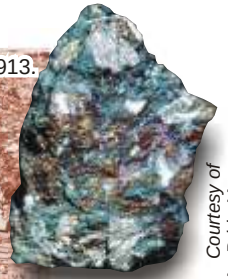
OUR BELT OF COPPER

Courtesy of MacBride Museum

Malachite displaying botryoidal texture, Pueblo mine.

Courtesy of Yukon Archives/MM Coll.

Pueblo open-pit mine, 1913.



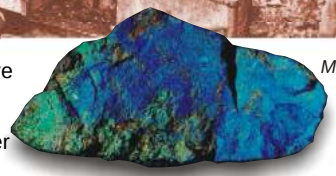
Courtesy of MacBride Museum

Bornite, Copper King mine.

A half-billion dollars worth of ore

A belt of copper deposits lies along the western slopes of the Whitehorse valley. Surface ores were discovered by prospectors and mined between 1900 and 1919. Development of modern geophysical and geochemical exploration techniques that could detect buried deposits led to a second period of mineral production between 1967 and 1982. The total value of copper, silver, and gold mined near Whitehorse is almost 500 million dollars. Future exploration using modern techniques may lead to new discoveries and renewed mining.

Courtesy of MacBride Museum

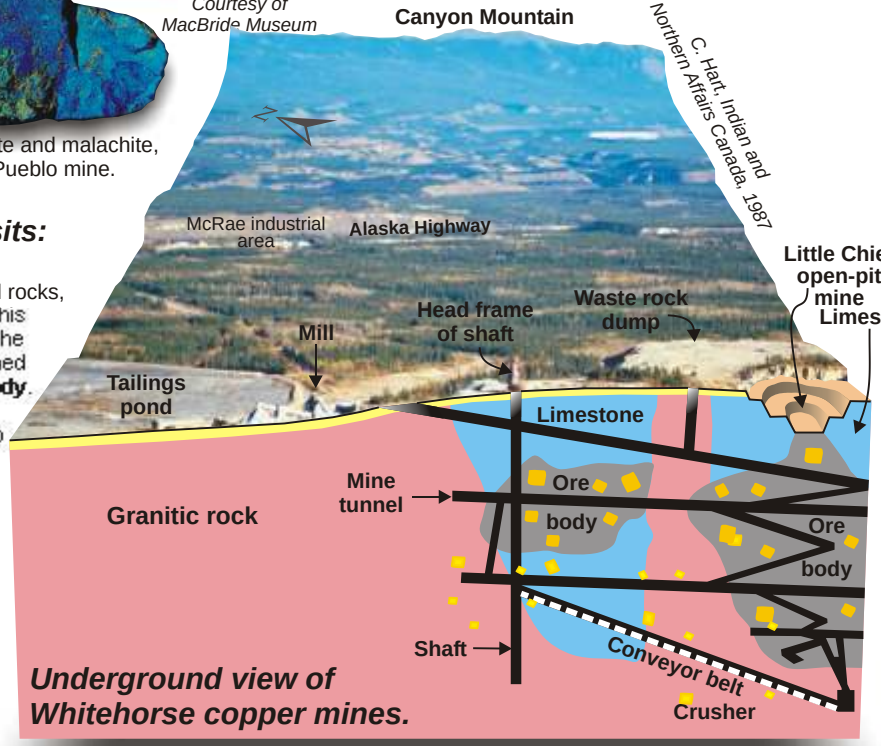


Blue and green copper ore was hand-picked from blasted rock and shipped to a smelter on Vancouver Island.

Azurite and malachite, Pueblo mine.

Mines, ores, and deposits: what's in a name?

Copper is present in small amounts in all rocks, but some Earth processes concentrate this element, producing a copper **deposit**. The part of a copper deposit that can be mined economically is referred to as an **orebody**. A **mine** consists of tunnels, open pits, buildings, and waste dumps required to extract ore and dispose of waste rock. Preliminary separation of copper-bearing minerals from waste rock is performed through crushing and density flotation in the mill buildings. Pulverized waste rock from the mill (**tailings**) is stored behind rock dams.



Underground view of Whitehorse copper mines.

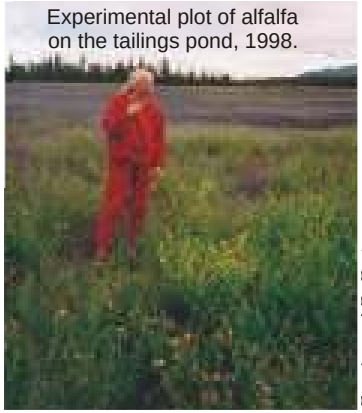
Reclaiming old wastes

All mines close when the ore minerals are too sparse to be mined at a profit. Mine buildings are removed, mine shafts are blocked, and the mine site is reclaimed to the standards of government regulatory agencies. One problematic issue is reclamation of mine tailings. Plants have not revegetated the sandy tailings that cover a ten hectare area west of McRae industrial area near the site of the old Little Chief mine. The sandy tailings retain little moisture, while abundant calcite (a mineral made of calcium carbonate) makes the soil too alkaline for plants. The loose tailings, though not toxic to humans, animals, or plants, are blown about by strong winds. However, a pilot study has shown that, when mixed with compost, the tailings support healthy vegetation.

Unvegetated tailings pond west of McRae industrial area.

Courtesy of D. Craig

Experimental plot of alfalfa on the tailings pond, 1998.



Courtesy of D. Craig