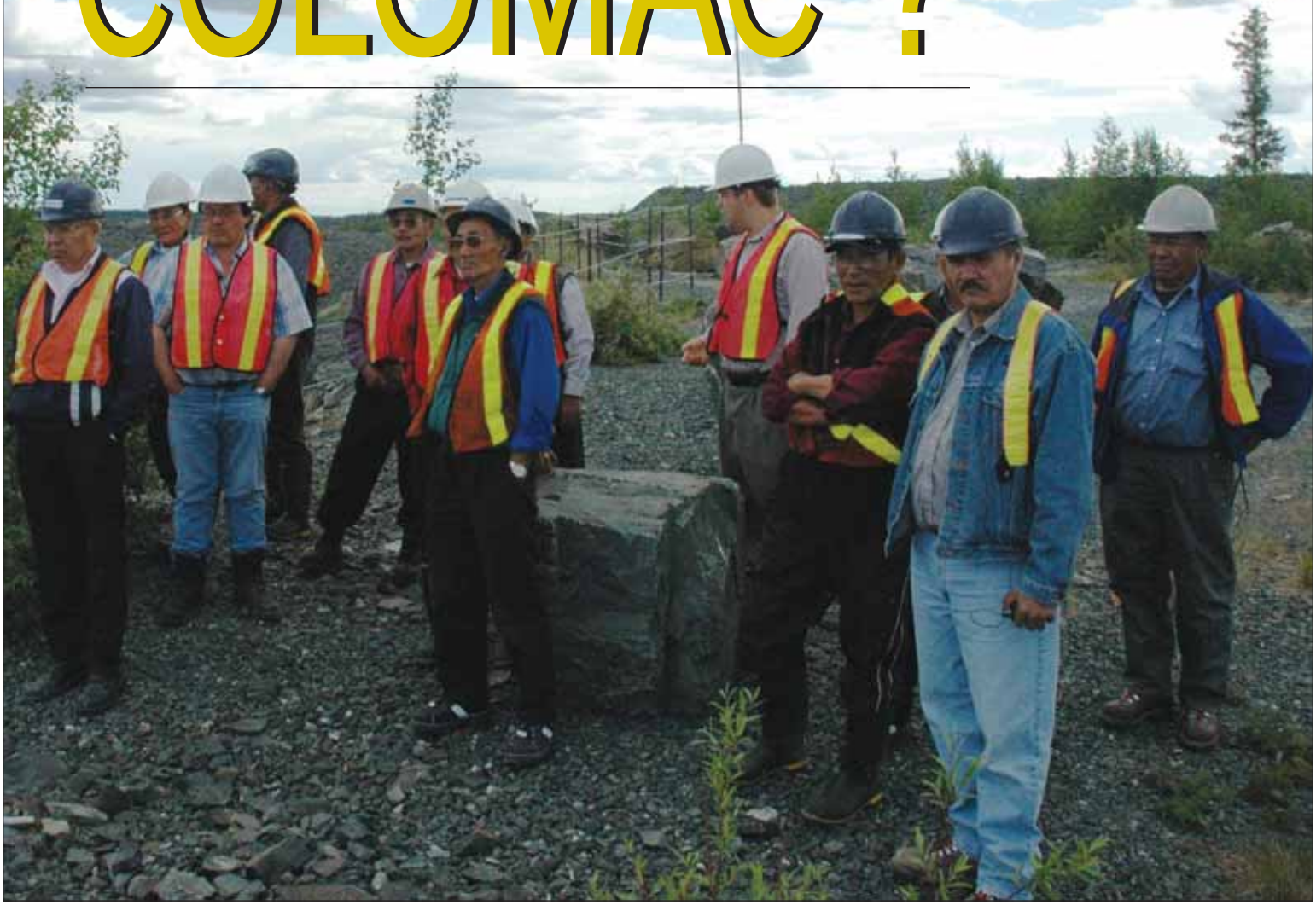
Winter 2008

Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

What's HAPPENING at COLOMAC ?



Update

Hydrocarbon Remediation

Watering a windrow in the waste oil lay-down area to increase moisture content.

Hydrocarbon remediation at Colomac is guided by the Colomac Site Remediation Plan and the Hydrocarbon Remedial Action Plan (RAP).

