

PRELIMINARY EVALUATION  
OF THE  
CARIBOO-BELL PROPERTY

CARIBOO MINING DIVISION, B. C.

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July, 1972

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SUMMARY

I have prepared an economic evaluation of the Cariboo-Bell Property based on preliminary information and order-of-magnitude cost estimates.

The property is a large one consisting of 158 contiguous claims between Bootjack and Polley Lakes in the Cariboo Mining Division.

Work from 1964 through 1970 has outlined two zones of copper mineralization with minor gold content. Mineable tonnage is estimated at 30,000,000 tons of 0.49% Cu with good potential for expansion.

There is considerable oxide copper present and metallurgical research is required to achieve economic recovery.

Various cash flows are attached and the results are as follows:

L M E Price Cu	(\$000)		
	<u>51¢</u>	<u>55¢</u>	<u>60¢</u>
Property rate of return (13 year life)	6½%	9¼%	12¼%
Duration of loan retirement	-	11.5	8.5
Net Cash Flow (after tax)	-	4,156	12,796
PV of NCF @ 10%	-	1,246	4,438
Property Cash Flow (includes loan retirement)	38,663	42,562	47,560

## PART I

### LOCATION

The property consists of approximately 160 mining claims located 36 miles northeast of the town of Williams Lake, British Columbia. The area of economic interest lies just west of Mt. Polley (elev. 4,130 ft.) and between Bootjack Lake and Polley Lake. See attached map.

### ACCESS, POWER, & WATER

The property can be reached via 55 miles of good gravel road from the paved Cariboo Highway at Williams Lake.

A 33 mile, 138 KV power line would be required between the property and the main B. C. Hydro line running north from Williams Lake.

Plant process water would probably be pumped from Bootjack Lake. Concentrate would be hauled by truck 55 miles to the P.G.E. railhead just south of Williams Lake.

### ORE RESERVE

Diamond drilling and surface trenching have outlined two mineralized zones occurring in a brecciated monzonite or dioritic igneous rock. Preliminary mineable reserves using a 0.3% Cu cut-off have been calculated as follows:

	<u>Zone 2</u>	<u>Zone 3</u>	<u>Total</u>
Ore (tons)	11,236,000	16,470,000	27,706,000
Waste	21,720,000	45,730,000	67,706,000
Waste/Ore ratio	1.9 to 1.0	2.8 to 1.0	2.4 to 1.0
Grade % Cu	0.47	0.51	0.49

The indicated gold content of both zones is 0.025 oz. per ton.

The principal copper mineral is chalcopyrite with minor bornite and pyrite. There is considerable secondary or soluble copper content. Roughly 20 to 30 percent of the total copper may occur in this form.

## MINING

About 20 ft. of overburden is present and both deposits should lend themselves well to efficient mining on gentle, side hill slopes. The two pits will ultimately merge to a final area of 1,200 ft. x 3,200 ft. at surface. Zone No. 2 will have an ultimate depth of 400 ft. and Zone No. 3 will go down to 700 ft.

At this stage, there does not appear to be a high grade portion enabling any substantial tonnage of better than average grade material to be mined in the early years. The southern portion of Zone No. 2 can be mined first to give slightly better grade material in the first two years with a lower stripping ratio. There is ample room for waste dumps.

## METALLURGY

The soluble copper content poses a metallurgical problem. No conventional sulphidization or flotation process has shown any promise in metallurgical testing. It is hoped that a new process, such as being developed by the Booth Co. in Salt Lake City, will ultimately achieve good recovery. For this evaluation, I have assumed 90% recovery and a slightly higher concentrate operating and capital cost as indicated by a Booth metallurgist.

## PLANTSITE

The 6,000 tpd concentrator and ancillary buildings could be located at the south end of Bootjack Lake at 3,200 ft. elev. The primary crusher would be adjacent to the pits at about 3,500 ft. elv. with a 3,500 ft. downhill conveyor run to the mill.

Although our knowledge of the topography outside the drilled area is rather limited there appears to be a suitable area for tailing disposal 10,000 ft. southeast of the plantsite.

PART II

ECONOMIC EVALUATION

1. ASSUMPTIONS

- a. Mill throughput of 6,000 tons per day or 2,100,000 tons per year for 13 years.
- b. Grade of 0.6% Cu the first year; 0.5% next three years; 0.4% in year five; 0.49% Cu thereafter. Assume 90% recovery.
- c. Gold content of 0.025 oz/ton. Use \$50 gold, 75% recovery and 95% smelter payment.
- d. No escalation in costs due to inflation.
- e. All debt financing at 8% interest. Total loan of \$25,723,000.

