłıchq Government and local communities will take place throughout the remediation process through community presentations and site visits. Tłıchq Elders most recently visited the site in September 2009 to observe the major structures and discuss a timeline for remediation. Concerns expressed by the Elders have been incorporated into the Remedial Action Plan.

What's Next?

Remediation is expected to be completed by 2012 with initial remediation work beginning after the winter road is constructed in 2011. Full scale remediation will take place in 2011/2012 and will likely include closure of mine openings and demolition of buildings and tanks. A winter road will be constructed in 2012 to remove equipment, supplies and any materials requiring off-site disposal. Long-term monitoring will begin in 2012, once remediation activities are complete.



RAYROCK MINE

The Rayrock Mine site is located 145 km northwest of Yellowknife and 75 km northwest of Behchokò within the boundaries of the Tłıchq Agreement. Rayrock Mine was an underground uranium mine in operation from 1957 to 1959. During operations, approximately 70,000 tonnes of ore were processed, yielding 207 tonnes of uranium concentrate. Radioactive tailings were deposited on land in two containment areas and a garbage dump.

The site was remediated in 1996–97. This work included sealing all mine openings and ventilation shafts, relocating radioactive material from the dump to the tailings piles and capping the tailings with a thick layer of silt-clay, followed by revegetation. Since then, the site has been monitored annually as part of the care and maintenance activities.

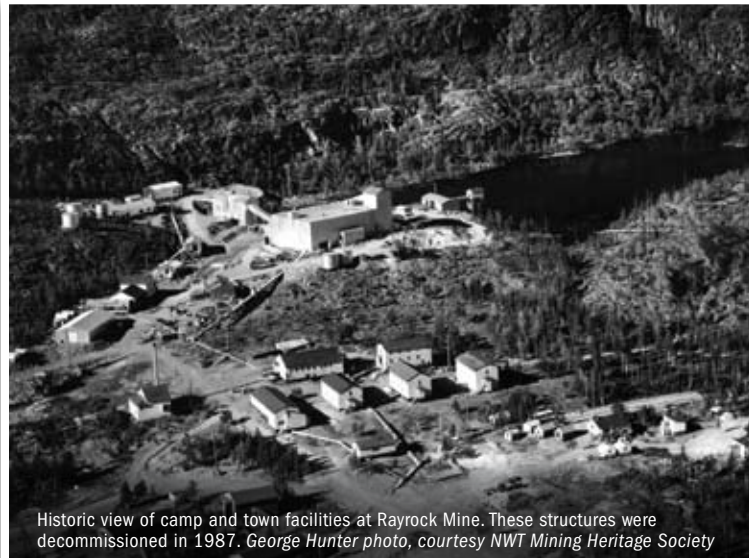
In the fall of 2009, a Supplementary Environmental Site Assessment (ESA) was started to look at the conditions of closure in 1996. This work included the assessment of remaining hazardous (asbestos-containing materials) and non-hazardous debris, concrete piers and foundations, and the maintenance of the tailings cap. CARD continues to monitor the site and complete care and maintenance activities as required.

Community Involvement

Community consultation has been ongoing throughout the remediation and monitoring process and extensive community consultations will also be conducted in 2010 as the mine undergoes additional assessment. Recognizing the importance of this site to the Tłıchq, consultation will include site visits, community meetings and briefings to the Tłıchq Executive, ensuring their involvement in the planning and design of any potential remediation options.

What's Next?

The ESA will be completed during the 2010 summer field season and will include an assessment of the former transportation route and a Site Specific Human Health and Ecological Risk Assessment. The results from the additional assessment work will be compiled to determine if, and what, further work is required.



CHALCO LAKE

The Chalco Mine site is located approximately 210 km north of Yellowknife near the Diversified/Indigo Mine site. It consists of two former camps, one dating back to the 1940s and another built as a mineral exploration camp in the 1970s.

Concerns at the site included structures and materials left behind and an area of hydrocarbon contamination.

Remediation of the site took place in the fall of 2009. This work included demolition of a building on the site, burning clean combustible materials and removal of all waste materials. While this work was underway, a small area of hydrocarbon contamination was identified. Further remediation will be required and the hydrocarbon contamination will be assessed during a Phase II Environmental Site Assessment scheduled for 2010/11.

DIVERSIFIED/INDIGO MINE

The Diversified/Indigo Mine site is located on Indin Lake, 205 km northeast of Yellowknife, within the boundaries of the Tłıchq Region. Gold exploration on the site dates back to 1939.

