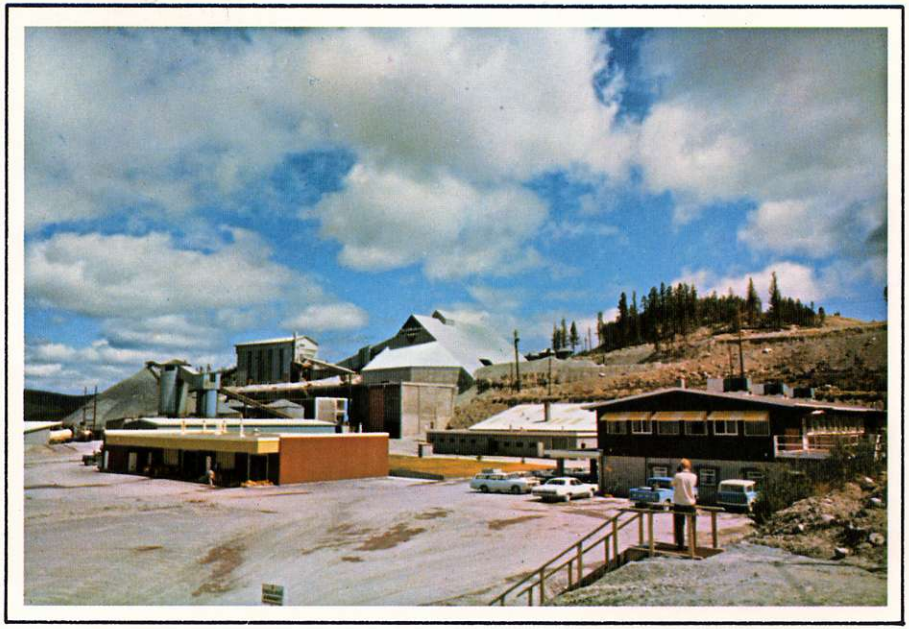


The Story of the

BETHLEHEM

HIGHLAND VALLEY COPPER MINE

Coming Together Is A Beginning;

Keeping Together Is Progress;

Working Together Is Success.

Theodore Roosevelt

BETHLEHEM COPPER CORPORATION LTD.

Head Office: Suite 2100 Guinness Tower Telephone 682-5211
1055 West Hastings Street Telex 04-507589
Vancouver 1, B.C.

Mine Office: P.O. Box 520
Ashcroft, B.C. Telephone Highland Valley 2424

FOREWORD

The Bethlehem open pit mining property is located in the Highland Valley of South Central British Columbia.

The mine itself is 27 miles southeast of Ashcroft, "Gateway to the Cariboo", and is accessible by a paved and well maintained road, mountainous and scenic.

Recognized as an example of efficient design and modern mechanization the mine encourages tourists to visit the operation and to see at first hand how careful planning can concentrate mining activity to a minimal area while at the same time provide for a high production.

In terms of economic benefit the mine means much to Canada's favourable balance of payments in world trade. It means much too, to the supply and service industries of British Columbia and it is fundamental to the economic well-being of the Village of Ashcroft - now a thriving community whose real growth began with the development of the mine.

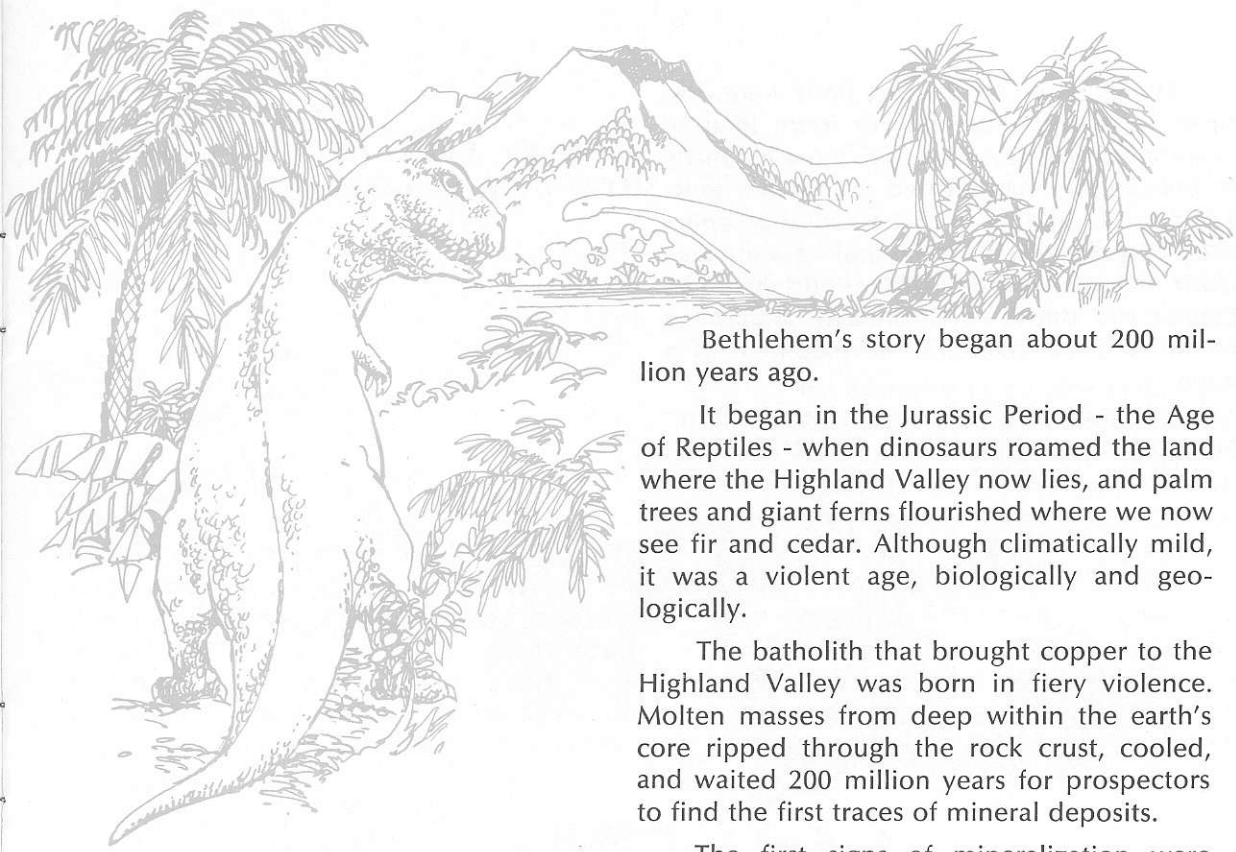
How the faith and determination of a small group of Canadians brought a dream to reality is a story in itself - a story told briefly in the following pages.

