BETHLEHEM COPPER CORPORATION LTD.,
ASHCROFT, B.C.

INTRODUCTION

The Bethlehem property is located in the Highland Valley area about 28 miles southeast of Ashcroft, B.C. It consists of 256 mineral claims covering an area in excess of 10,000 acres. The open pits and milling installations are located at an elevation of approximately 4900 feet above sea level in an area of gently rolling hills, characterized by snowfalls in winter and moderate amounts of rainfall and pleasant temperature in summer.

Copper mineralization in the Highland Valley has been known since the turn of the century. In the year 1899, a group of mineral claims was staked in the area now known as the Snowstorm zone. In 1915-16, some 96 tons of hand sorted high grade ore was shipped, averaging about 0.08 oz. gold, 6 oz. silver and 30% copper per ton. Although exploration was carried on in the area off and on, it failed to demarcate any economical ore bodies.

In 1954, the Huestis-Reynolds-McLellen Syndicate did some prospecting work in the Highland Valley area and staked about 100 mineral claims in an area covering Snowstorm-Lone-Jersey zones. Bethlehem Copper Corporation Ltd. was incorporated in 1955 and the claims staked by the Syndicate were transferred to the Company. Persistant efforts of this Company to bring the property into production, backed by the faith of its originators, Mr. Huestis, Mr. Reynolds and Mr. McLellen, were finally rewarded in 1962 when the first shipment of copper concentrates was produced by Bethlehem and shipped to Japan. Today, Bethlehem operates one of the largest open-pit copper mines in B.C. and is among the major copper producers in Canada.

GEOLOGY

The Bethlehem property occurs in the Guichon batholith of lower Jurassic age. The batholith is about 40 miles long in a north-south direction and about 16 miles wide. The rock is massive, coarse textured, grey quartz diorite which is locally called the Guichon or older quartz diorite. At Bethlehem, it has been intruded by granite, a younger quartz diorite, porphyries and breccia. This assemblage of rocks has been termed the Younger Complex and are important economically in that they are the major host rocks for the mineralization.

Bethlehem Copper belongs to a class of mineralized deposits known as the "Porphyry Coppers". The Porphyry Coppers are low grade copper ore bodies found in porphritic type of rocks and are characterized by such common features as:

1. Large tonnage
2. The ore minerals occur as finely disseminated particles through the rock and as tiny hairline fracture fillings
3. The ore bearing rocks are altered, shattered and broken.
4. Intrusive breccias and volcanic dykes and flows are usually associated with them.

Mineralization at Bethlehem consists principally of chalcopyrite and bornite with minor amounts of molybdenite. Chalcopyrite and bornite occur in about equal amounts in the East Jersey zone. In the Jersey Pit, and in the Huestis and Iona Zones, the chalcopyrite and bornite ratio is approximately 60 to 40.

