

A non-hazardous waste landfill will be constructed within the central industrial core area of the site. Waste requiring disposal in the landfill includes non-hazardous waste, such as demolition debris and double-bagged asbestos waste. Water treatment plant residuals, sludge, and filter media will be disposed in a separate cell of the landfill. This section of the new landfill will remain open to support the ongoing operation of the water treatment plant.

## BORROW SOIL AND ROCK QUARRIES

Rock quarry and fine-grained borrow areas will provide the material required for pit backfilling and for construction of the covers on tailings containment areas. Wherever possible, rockfill generated by other site activities — such as flattening high walls above pits — will be used.

Following excavation of the borrow areas, the surface will be graded to provide a safe terrain and to prevent erosion and impacts to surface water flows.

## WATER MANAGEMENT

The water located in the mine is contaminated and not suitable for direct release into the environment. A water treatment will remove arsenic and other contaminants from the water before discharging it into the environment.

A new water treatment plant will be built in the central core industrial area of the site, designed to produce a mine water discharge that meets the drinking water quality guideline for arsenic and other water quality criteria, in order to protect the environment. The plant will run year-round. Treated mine water will be transported by overland pipe and released into Back Bay, near the outlet of Baker Creek. The existing Effluent Treatment Plant will be removed after the new Water Treatment Plant is operational.

## SURFACE WATER (BAKER CREEK)

Baker Creek will stay in its current location, but will be designed to allow the passage of significant quantities of water during a potential flooding event. All contaminated sediment will be removed from Baker Creek.

Baker Pond channel will be widened in order to accommodate wet years. Fish access will not be restricted, but any fish habitat to be constructed in Baker Creek will be determined based on future consultation with Fisheries and Oceans Canada, the Yellowknives Dene, and other stakeholders.

## SITE-WIDE SURFACE WATER

Site runoff (from areas such as covers on tailings containment areas and ponds) must be suitable for release into the environment. Runoff assessed as contact water will be collected, transported to the mine water pool, and treated prior to discharge.

# Giant Mine Remediation Project: Closure and Reclamation Plan

The Closure and Reclamation Plan (CRP) identifies the activities proposed to remediate the site and provides details for the on-going monitoring, management, and reduction of environmental effects and measures of success.

This document is a summary of the Giant Mine Closure and Reclamation plan.

## HISTORY OF THE GIANT MINE

Gold was first discovered in the Yellowknife greenstone belt in 1935. Over the more than 50 years of operation, the Giant Mine produced over seven million ounces of gold and contributed significantly to the economic viability of the City of Yellowknife and the territory.

Royal Oak Mines Inc. operated the Giant Mine from 1990 to 1999, until they entered into receivership in April 1999. In December 1999, a court ordered the transfer of the Giant Mine property from the interim receiver to Indigenous and Northern Affairs Canada (INAC) on behalf of the federal Crown.

When INAC became responsible for the Giant Mine site, they continued to care and maintain the existing infrastructure on the site. INAC also accepted the environmental liability related to the arsenic trioxide dust stored underground, and the surface components of the site. And the plan to address the risks and liabilities at the site would be carried out via the Giant Mine Remediation Project.

The remediation plan for the site is being updated following the completion of an Environmental Assessment in 2014, and the Surface Design Engagement process, with input from experts, Indigenous groups, regulatory agencies, and the public.

### FIND OUT MORE

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# CLOSURE AND RECLAMATION PLAN SUMMARY

## MINE INFRASTRUCTURE

All current site infrastructure — including approximately 85 buildings, 25 debris stockpiles, up to 30 kilometres of road network, utilities, and fencing — will be decommissioned, demolished, and removed. Infrastructure to be constructed and that will remain on site, includes:

- A fence to restrict public access will be built around the Core Industrial Area to house the freeze areas, the water treatment plant, the non-hazardous landfill, and areas with significant arsenic concentrations in the soil;
- Equipment required to support the freeze program;
- A recreation hall and exploration shop (to be managed by the NWT Mining Heritage Society);
- A transport network that includes roads, culverts and bridge(s), to maintain access to the remaining infrastructure;
- Power and communications services;
- An overland treated water pipeline and outfall
- Operations and Maintenance office space, and vehicle garage;
- A non-hazardous landfill; and
- Long-term underground mine access.

## UNDERGROUND

Areas underground that are unstable will be backfilled with tailings and other materials to ensure they don't pose a risk to the public or wildlife. All openings to the underground will be sealed, except for one long-term access area that is necessary for monitoring the underground areas.

## FREEZING OF ARSENIC CHAMBERS AND B1 PIT

The purpose built underground chambers and mined stopes that contain arsenic trioxide dust, or other materials impacted by arsenic trioxide that have the potential to impact human health and the environment, will be permanently frozen. A portion of the B1 Pit that will contain arsenic trioxide-impacted materials will also be frozen. A 10-metre-wide frozen zone will be established around the areas and be maintained at -5°C (or colder). Temperatures will be monitored to ensure that they remain frozen.

## OPEN PITS

The remaining pits will be backfilled with a combination of new quarried rock and coarse waste rock from the mine site. All open pits will be secured to reduce hazards associated with unauthorized public access and to prevent future underground flooding, which could impact mine water levels and the underground arsenic chambers.

## TAILINGS AND DAMS

Tailings generally contain high concentrations of arsenic that can impact both human health and the environment, either through direct contact or by contaminating water.

- Tailings will be used to fill underground areas.
- Tailings Containment Areas (TCAs) will be covered with a rock cover and include a liner that directs water to spillway points in order to be treated for safe discharge and minimizes movement into the underground.
- The South Pond tailings will be relocated into the North and Central tailings ponds.
- Dams will be reviewed for stability and, if required, will be repaired.
- The Settling and Polishing Ponds, in addition to any existing contaminated materials, will be drained and covered.
- Foreshore will be covered with rock.

## CONTAMINATED MATERIALS

Arsenic-contaminated waste rock, soil, and sediment that does not meet the Canadian Council of Ministers of the Environment (CCME) or the Government of the Northwest Territories (GNWT) environmental guidelines require relocation, as they may pose risks to humans and the environment. Areas disturbed by mining activities in the central area of the site will be cleaned up to meet GNWT industrial soil quality guidelines. Areas in the former mine townsite, boat launch, and shoreline will be cleaned up to meet GNWT residential soil quality guidelines. The contaminated material will be excavated and placed in tailings areas.

## LANDFILL AND OTHER WASTE

Demolition debris and site waste, both hazardous and non-hazardous, will be generated as part of closure activities. Safe and secure final disposal of these materials is necessary. All hazardous waste will be removed from site and disposed of at an approved facility.