IN THE BEGINNING . . .

- There was H. H. (Spud) Huestis, a prospector who first saw a future in the low-grade mineralization of the Highland Valley.

- There was P. M. Reynolds, a chartered accountant who gave first financing and who, with Spud Huestis, staked the claims that would become the Bethlehem Mine.

- There was J. A. McLallen, a timber company executive, who, with his brother W. H. McLallen, provided much of the financing for early development.



Bethlehem's story began about 200 million years ago.

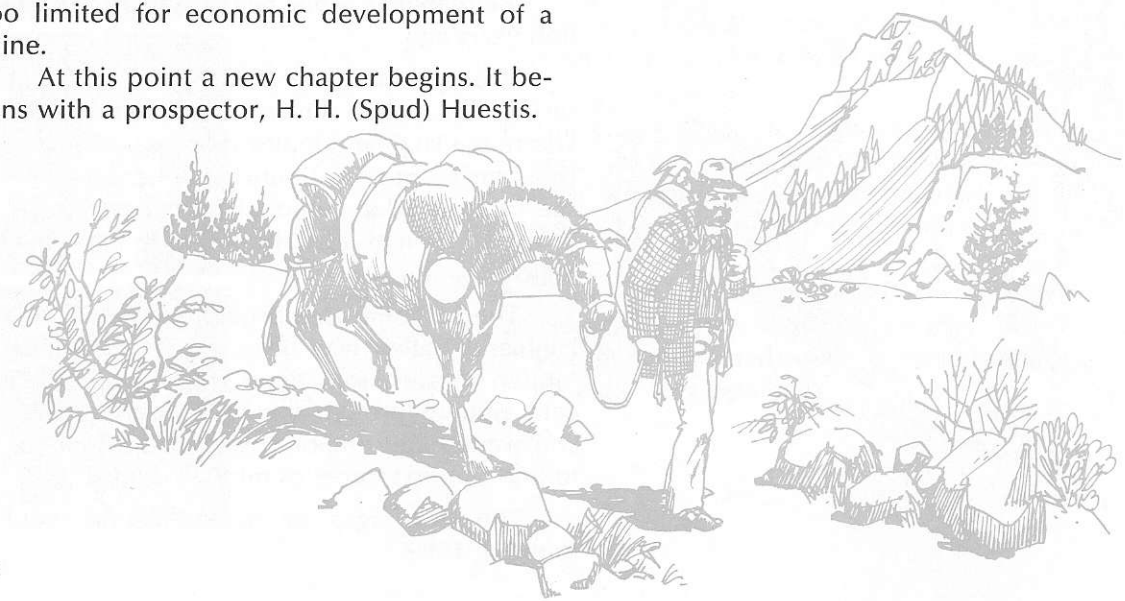
It began in the Jurassic Period - the Age of Reptiles - when dinosaurs roamed the land where the Highland Valley now lies, and palm trees and giant ferns flourished where we now see fir and cedar. Although climatically mild, it was a violent age, biologically and geologically.

The batholith that brought copper to the Highland Valley was born in fiery violence. Molten masses from deep within the earth's core ripped through the rock crust, cooled, and waited 200 million years for prospectors to find the first traces of mineral deposits.

The first signs of mineralization were found in 1899.