Removing diesel fuel from the ground

Diesel fuel that was spilled on the ground at Colomac during mine operations has collected in a layer on the bedrock and permafrost. To remove this diesel, 16 new wells were installed on the site in the spring of 2007. Diesel and water levels have been checked in all of the wells, and diesel has been frequently removed. Over 200 litres have been collected so far, but there is still more to be removed. In 2008, a faster method of moving the diesel out of the rocks and into the wells will be developed.

Update on the Land Treatment Unit (LTU)

This summer, the soil in the LTU was moved to a level lay-down area at the top of the hill for additional treatment. More fertilizer was added to the soil, which was turned weekly. By early fall, all of the soil met clean-up guidelines! All other soil at Colomac contaminated by diesel spills has been collected and placed in the LTU for treatment next year.

Sediment sampling completed

Sediments in Steeves Lake, beside the Colomac Camp, were sampled in 2005 and 2006 and were found to contain diesel and Polycyclic Aromatic Hydrocarbons (PAHs). Final sampling on site was completed this year. Now that the size of the contaminated area is known, a program will be developed to make sure that the contamination does not affect wildlife and plants in the area.

Clean those drums!

Over 2500 drums were left at Colomac that were used for petroleum products such as waste oil and aircraft fuel. Many of the drums were empty, but still had a coating of oil on the inside. Other barrels contained oil, or a mixture of oil and water. Over 1200 of these barrels have been washed, crushed and placed in the Zone 2.5 pit for eventual burial. The rest of the barrels will be emptied and cleaned this winter. Oil collected from the barrels will be burned in the Colomac waste oil incinerator.

What's coming up?

Hydrocarbons
- Additional sampling and product recovery
  Fall/Winter 2007
- Steeves Lake
  Summer/Fall 2008
- Funnel-gate treatment system
  Spring/Summer 2008

Mill asset recovery
Winter 2007/08

Winter road construction
Winter 2008

Airport quarry remediation
Spring 2008

Dam 1b infill flooding
Spring 2008

Mill deconstruction and removal
Summer 2008

Waste consolidation
Summer 2008

Waste oil program
Summer 2008

Kim-Cass Quarry remediation
Summer 2008

Dam 1 valley recontouring
Summer 2008

Diversion ditch (sump) decommissioning
Summer 2008

Caribou fence
- Additional sampling
  Tailings Containment Area
  Spring 2008
- Fence decommissioning
  Summer/Fall 2008

Update

Construction

The summer of 2007 was a busy time, with a number of construction and clean up activities being completed around the Colomac site.

Quarry remediation

Quarry remediation began in early June in and around the Tailings Containment Area. Loose rock from the edge of each quarry and quarry face were removed, and vegetation along the edge of the quarry was stripped back to provide a visible "warning" break. Large boulders were placed along the edge of the quarry as an additional visual warning to caribou and humans. The loose rock at the base was contoured against the quarry wall, in accordance with land use requirements. A total of four quarries were remediated. The Airport Quarry (near airstrip) presents the biggest remediation challenge due to its height and difficult access, and will be worked on in March 2008. The high-risk quarries along the Kim-Cass Road will be addressed during the summer of 2008.

Berm construction

Berm construction also began in early June. Waste rock berms, approximately two and a half metres in height, were placed at various points around the north and south waste rock dumps to keep caribou away from the waste rock dumps and the three open pits. The waste rock dumps are high, with steep slopes that make good physical barrier. However, as an additional precaution, berms were placed in areas where caribou might still have been able to get onto the waste rock dumps. These areas included unused mine access roads, bottoms of valleys, and points where the natural landscape met the level of the waste rock dump.

Caribou ramp at Steeves Lake.

Caribou ramps

Caribou "ramps" were also constructed using waste rock, with a surface finished with smaller rock that will allow for the safe passage of caribou. The ramps were placed in areas that will encourage traditional north-south caribou migration – specifically, the north end of Ridge Lake and east shore of Steeves Lake.

Site Clean-up

Scrap metal in the Zone 2.5 Pit, site of the non-hazardous landfill.

A number of waste clean-up activities happened at Colomac during the summer of 2007.