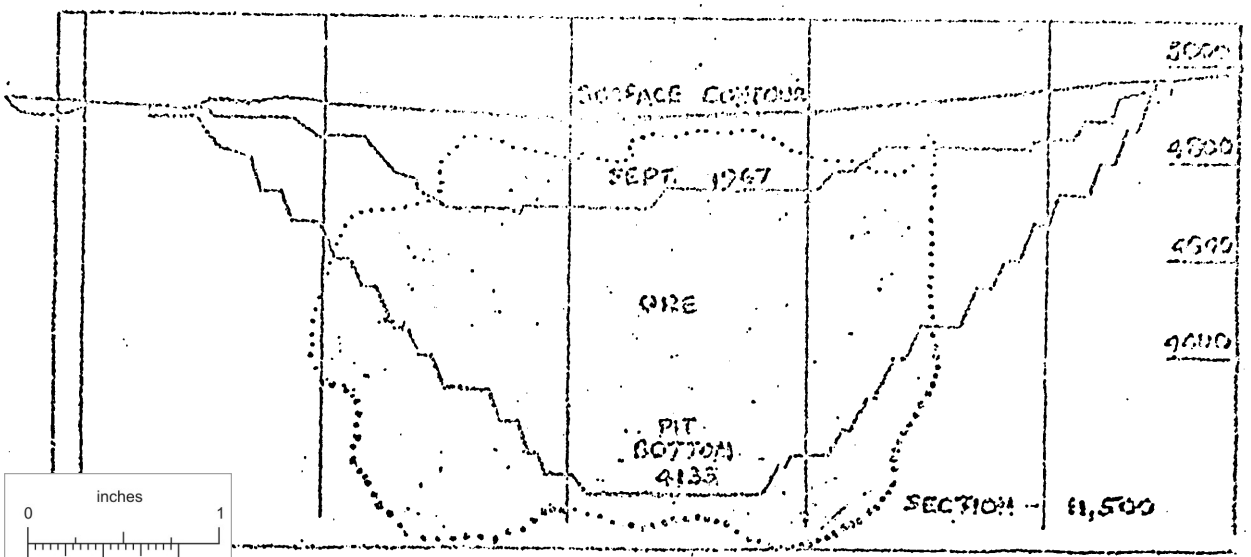
At present, a total of four commercial ore bodies have been outlined on the Bethlehem property. The East Jersey ore body was the first to be mined and was worked until 1965. The Jersey body is now being mined and has an estimated ore reserve of approximately 35,000,000 tons at an average grade of 0.60% copper. The cut-off value is .35% copper. The reserves for the Iona ore body are about 11,000,000 tons of .55% copper and the Huestis Zone reserves are estimated to be about 20,000,000 tons of .65% copper. Both the Iona and Huestis zones ore bodies will be mined by open pit in the future.

Other potential zones exist which have not been explored sufficiently to determine their limits or ore potential. These are the White, Snowstorm, Hank and Spud Lake Zones.

MINING

About 11 to 12 million tons of rock are mined per year to supply 4.5 - 5 million tons of ore per year. Mining is on a three shift basis, seven days a week.

The mining is presently being done in the Jersey Open Pit. This pit is about 3000 feet long and 2000 feet wide. The maximum depth of the pit at completion will be about 1,050 feet. The mining is done in 30 foot benches. Pit walls are sloped at a 70° angle and a 25 foot wide safety berm is left every second bench to catch any falling rock and to give added stability to the Pit walls. The following section through the designed pit gives an idea of the mining method:



A TYPICAL CROSS SECTION THRU THE JERSEY PIT.

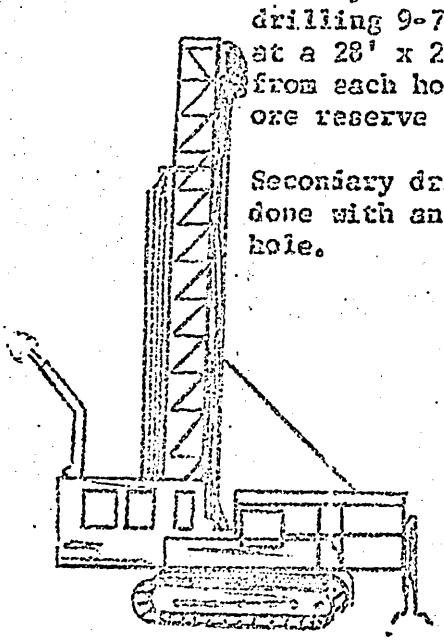
Since it is necessary to mine waste rock above and around the ore, pit limits are designed to get the most favourable waste to ore ratio.

The ore and waste hauled on roads which spiral and switch back along the pit walls at a -.10% grade.

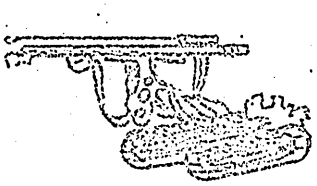
DRILLING

Primary drilling is done with a Bucyrus-Erie 45-R drill drilling 9-7/8" diameter holes. These holes are drilled at a 28' x 28' pattern to a depth of 42 feet. Drill cuttings from each hole are assayed for copper values to check the ore reserve grade and to demarcate the ore and waste areas.