Hopes raised by the first finds were destined for disappointment. For more than 50 years sporadic discoveries of rich ore led many to believe they had located the mother-lode. Their hopes, like those of the earlier prospectors, ended in despair. In their discouragement they allowed their claims to lapse. The copper was there, but in meagre amounts - too limited for economic development of a mine.

At this point a new chapter begins. It begins with a prospector, H. H. (Spud) Huestis.



"No man is an island, complete unto himself." (John Donne, 1573-1631)

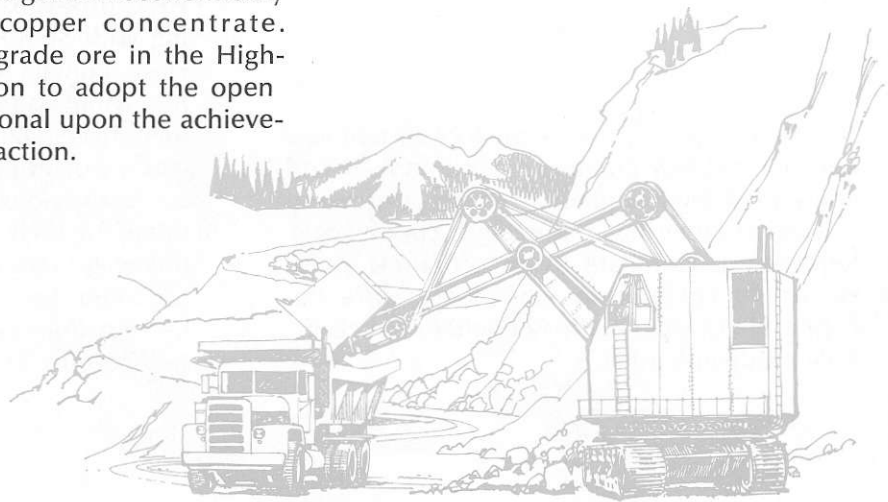
Where other prospectors looked and saw uneconomic low grade ore, Spud looked and envisioned the low grade ore being processed in such volume that the meagre copper content must accumulate to an economic yield. He would wring from the reluctant ore the copper that would make Bethlehem a successfully producing mine.

For Spud Huestis and the development of his mine, the time had come to seek assistance. That assistance came from his friend and financial advisor, Patrick M. Reynolds.

Pat Reynolds was a chartered accountant. His business had brought about his first meeting with Spud; it also had brought him into close contact with the financial world. The friendship and mutual confidence of these two men from widely different areas of interest was a powerful influence in the drive toward successful development of their potential mine. To their own resources was added the financial assistance of lumberman John A. McLallen. Thus was formed the founding partnership that established the Bethlehem Copper Corporation Ltd. in 1955.

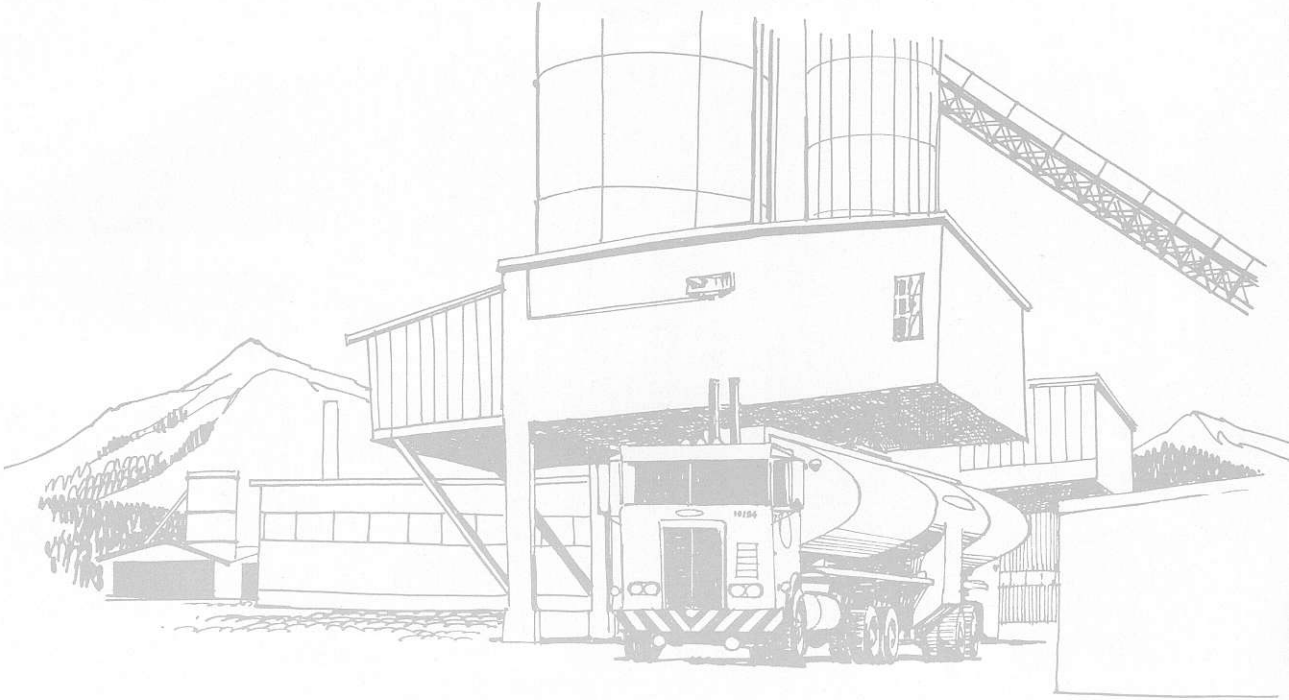
The founding of the Huestis-Reynolds-McLallen partnership marked the beginning of a long, arduous and frustrating journey - a journey that would take eight years to complete.