Approximately seven kilometres of old tailings pipeline was removed from the Tailings Containment Area access road, and placed closer to the Zone 2.0 Pit for eventual disposal. Scrap metal and debris around Truck Lake was removed to the Zone 2.5 Pit, the site of the non-hazardous landfill. Electrical cable was set aside for potential salvage. The Truck Lake clean-up will continue in 2008.

A bulk metal shredder ("T-Wrecks") was brought into site on the 2007 winter road, and, following an overhaul, is now ready to shred the large volume of metal drums, tires and other metal debris remaining at site. While the shredder was being overhauled, Tlicho Logistics staff constructed a drum crusher, using spare parts from around the site. Using the crusher and a re-designed drum steamer, the staff was able to clean out and crush a large number of waste oil drums, which were then disposed of in the Zone 2.5 Pit.

Clean-up activities will continue at the site in 2008.

Colomac and the Community

Jeremy Antoine, apprentice electrician

Davin Jacobson, apprentice mechanic

Congratulations are due to participants in the Colomac Mine Apprenticeship Program, currently placed at Colomac, Diavik and Ek'ati, who have successfully completed the first 1600 hours of hands on training, and are now moving on to the technical classroom portion of their apprenticeship.

A new apprentice, Delmar Sanderson, has recently joined the program as a first year Mobile Crane Operator Apprentice. Delmar has been placed at the Diavik site.

The two apprentices currently onsite at Colomac, Jeremy Antoine and Davin Jacobson, will be moving on to new placements as they progress in their training. New apprentices entering the program next year will again be placed at Colomac, an ideal site at which to begin an apprenticeship.

In addition to supporting apprentices on site at Colomac through the NWT Region Contaminants and Remediation Directorate, Indian and Northern Affairs Canada (INAC), along with the Mine Training Society (MTS) of the Northwest Territories, Diavik and BHP Billiton, provides funding that enables Tåîchô Logistics to provide salaries for apprentices, as well as meals, accommodation, airfare, books and tuition. The intent of this funding is to remove financial pressures on apprentices and allow them to devote all their attention to learning.

Fence project

In 2003, work was completed on approximately eight kilometres of wire mesh fencing, which was installed around the Tailings Lake area at the Colomac Mine Site. The fence was installed on the recommendation of Tåîchô Elders, to discourage wildlife, including moose, caribou and bear, from entering the area of the Tailing Lake so that they would not be exposed to possible contaminants. Elders requested that consideration be given to the offspring of the animals, so that smaller newborn animals would not be separated from their mothers by the fence. The fence was considered a necessary temporary measure, to be kept in place until remediation of the area was complete.

Fence repairs will be completed this fall to ensure safety to humans and wildlife. An inspection report, including recommendations, was submitted to the Tåîchô Government, who requested that an additional metal analysis of soil and plants within the fence area be completed, before the fence is removed. The Colomac Project Team has begun the process of collecting samples, which will be completed in spring 2008. An analysis will be done by mid-summer, and results and further recommendations will then be submitted to the Tåîchô Government.

Fence posts pushed up out of the ground by permafrost.

Youth science workshop

Chief Jimmy Bruno students taking water samples on Yellowknife Bay.

Tåîchô leaders and Elders have continuously expressed the need for education and involvement of younger people in the environmental sciences. This year, the Colomac Mine Remediation Project Management Team, in partnership with Chief Jimmy Bruneau School in Behchokö, and Taiga Labs, developed a course called How to Collect Hydrocarbon Water from Drill Wells and Open Water.

In March 2007, nine graduating student from Chief Jimmy Bruneau School in Behchokö came to Yellowknife to take the five-day course. The workshop began with an overview of the Chief Jimmy Bruneau vision, and provided an introduction to environmental science including sampling techniques and equipment, aquatic ecology, and visits to the Taiga Lab. As well, a presentation was made on career paths in environmental science. Students received an overview of the Colomac Mine Site and site health and safety; unfortunately, bad weather prevented a planned visit to the mine site from taking place.

Students at the Taiga Lab.

At the end of the course, a certificate of achievement in Water Sampling Collection and Analysis was presented to each student. One student, Alison Chocolate, worked this summer as an Environmental Assistant with two contracting firms at the Colomac Mine Site.