Secondary drilling to trim the walls, drill toes, etc. is done with an air trac percussion drill drilling a 3" diameter hole.



45R ROTARY DRILL.



AIR TRAC DRILL

PLUGGER

BLASTING

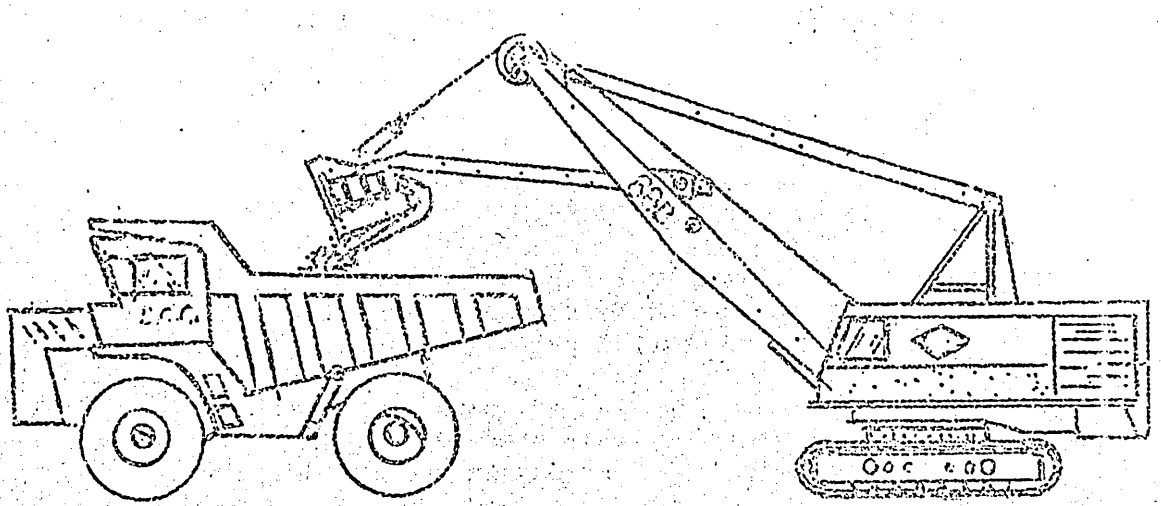
After all planned holes in an area have been drilled, they are loaded with explosives and blasted. A blast with 30 large holes contains about 43,000 tons of rock. Larger blast yield 100,000 tons or more.

All blasting is done with ammonium nitrate/fuel oil mix for explosive. The charge in a hole is primed with a stick of dynamite and detonated with a blasting cap and a detonating cord. In wet holes, hydromex is used in place of the ammonium nitrate/and fuel oil mixture.

After an area has been blasted, the engineers mark out the ore and waste sections respectively.

EXCAVATING AND HAULING

Broken rock is loaded into 50 ton trucks by a Bucyrus-Erie 88-B shovel equipped with a 5½ cubic yard bucket. There are three shovels and 12 trucks on the property: two shovels and 8 trucks work during any one shift and the remaining spare units are being serviced. A shovel loads about 6000 tons of broken rock in one shift. The ore is hauled to the crusher and the waste to a specified dump area for disposal.



5½ CU. YD. SHOVEL LOADING INTO A 50 TON HAULPAK

MISCELLANEOUS

Three bulldozers, a grader, a front-end loader and a sand truck work on the property to clean up and develop pit floors and haul roads, and dump areas. There is a heavy equipment maintenance shop on the property equipped with the latest tools and equipment where all repairs to the mining equipment are made.

CRUSHING (See Flow Sheet)

The trucks dump directly into an Allis-Chalmers gyratory crusher which takes rock up to three feet and crushes it to minus six inches. The rock then moves on a conveyor to a live-storage coarse-ore stockpile. From the bottom of the pile it is conveyed to a cone crusher, through sorting screens and other crushers which sort and reduce it in size to ½". The ½" ore goes to an enclosed fine ore stockpile with 30,000 live storage capacity

From the fine ore stockpile the ore falls through onto a conveyor in an elliptical tunnell beneath the pile. The ore moves along the conveyor to the mill which has a 14,000 ton per day capacity.