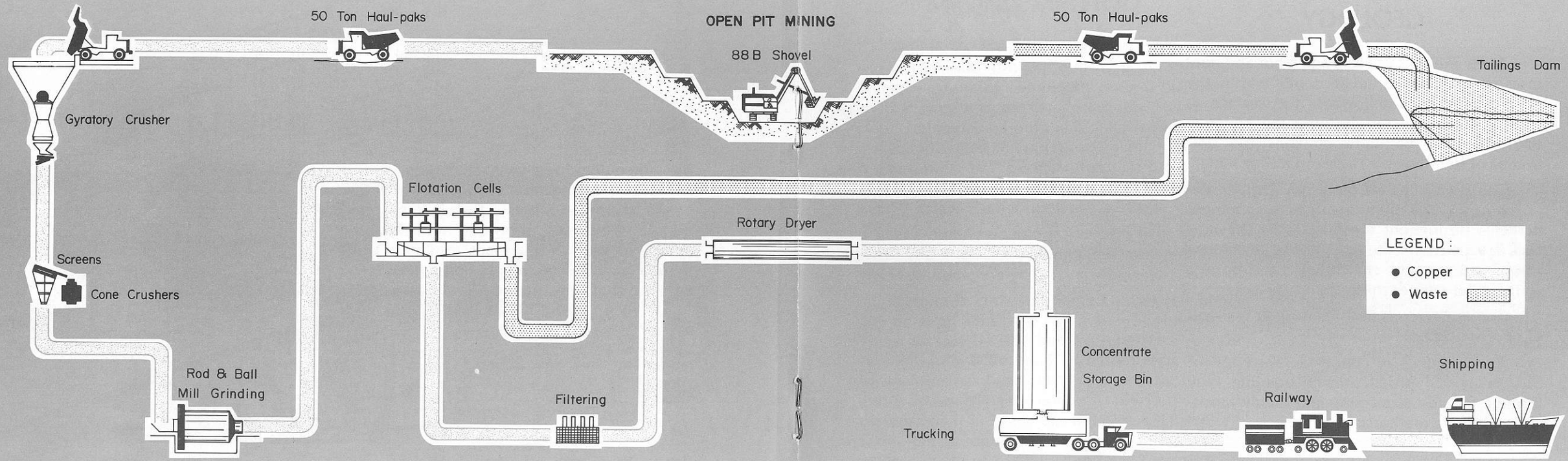
The partnership, aware of specific successful open pit mining operations in the Southwestern United States, Chile and Peru, made a detailed study of the methods that by sheer volume of processed ore gave an economically satisfactory return of copper concentrate. Faced with the lower grade ore in the Highland Valley, the decision to adopt the open pit method was conditional upon the achievement of maximum extraction.



To attain the essential efficiency would require the most modern and sophisticated equipment and highly automated processes. It would also mean heavy capital expenditure - a problem frequently encountered by new ventures. And Bethlehem's open pit operation was indeed a new venture. There was no comparable operation in Canada and Canadian investors were hesitant. An American company, ASARCO, showed some interest and made a provisional financial arrangement with Bethlehem in 1955, but by reason of its own domestic requirements terminated the agreement in 1958. Bethlehem again sought development capital from Canadian and international investment markets. It was more than two years before Japan's Sumitomo Group of Companies investigated and eventually provided the necessary funds to bring Bethlehem's mine into production.

December 1st, 1962 saw Bethlehem's first shipment of copper concentrate leave the Highland Valley. It was the beginning of the productive life of a new Canadian enterprise. The Company's success is evident by its national recognition as a major Canadian copper producer and substantial contributor to the economic well-being of Canada.