2. OPERATING COST ESTIMATE

Years	<u>1 - 2</u>	<u>3 - 8</u>	<u>9 - 13</u>
Mining (per ton mined)	\$0.29	\$0.31	\$0.33
Mining (per ton milled)	0.87	1.25	0.92
Milling	1.00	1.00	1.00
Administration and Overhead	<u>0.60</u>	<u>0.60</u>	<u>0.60</u>
Total (per ton milled)	\$2.47	\$2.85	\$2.52

### 3. CAPITAL COST ESTIMATE (\$000)

#### 6000 TPD PLANT

Design and Research		\$	750
Open Pit			
Stripping 1.1 million yds. @ 90¢	\$	990	
Mining ½ million tons rock @ 40¢		200	1,190
Mining equipment		3,900	3,900
Concentrator (including Primary Crushing) @ \$1,300/ton capacity			7,800
Tailing disposal			1,400
Power Line			
33 mi. @ \$25,000		830	
Distribution		500	1,330
Water System			700
Ancillary Buildings			900
Preproduction General Expense including site development			1,400
Roads & housing			<u>800</u>
Sub-total			\$20,170
Contingency @ 10%			2,002
Inventory			500
Working Capital			1,361
Preproduction interest			<u>1,450</u>
TOTAL			<u><u>\$25,723</u></u>

4. REVENUE

1. With gold at \$50 per oz., recovery of 75% and smelter payment for 90%, net recoverable value of gold in ore is 85¢ per ton.
2. The following net values, per lb. of copper produced, shall apply:

L M E Price	<u>50¢</u>	<u>55¢</u>	<u>60¢</u>
<u>Deduct</u>			
Smelting and refining	11.5	12.0	12.5
Freight and handling	<u>1.4</u>	<u>1.4</u>	<u>1.4</u>
	12.9¢	13.4¢	13.9¢
Net return/lb. produced	37.1¢	41.6¢	46.1¢

5. CASH FLOWS

Three cash flows are attached.

## COPPER \$0.51 U.S.

- (1). \$25,723,000 OF US DEBT FINANCING.  
 (2). COPPER AT LME \$0.5105, GOLD \$50., SILVER \$1.50  
 (3). PREPRODUCTION EXPENSE \$5,674,000; DFP \$16,854,000.  
 (4). MILLING ASSETS \$6,800,000; EARNED DEP \$7,434,000.  
 (5) ALL FIGURES IN THOUSANDS UNLESS OTHERWISE NOTED (\$CAN.)  
 (6). CUELL: US/CAN DOLLAR PARITY. GOLD & SILVER AT \$1.85/T MILLED.

YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
OPERATING COST PER TON MILLED PRODUCTION-LOS COPPER	2.47	2.47	2.44	2.44	2.44	2.43	2.43	2.43	2.52	2.52	2.52	2.52	2.52	0.0	0.0	242916
GROSS REVENUE-FROM COPPER AND SILVER	8641	7201	7201	7201	5761	7068	7068	7068	7068	7068	7068	7068	7068	0	0	92549
-FROM GOLD AND SILVER	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	0	0	23400
-TOTAL (1)	10441	9001	9001	9001	7561	8868	8868	8868	8868	8868	8868	8868	8868	0	0	115949
OPERATING COST-MINING, ADM., ETC.	5187	5187	5964	5964	5964	5943	5943	5943	5300	5300	5300	5300	5300	0	0	72595
-INTEREST SENIOR (2)	2058	1826	1683	1591	1491	1494	1465	1364	1255	1086	967	775	575	0	0	17635
-TOTAL (3)	7245	7013	7647	7555	7455	7442	7408	7307	6555	6386	6267	6075	5675	0	0	90230
DOP (1-3) LESS-PROV. PREPRODUCTION ALLOW.	3196	1988	490	0	0	0	0	0	0	0	0	0	0	0	0	5674
-CAPITAL COST ALLOWANCE	0	0	864	1446	106	1426	1460	1561	2313	2482	2601	2008	1466	0	0	17733
-PROCESSING ALLOWANCE	0	0	0	0	0	0	0	0	0	0	0	196	229	0	0	425
TAXABLE PROFIT (PROVINCIAL)	0	0	0	0	0	0	0	0	0	0	0	549	1296	0	0	1887
BC MINING TAX	0	0	0	0	0	0	0	0	0	0	0	68	194	0	0	282
GCP (1-3) LESS-PROPRODUCTION ALLOW.	0	0	0	0	0	0	0	0	0	0	738	2544	2392	0	0	5674
-CAPITAL COST ALLOW.	3196	1988	1354	1446	106	1426	1460	1561	2313	2482	1863	249	131	0	0	19575
-EARNED DEPLETION	0	0	0	0	0	0	0	0	0	0	0	0	156	0	0	156
FEDERAL TAXABLE PROFIT ON MINING	0	0	0	0	0	0	0	0	0	0	0	0	314	0	0	314
FEDERAL INCOME TAX	0	0	0	0	0	0	0	0	0	0	0	0	109	0	0	109
AFTER TAX CASH GENERATED (4)	3196	1988	1354	1446	106	1426	1460	1561	2313	2482	2601	2705	2690	0	0	25328
LESS-ASSET ACQUISITIONS (5)	300	200	200	200	200	1000	200	200	200	1000	200	200	200	0	0	4300
-SENIOR DEBT RET. (100% OF ACF)	2896	1788	1154	1246	0	426	1260	1361	2113	1482	2401	2505	2490	0	0	21122
NET CASH FLOW (NCF)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PV OF ACF (10% DISCOUNT FACTOR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROPERTY CASH FLOW (2+4-5)	4954	3614	2637	2837	1397	1925	2725	2725	3368	2568	3368	3280	3065	0	0	38663