Student course evaluations showed that the students enjoyed the course. Some were interested in science, while others wanted to learn about water sampling. All students enjoyed the field work of water sample collections, and the visit to the science laboratory at Taiga Lab. Although all students were not sure about a career in science, their interest in science has increased. The students expressed a desire for more hands-on experience, and hoped future workshops would include a mine site tour.

The Colomac Remediation Project Management Team plans to discuss future student training opportunities with Tåîchô Executives and Community Chiefs.

Students Carrcie Mantla and Cordelia Bouvier, with Judy Mah, at the Taiga Lab.

Public Involvement - the key to success

Elders visit the Colomac site, July 2007.

Mine site reclamation of both operating and abandoned mines is an important issue for the Tåîchô people. The area around the Colomac mine was a trapping area for many Tåîchô families, and is still an important caribou hunting area. Working closely with community members continues to be a very important part of the Colomac Project, where positive results have been achieved by including traditional knowledge and cultural values throughout.

In addition to participating in the development of the Colomac Mine Remediation Plan, each year Tåîchô Elders and youth visit the site to see the progress of the remediation project first hand. As well, a community update meeting is held yearly in one of the Tåîchô communities to tell the public about the project. These meetings give community members a chance to ask question and provide advice.

This year, on July 9 and 10, Tåîchô Elders from Behchokö, Whatì, Gamètì and Wekweètì again visited the site overnight to view completed work, hear an update on improving water quality, and provide suggestions on how to move forward with remaining work at the site. On the second day of the tour, the Elders visited the nearby North Inca Mine, to view site conditions and provide input on remediating the site, which is expected to take place during the summer of 2008.

Elders onsite at the North Inca site, July 2007.

The next community update meeting will take place later this year. Topics for this meeting include new Dam 1b construction, solid rock cover for Tailings Lake area, quarry remediation progress, hydrocarbon remediation progress and future plans for the Colomac site, and other contaminated sites in the Tåîchô Region. An update will also be provided on the remediation of Silver Bear Properties.

Zone 2 Pit - great news!

Installing the diffuser in the Zone 2 Pit.

Water quality improvement using the Enhanced Natural Removal (ENR) treatment process has been slower in Zone 2 Pit than in Tailings Lake. Mixing of water from top to bottom in the lake plays an important part in the ENR process, as it refreshes the depleted phosphorus from algae growth in the top layer. Because Zone 2 Pit is very deep, mixing doesn't occur well naturally.

To increase mixing and speed up the ENR process, an artificial air circulation-aeration-system was installed in 2006. By the end of the summer, thiocyanate was completely gone from the water. The aeration system was installed again in June 2007, and by September ammonia had gone down to a very low level. No further water treatment is necessary, and the aeration system has been completely removed.

Health and Safety

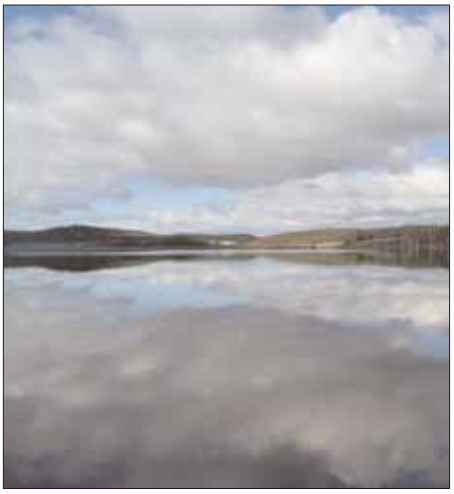
In 2003, INAC recognized that the Colomac Project had become quite complex and that a health and safety management system was required to address health and safety and environmental risks and hazards at the site. The result was the Environment Health and Safety Management System (EHS-MS) based on ISO 14001/OHSAS 18001 standards. The EHS-MS was developed jointly between 2003 and 2005 by INAC and Tåîchô Logistics.

Since then, INAC has conducted health and safety audits every three months. The health and safety auditor looks at site operations and administration, in areas such as: fire safety, construction, drilling and blasting, equipment operation, air traffic, first aid and wildlife management. INAC also conducts annual management reviews of the EHS-MS to make sure it is working as it should.