Concerns include structures and equipment left at the site, an unsecured mine opening, and potential hydrocarbon contamination.

The Phase I Environmental Site Assessment (ESA) was performed in 2009/10 and a Phase II ESA is planned for 2010/11.

SPIDER LAKE

The Spider Lake Mine site is located on an island at the centre of Spider Lake, 233 km northeast of Yellowknife within the Monfwı boundary of the Tłıchq Agreement. The island, called "Treasure Island," is 200 hectares in size. Exploration at the site occurred sporadically between 1945 and 1988.

Concerns at the Spider Lake Mine site include collapsing structures and debris left behind and potential soil contamination. A Phase III Environmental Site Assessment (ESA) was conducted in 2009 and a Remedial Action Plan (RAP) will be developed through consultation with the Tłıchq and communities.

Remediation plans are expected to be finalized in 2011/12, with remediation to commence thereafter. Once remediation is complete, a long term monitoring plan will be put in place.



INAC employees visited Behchokò in September 2009 to provide an update on contaminated sites in the Tłıchq Region.

SITES IN REMEDIATION

Steps 8–9

COLOMAC MINE

Colomac Mine was a gold mine in operation from 1989 to 1997 and is located 222 km northwest of Yellowknife.

The mine site is within the traditional lands of the Tłıchǫ people, in the Indin Lake area, 45 km west of the nearest Tłıchǫ community of Wek'weètì. This area was used historically by the Tłıchǫ for hunting, trapping and fishing and is within the annual migration route of the Bathurst caribou herd which passes through the area to and from its calving grounds.

The mine was developed in 1988-89, but mineral exploration in the area dates back to the 1930s. Advanced gold exploration occurred in the 1940s, limited exploration resumed in the 1970s and intensive exploration began in 1986. Mining production lasted from 1990-97 and the following year, Royal Oak Mines Inc. placed the mine in Care and Maintenance. It reverted to the Crown in 1999 when Royal Oak Mines Inc., went into receivership.

The main concerns at the Colomac Mine site include tailings and hydrocarbon contamination, as well as diesel leakage, during operations that contaminated soil around the mill, areas of bedrock and the Steeves Lake shoreline around the mill buildings. Diesel and oil barrels left behind had to be washed, crushed and discarded or sent south via winter road for disposal in a hazardous waste facility.

Site remediation is an important step for both the Tłıchǫ people who use the land and the caribou that migrate through it. Working with Tłıchǫ Elders, a fence was constructed around the contaminated site to protect migrating caribou from the contaminants. The area was deemed safe for caribou in 2008 and the majority of the fence was dismantled later that year. The posts were left in, at the request of Tłıchǫ Elders, until additional monitoring is completed in the fall of 2010. The posts are now scheduled to come out in the fall of 2010.



Community Involvement

Tłıchǫ Elders and community members have been actively involved in the remediation process since identifying the Colomac Mine Site as a major concern early in the Tłıchǫ Agreement negotiation process. Elders provided traditional knowledge and advice about caribou migration and traditional land use in the Indin Lake area as the Colomac Remediation Plan was developed.

Each year the Colomac Project Management team visits communities and schools in the Tłıchǫ to give updates on progress being made at each of the contaminated sites. Elders also visit the site twice a year to examine site remediation progress and provide valuable traditional knowledge related to future remediation plans.

What's Next?

The final stages of remediation are underway and final demobilization is anticipated to occur in April 2012. The final remediation contract was awarded in February 2010 and over the next two years the site will undergo final remediation.

This summer, the project team will continue site remediation and restoration activities including the remediation of the Steeves Lake shoreline and beginning demolition of the mill facilities. They will also continue to collect free product, treat hydrocarbon-impacted soil and water, and monitor water quality. When all remediation work has been completed, a long-term monitoring and post-closure hydrocarbon management plan will be developed, initially for a five-year period.



Science Meets Traditional Knowledge at the Colomac Site!