50 Ton Haul-paks
OPEN PIT MINING
88 B Shovel
50 Ton Haul-paks
Tailings Dam
Gyratory Crusher
Flotation Cells
Rotary Dryer
Screens
Cone Crushers
Rod & Ball
Mill Grinding
Filtering
Concentrate
Storage Bin
Shipping
Railway
Trucking
LEGEND :
Copper
Waste

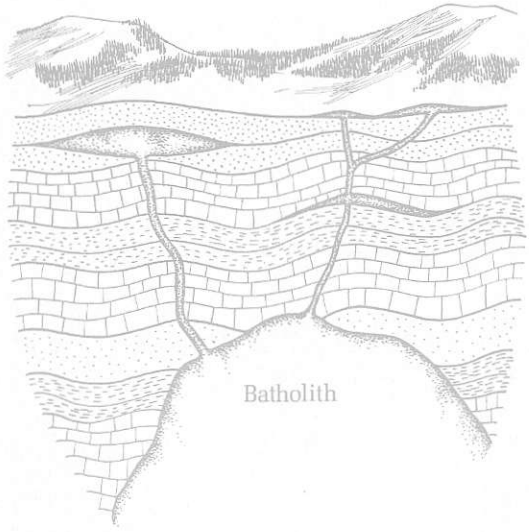
GEOLOGY

Many millions of years ago a hot and fluid mass, originating at great depth within the earth's crust, moved towards the surface. It cooled, solidified and became the Guichon Batholith. The batholith contains the orebodies of Bethlehem's Highland Valley mine.

The orebodies are porphyry copper deposits - in which the minerals exist as minute particles throughout the host rock. The host rock is a quartz-diorite, granite-like in composition, and contains chalcopyrite and bornite as the chief copper minerals.

The ore grade is low, assaying at one-half of one per cent.

At 10 pounds of copper in every ton of ore, economic production is possible only through volume processing and highly mechanized mining methods.



MINING METHOD

Mining by the open pit method, ore and waste rock are broken out in a series of benches extending completely around the pit walls at regular intervals of elevation. Step by step, commencing from the top, each bench is drilled and blasted and the broken rock is trucked either to the concentrator for processing or to a disposal area, as predetermined by copper assays for the particular section.

The mining operations involve large tonnages and require matching large-scale mechanical equipment.

Mining is currently being carried out in two open pit mines, the Jersey and the Huestis. These lie side by side but are separated by a one-half mile wide block of barren rock. The Jersey Mine has been worked since early 1965 and is approaching the end of its life. In its top dimensions it is 2,400 feet long by 1,900 feet wide. On completion the Jersey Mine will reach a depth of 1,000 feet and will have provided some 40 million tons of ore.

The Huestis Mine is a new operation. It was started in late 1970 and will develop into the main source of ore.

In the blasting operations the bench rock is drilled in 25 ft. by 25 ft. patterns of vertical holes, each 9⅞ inches in diameter and 33 feet deep. Each blast shatters upwards of 60,000 tons of rock.

Loading is carried out by 5½ cu. yd. diesel shovels and by 12 cu. yd. front end loaders.

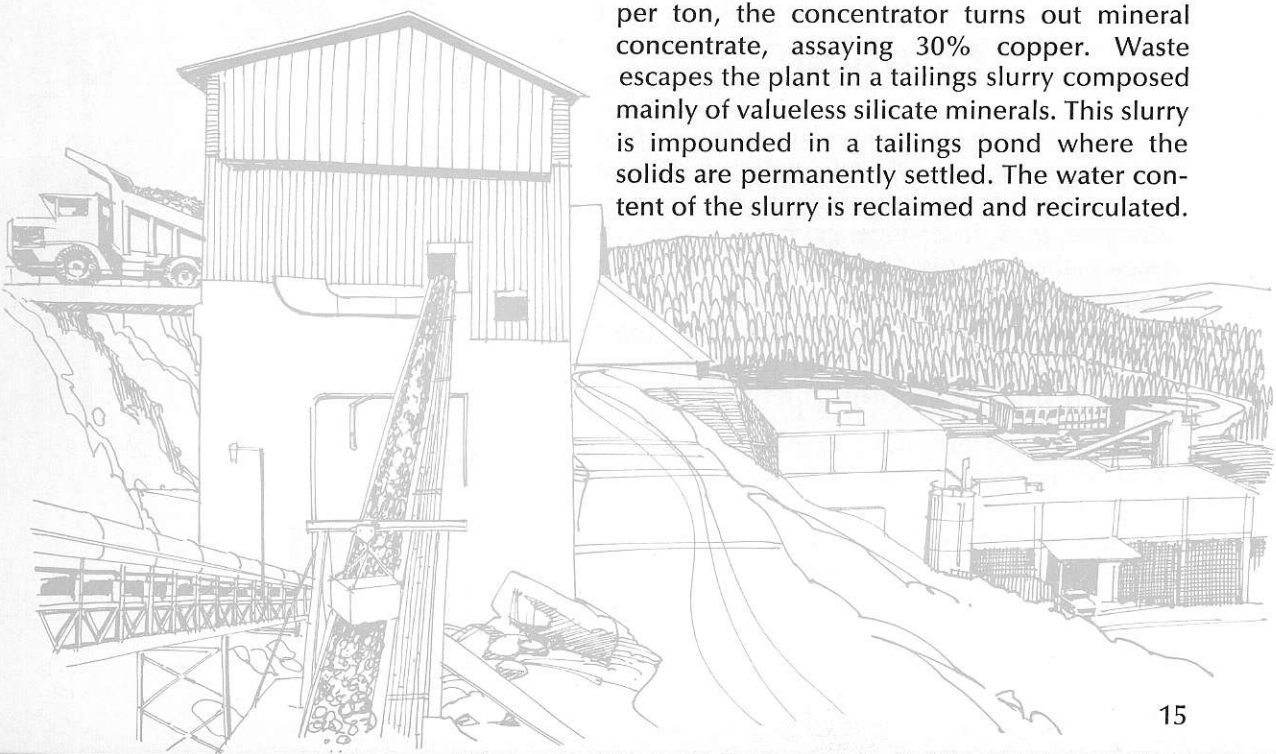
The mine operates a fleet of 17 50-ton diesel trucks with 12 of these on continuous haulage duty.