This ore has an average grade of about 0.60% copper or 12 lbs. per ton. This copper is contained in the form of sulphide minerals, chalcopyrite and bornite. In order to obtain a copper concentrate containing the copper minerals, about 98% of the waste material has to be removed from the ore. This separation of minerals and rock is accomplished in the mill by the process known as flotation.

In order to separate the minerals from the rock, the ore must be ground to very small particle size - all minus 48 mesh which is equivalent to 0.0116 inch. The ore from the fine ore stockpile goes to a series of rod mills and ball mills where it is mixed with water and chemicals and ground up into a slurry. A rod mill is essentially a cylindrical mill, about half filled up with steel rods. As the mill rotates, the rods keep dropping down and grind the rock particles to (-) 8 mesh size (.093 inch).

The slurry from the rod mill goes to a ball mill where it is further ground. A ball mill is similar to a rod mill except in so far as the grinding is done by steel balls instead of rods.

The slurry goes from the ball mill to a cyclone classifier. The coarse material is separated and sent for further grinding. After 3 stages of grinding the rock particles are so fine that 60% of them would go through a 200 mesh screen that is equivalent to a 0.0029 inches.

The slurry now goes to the flotation cells. Air is blown from the bottom of the cell. As the air bubbles rise through the slurry, the mineral particles cling to them and come up to the surface as a froth. The froth is skimmed off with a blade. Barren particles settle to the bottom and are drawn off from the bottom of the cell. Any remaining mineral particles in the bottom

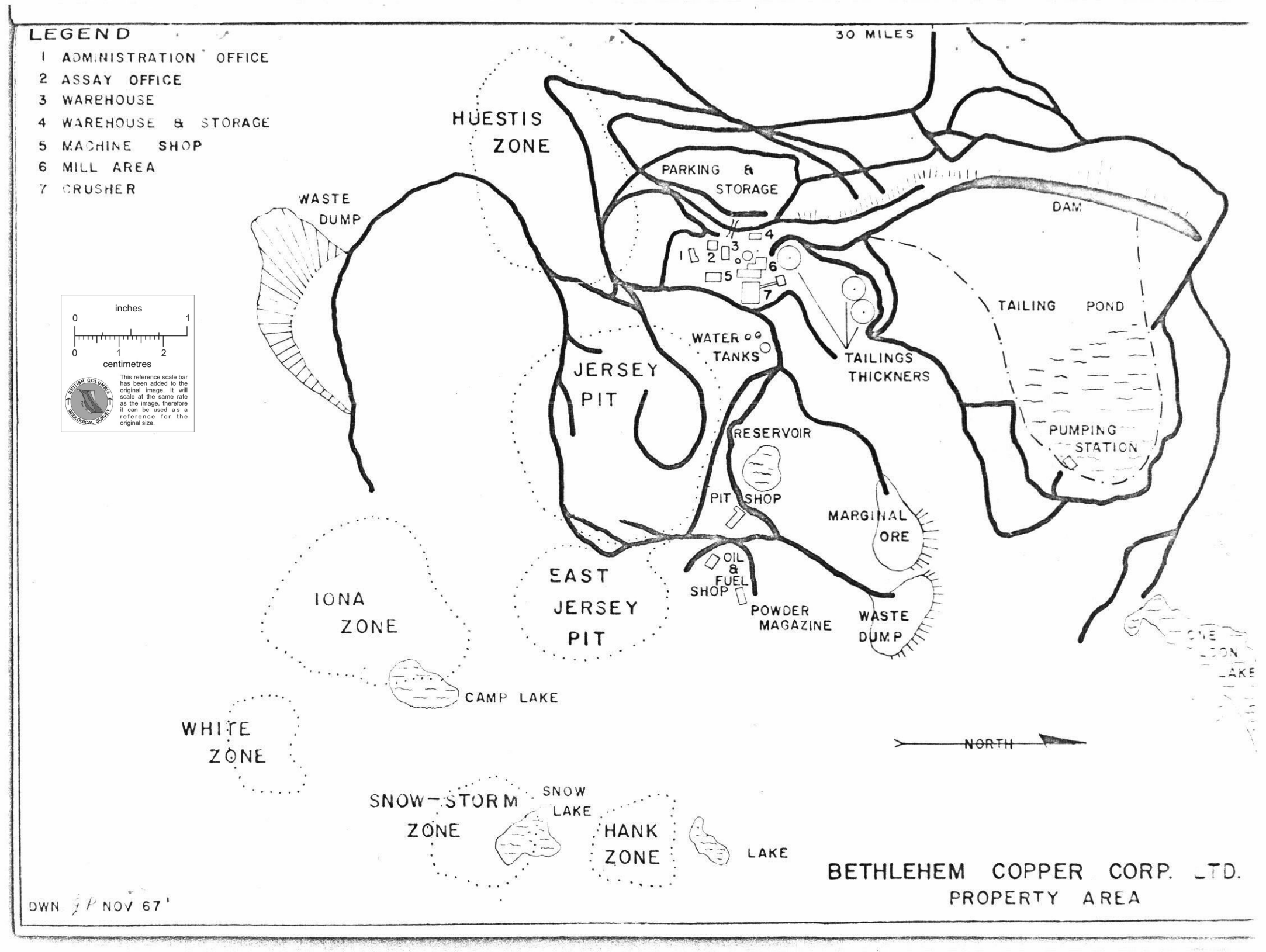
product are reflooted in further flotation cells and the barren material is discarded as tailings. It still contains about 1.5 lbs. of copper which cannot be economically extracted.