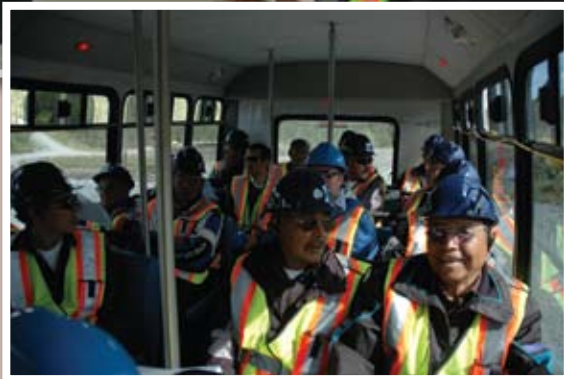
This summer at the Colomac mine site, a celebration marked a successfully completed project, and was a shining example of what can be achieved when science and traditional knowledge blend. In July, Elders from all Tłıchq communities gathered to celebrate the conclusion of the Colomac Caribou Fence Project. Alongside them, staff from the site operator, Tli Cho Logistics, INAC, Public Works and Government Services Canada and members of the media witnessed the final piece of the fence coming down.

The Fence Project began when Tłıchq Executive and Elders expressed concerns about exposing caribou and moose to contaminants in the Tailings Lake area of the site. INAC worked with the Tłıchq to come up with a temporary but effective way to protect wildlife in the area. So, in 2003, a fence was installed to divert wildlife during remediation activities. It was no easy feat — the eight km fence was built through rough, hilly terrain, poor weather and bugs - but it was well worth the effort.

In May 2008, a comprehensive survey showed levels of contaminants in the soil and vegetation were greatly reduced from an earlier survey done in 2003 and are now well within acceptable limits. In fact, the vegetation is now safe for the caribou to eat and the water is drinkable! Given this, when INAC met with Tłıchq Elders and the Tłıchq Executive in October 2008, it was agreed the fence could come down. By December 2008, the fence was removed - except one important piece: the large main gate remained intact until July 14, 2009 when it was ceremonially deconstructed as a symbol of the success achieved at the site.

“The fence crew worked so hard and so fast bringing the fence down, we had to remind them a couple of times to leave us something for the ceremony!” said Ron Breadmore, INAC Project Manager for the site cleanup. Everyone watched as a front loader lifted the gate from its posts, a clear sign the area is open to wildlife once more. Among those present were former CARD staff members Carole Mills and Lisa Dyer and Renewable Resources and Environment staff member David Livingstone. David recently retired after 30 years of dedicated service with INAC and was a driving force behind the Caribou Fence.

“The fence project is an excellent example of what can be achieved when many minds meet to solve a problem,” explained Breadmore. “Scientific minds combined with traditional knowledge to develop a well-rounded solution that works. Bringing that last piece of fence down today is really symbolic of our success in addressing those ecological risks. In a broader sense, the fence symbolizes the strong partnership between the Tłıchq and INAC towards the remediation of the Colomac site.”



SITES IN REMEDIATION (continued)

NORTH INCA

The North Inca mine site is located approximately 190 km north of Yellowknife and 70 km east of Wek'weètì in the M̄qwhì Gogha De N̄l̄t̄t̄èè area of the T̄l̄ch̄ Agreement. Gold exploration occurred at the site between 1945 and 1949, including surface and underground drilling. There has not been significant activity at the site since 1949.

Concerns at the North Inca Mine site included a partially open mine shaft, deteriorating buildings, two above-ground fuel storage tanks, and possible asbestos-containing materials.

Remediation began in 2009 and included the closure of mine openings, demolition of buildings and removal of fuel storage tanks. All materials to be shipped off-site were prepared for removal on the 2010 winter road.

Community Involvement

Community consultation was carried out throughout the remediation project. The T̄l̄ch̄ Government and local communities were engaged through site visits, community presentations and T̄l̄ch̄ Executive briefings. The most recent site visit took place in late summer of 2009 when T̄l̄ch̄ Elders were able to view the results of the remedial effort.

What's Next?

All materials will be removed from the site via winter road and full remediation is expected to be complete by March 2010. Following site closure, long-term monitoring is scheduled to take place in 2012 and 2014.



Published under the authority of the
Minister of Indian Affairs and Northern
Development and Federal Interlocutor for
Métis and Non-Status Indians
Ottawa, 2008
www.ainc-inac.gc.ca
1-800-567-9604
TTY only 1-866-553-0554

QS-Y318-001-EE-A1
ISSN:1918-8056

© Minister of Public Works and Government Services Canada

Cette publication est aussi disponible en français sous le titre :
Que se passe-t-il dans la région des Tl̄ch̄

**If you see a contaminated site or have
questions about sites in your area, contact us:**

Contaminants and Remediation Directorate

Indian and Northern Affairs Canada,
NWT Region

P.O. Box 1500

Yellowknife, NT X1A 2R3

Phone: 867 669 2416

Fax: 867 669 2721

Email: ntcard@inac-ainc.gc.ca