For each ton of ore taken to the crushing plant, approximately two tons of waste rock must be removed. Much of the waste rock is used in the construction of the plant tailings dam and haul roads; the remaining waste is hauled to designated disposal areas.

The entire mine operation requires close scheduling and a maximum of mobility and flexibility. Radio equipment in supervisory vehicles and departmental desk sets facilitate instant communication between any and all mine departments.

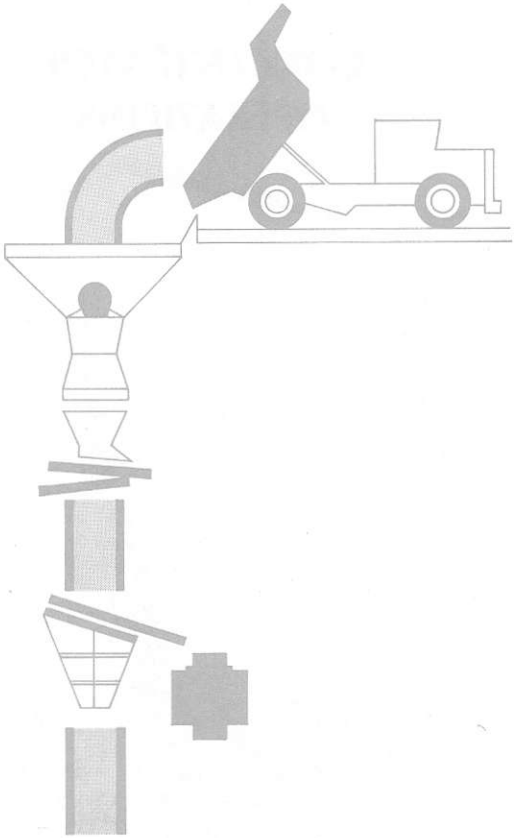
CONCENTRATOR OPERATIONS

Ore delivered to the concentrator is processed by crushing, grinding and flotation. From the daily feed, grading 10 pounds copper per ton, the concentrator turns out mineral concentrate, assaying 30% copper. Waste escapes the plant in a tailings slurry composed mainly of valueless silicate minerals. This slurry is impounded in a tailings pond where the solids are permanently settled. The water content of the slurry is reclaimed and recirculated.

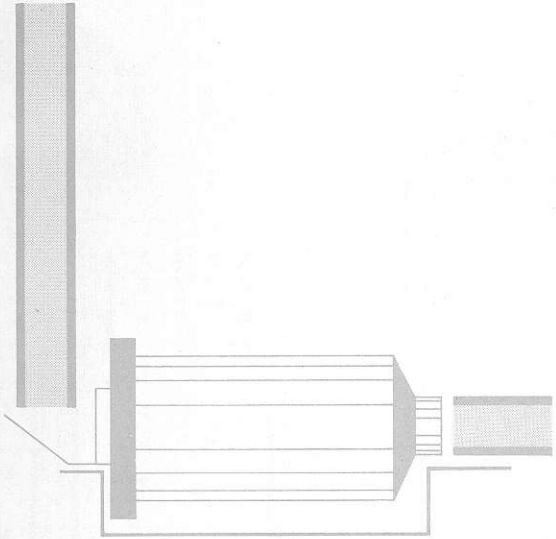


CRUSHING

Crushing is carried out in a three-stage plant housed in a separate building. Pit-run ore, sizing up to three feet in diameter, is dumped in a first stage gyratory crusher. It passes through two further stages of cone crushing, exits as a minus one-half inch product and is conveyed to a fine ore bin. From a tunnel under the fine ore bin two conveyors carry the ore into the plant grinding bay.