The Colomac EHS-MS is working well, thanks to the hard work and efforts of Tåîchô Logistics site staff, managers and health and safety officers.

Bert Varkonyi checks rock haul truck on weigh scales.

Water Quality Continues to Improve



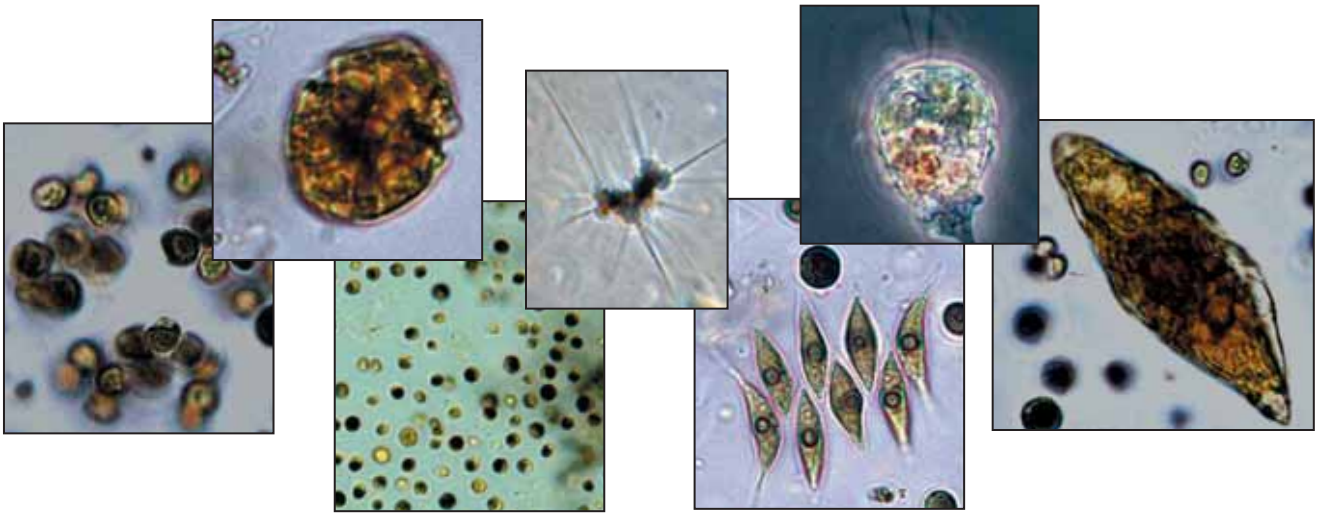
Tailings Lake, former Colomac Mine Site.

Water quality of Tailings Lake improved

Testing in 2005 showed that water quality in Tailings Lake had already met the NWT water license criteria and was ready for discharge, three years ahead of schedule. All metals, except Total Copper, were measured below the acceptable limits established for the point of compliance.

Since the tailings cover was installed in 2006/07, none of the metal levels have increased. Total Copper decreased slightly over the 2007 monitoring period, and is now well below the maximum allowable level. Water quality continues to improve, and the water is ready to discharge. All metals will meet requirements when they are discharged to "L" Shaped Lake.

As well, phosphorus levels continue to go down. With algae growth under control, the colour and clarity of the water are returning to normal. Ducks visited the lake again this summer, and zooplankton (a type of small aquatic animal) is present in the water for the third year in a row. Testing shows that no rainbow trout or daphnia (another type of small aquatic animal) have died from contaminants in the water.



From 2003 to 2004, small green algae typical of waste water, such as small Chlorophyta and large heterotrophic flagellates, began to appear in Tailings Lake. In 2005, more advanced organisms began to show up in the water, such as Crytophyte flagellate and species of zooplankton like Cyclops vernalis and Daphnia.

Published under the authority of the
Minister of Indian Affairs and Northern
Development and Federal Interlocutor for
Métis and Non-Status Indians
Ottawa, 2007
www.ainc-inac.gc.ca
1-800-567-9604
TTY only 1-866-553-0554

QS-Y219-060-EE-A1
ISSN 1708-5748

Cette publication est aussi disponible
en français sous le titre :
Que se passe-t-il à Colomac? Hiver 2008

Contact Information

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

Canada