The froth from the top of the flotation cells goes thru a thickener tank to a filter. During these two stages 85% of the water is removed. The resulting filter cake is put through a dryer to obtain a concentrate containing less than 7% moisture. This concentrate contains 35 - 40% copper. It is stored in a tank and is hauled to the docks in North Vancouver where it is shipped to Japan for smelting.

It may be quite interesting to look at a few statistics to comprehend the magnitude and achievements of Bethlehem's operations. About 33,000 tons of rock are mined every day to feed 14,000 tons of ore to the mill. The mill rejects 13,800 tons of rock in tailings and produces about 200 tons of concentrate. This yields about 75 tons of pure copper at the Japanese smelter.

In producing this copper, we use 7,000,000 gallons of water per day. We consume over/0 million dollars worth of materials and supplies every year and contribute 2.00 million dollars in wages and salaries. Bethlehem has proven ore reserves to keep the mill going for the next 20 years. Our engineers foresee a lot more potential ore on the property to keep this operation going for a long time.

WE WELCOME YOU ON OUR PROPERTY AND WE HOPE YOU ENJOYED YOUR VISIT.


LEGEND
1 ADMINISTRATION OFFICE
2 ASSAY OFFICE
3 WAREHOUSE
4 WAREHOUSE & STORAGE
5 MACHINE SHOP
6 MILL AREA
7 CRUSHER
30 MILES
HUESTIS ZONE
WASTE DUMP
PARKING & STORAGE
DAM
TAILING POND
WATER TANKS
TAILINGS THICKNERS
JERSEY PIT
RESERVOIR
PUMPING STATION
PIT SHOP
MARGINAL ORE
OIL & FUEL SHOP
POWDER MAGAZINE
WASTE DUMP
EAST JERSEY PIT
IONA ZONE
CAMP LAKE
WHITE ZONE
SNOW-STORM ZONE
SNOW LAKE
HANK ZONE
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inches
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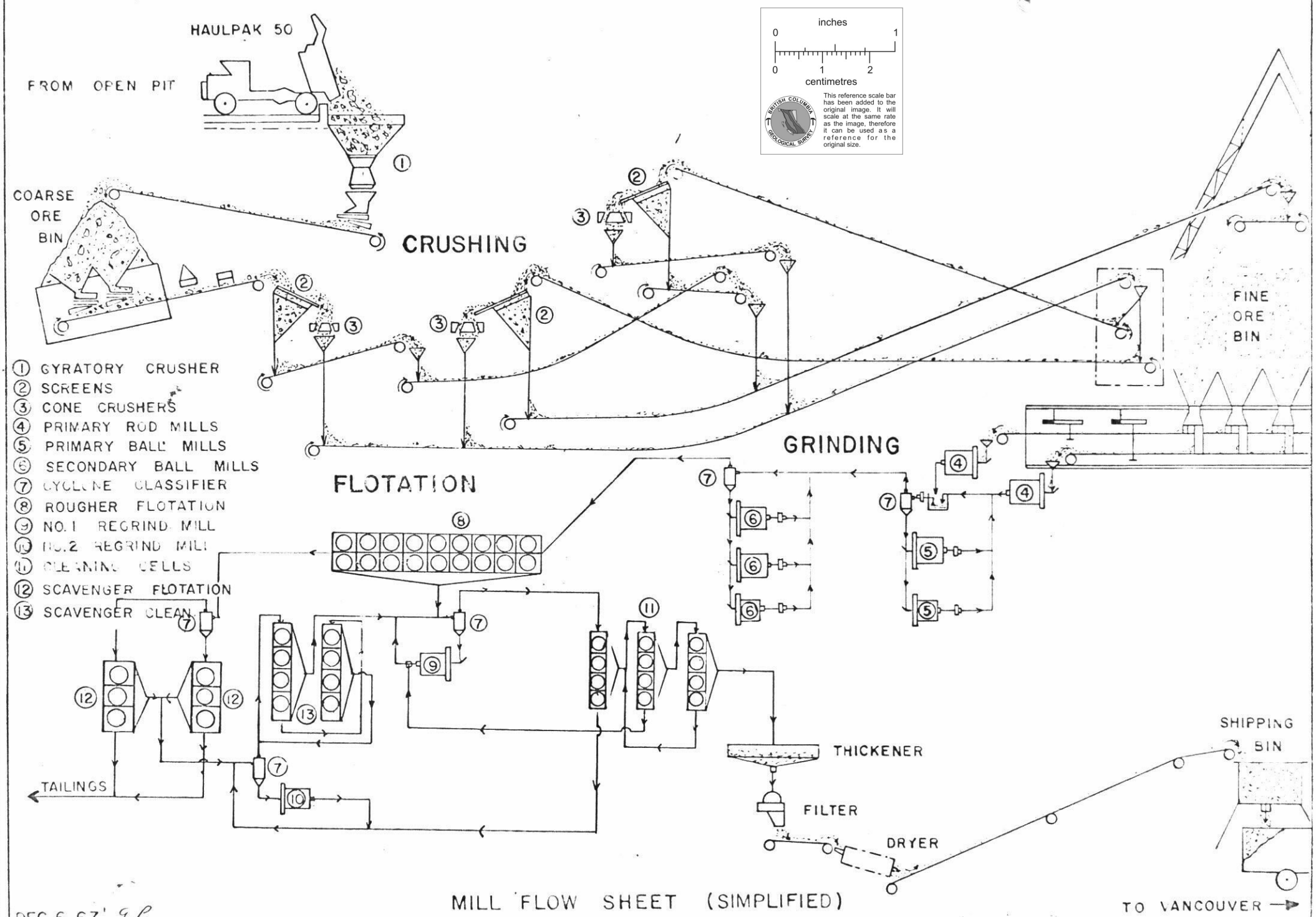
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
BETHLEHEM COPPER CORP. LTD.
PROPERTY AREA
DWN JP NOV 67'



MILL FLOW SHEET (SIMPLIFIED)

DEC. 6, 67' J.P.