GRINDING

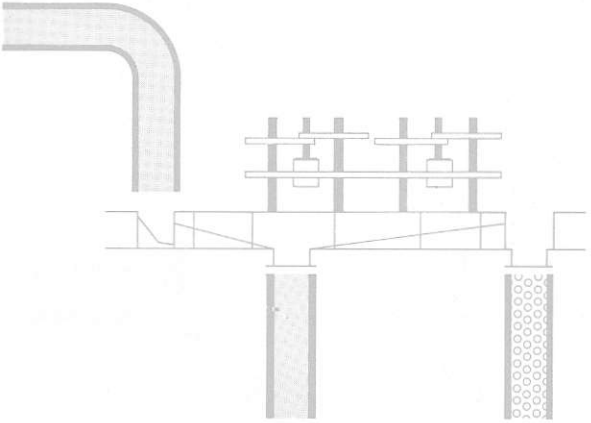


Grinding to suitable consistency is accomplished in seven main grinding mills arranged in three stages. The crushed ore is slurried with water as it enters a first stage of two rod mills. It is discharged as a pulp sizing minus 0.10 inches. Two stages of ball mill grinding then take the pulp to a finished size of minus 0.015 inches. At this point the recoverable copper has broken free of waste rock and is ready for separation and concentration.

The seven grinding mills are similar in that all have large steel shells with end feeding and discharge openings. Each shell is rotated about a horizontal axis by an electric motor drive system. However, a rod mill carries a charge of loose steel rods which tumble within the rotating shell, whereas a ball mill is loaded with a charge of loose solid steel balls.

FLOTATION

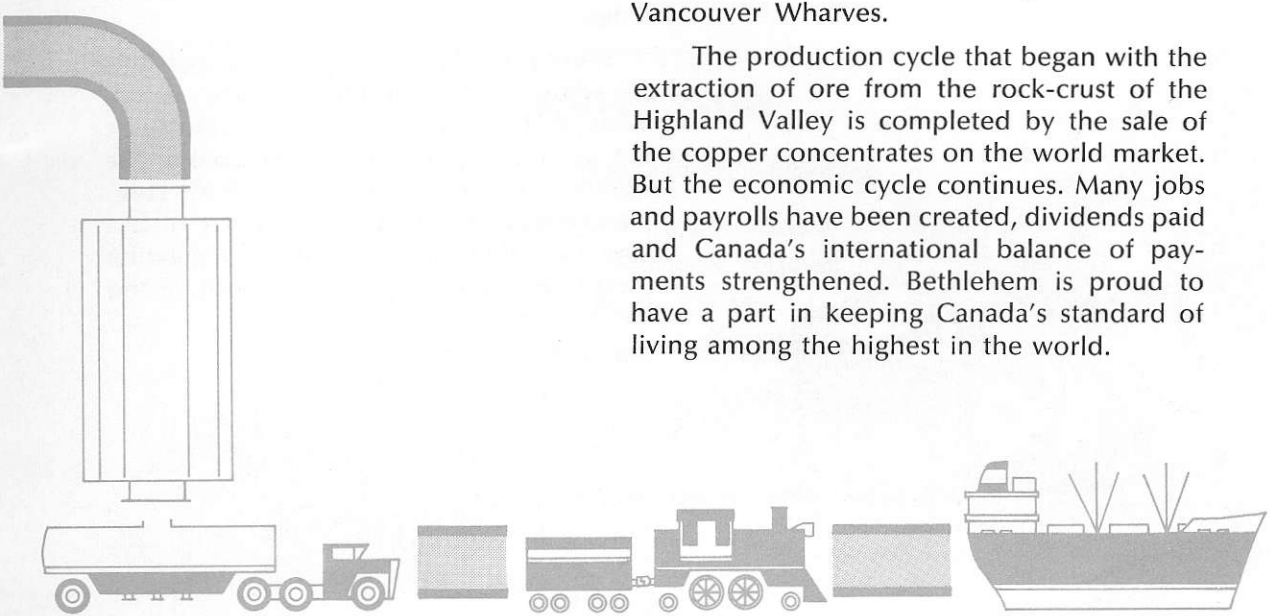
Flotation is employed to separate the copper mineral particles from the accompanying waste minerals. In this process a minute quantity of organic chemical is introduced to the ground pulp. It selectively coats the copper particles with a molecular oil-like film, endowing these particles with an affinity for an air surface. With the aid of a frothing agent, the flotation machine injects a mass of small air bubbles into the mineral pulp slurry. Rising bubbles collect the copper minerals and surface in a layer of loaded froth. The froth is continuously removed and led through other similar flotation stages. The waste minerals are not collected and pass through the flotation plant and out to the tailings pond.



One primary or "roughing" stage and three "cleaning" stages of flotation are necessary to produce a concentrate meeting the required copper purity standard. The concentrate froth is dewatered by the three operations of thickener settling, vacuum filtration and kiln drying.

The resulting plant product, carrying an eight-to-nine percent moisture content, is binned for truck and rail shipment to the Vancouver Wharves.

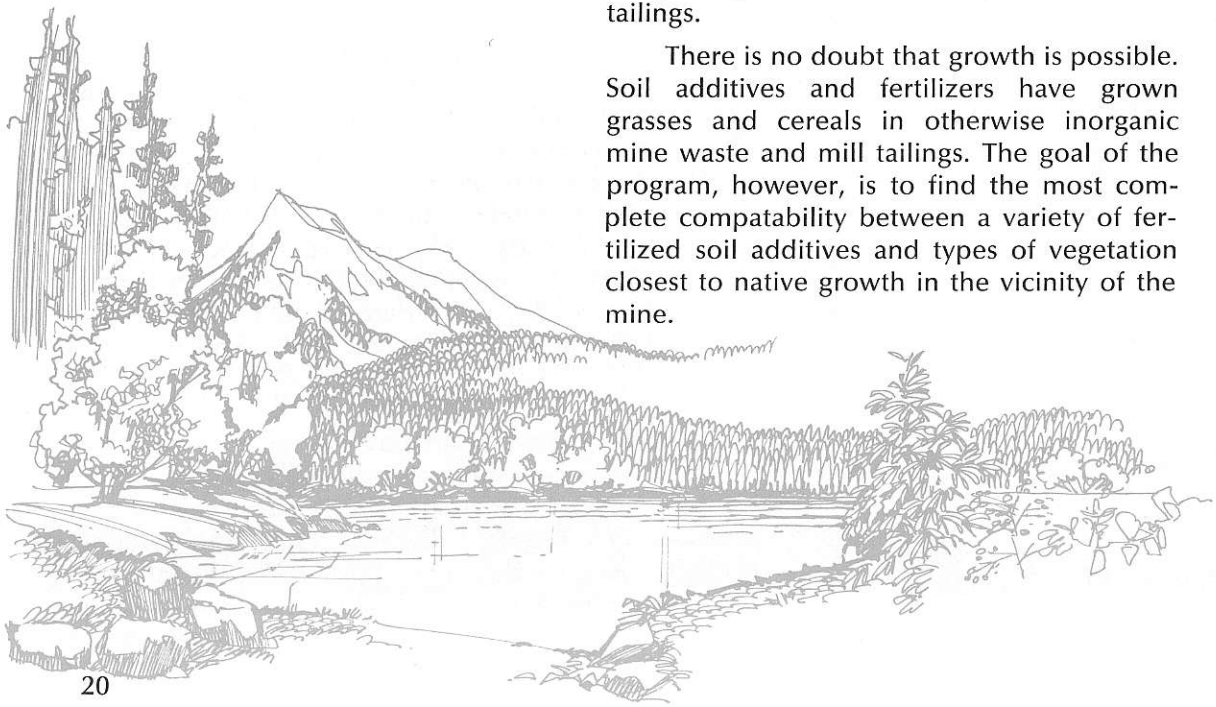
The production cycle that began with the extraction of ore from the rock-crust of the Highland Valley is completed by the sale of the copper concentrates on the world market. But the economic cycle continues. Many jobs and payrolls have been created, dividends paid and Canada's international balance of payments strengthened. Bethlehem is proud to have a part in keeping Canada's standard of living among the highest in the world.



RECLAMATION PROGRAM

A continuing research program will establish plant growth on both mine waste and mill tailings.

There is no doubt that growth is possible. Soil additives and fertilizers have grown grasses and cereals in otherwise inorganic mine waste and mill tailings. The goal of the program, however, is to find the most complete compatability between a variety of fertilized soil additives and types of vegetation closest to native growth in the vicinity of the mine.




INVITATION
THE MINE WELCOMES VISITORS
SCHEDULED DAILY TOURS
MONDAY THROUGH FRIDAY
11 A.M. & 2 P.M.

Ore Sample from the Bethlehem Highland Valley Copper Mine

Michael White
McGill
Makkovik
M.Sc.
Fall 1972

Valley Copper 800-1 bill tons ~ 0.48% Cu
Lornex 300 mill
.42% Ca
.014% Mo

Highmont 150 mill tons
.2%
.015 MoS_2

J. A. - Zone
found
1971
during course of
systematic
drilling
program
of overburden
areas in
Highland Valley
Bethlehem Copper
deposit

1972 P&D
Convention
Talk on Tar Zan

320' to 800'
SE on west
of overburden
possibly
up to 1200'
of overburden

initial expenditure
$2 mill to
June '72
feasibility study
complete by
June or Dec.

- cracked zone

- block caving or open pit mining are conceivable

- drilling to date
  61,000' - 37 holes
  (1,560' av. depth)
  4800 X 2000'
  mine
  > 300 ~~Mton~~
  .54% Cu
  to date open in all directions
  100 mell + Mo
  .6% Cu .165%

Bethsaida

qz monz

Core of batholith

1 to 5

bn to cp

increase near
core of deposit
of bn

- 6 holes a week
completed on deposit

southerly > 2% py
high py in NE in
area of low Cu

peripheral ⇒ erratic grade
– cp, chl, ser, t-spar
are it / main
alt mins
hem.
mer zone
↓
Souther part of dep pfso core

Zeolite
anhydrite
& gypsum
~~these at~~
~~then margin~~
~~only~~
are also fracture
filling with
e
(young) without Qtz

1. ccp-bn veins
low qz
2. high " "
3. moly without qz
4. moly with qz