PROPERTY RATE OF RETURN (3) 6.80



COPPER @ \$0.55 U.S.

211055

- (1). \$25,723,000 OF LN DEBT FINANCING.  
 (2). COPPER AT LME \$0.55/U.S., GOLD \$50., SILVER \$1.50  
 (3). REPRODUCTION EXPENSE \$5,674,000; DEP \$16,454,000.  
 (4). MILLING ASSETS \$8,500,000; CARNED DEP \$7,434,000.  
 (5) ALL FIGURES IN THOUSANDS UNLESS OTHERWISE NOTED (\$CAN.)  
 (6). C/BELL; US/CAN DOLLAR PARITY; GOLD & SILVER AT \$405/T MILLED.

YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
OPERATING COST PER TON MILLED	2.47	2.47	2.84	2.84	2.84	2.83	2.83	2.83	2.52	2.52	2.52	2.52	2.52	0.0	0.0	
PRODUCTION-LBS COPPER	22680	18900	18900	18900	15120	18552	18552	18552	18552	18552	18552	18552	18552	0	0	242916
GROSS REVENUE-FROM COPPER AND SILVER	9435	7862	7862	7862	6290	7718	7718	7718	7718	7718	7718	7718	7718	0	0	101055
-FROM GOLD AND SILVER	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	0	0	23400
-TOTAL (1)	11235	9662	9662	9662	8090	9518	9518	9518	9518	9518	9518	9518	9518	0	0	124455
OPERATING COST-MINING, ADM., ETC.	5187	5187	5964	5964	5964	5943	5943	5943	5300	5300	5300	5300	5300	0	0	72595
-INTEREST SENIOR (2)	2058	1703	1562	1407	1240	1185	1073	884	641	443	287	85	0	0	0	12683
-TOTAL (3)	7245	6950	7526	7371	7204	7128	7016	6832	5991	5743	5587	5385	5300	0	0	85278
CCP (1-3) LESS-PRDV. REPRODUCTION ALLOW.	3990	1684	0	0	0	0	0	0	0	0	0	0	0	0	0	5674
-CAPITAL COST ALLOWANCE	0	1028	2136	2291	886	2390	2502	2436	1765	1536	1135	855	658	0	0	19618
-PROCESSING ALLOWANCE	0	0	0	0	0	0	0	162	264	335	419	451	533	0	0	2204
TAXABLE PROFIT (PROVINCIAL)	0	0	0	0	0	0	0	86	1498	1904	2377	2787	3027	0	0	11681
BC MINING TAX	0	0	0	0	0	0	0	13	224	285	356	418	454	0	0	1750
CCP (1-3) LESS-REPRODUCTION ALLOW.	0	0	0	0	0	0	0	1199	3396	1079	0	0	0	0	0	5674
-CAPITAL COST ALLOW.	3990	2712	2136	2291	886	2390	2502	1487	131	371	299	249	131	0	0	19575
-EARNED DEPLETION	0	0	0	0	0	0	0	0	0	775	1210	1254	1362	0	0	4641
FEDERAL TAXABLE PROFIT ON MINING	0	0	0	0	0	0	0	0	0	1550	2422	2590	2725	0	0	9287
FEDERAL INCOME TAX	0	0	0	0	0	0	0	0	0	542	847	906	953	0	0	3248
AFTER TAX CASH GENERATED (4)	3990	2712	2136	2291	886	2390	2502	2673	3303	2348	2728	2809	2811	0	0	34179
LESS-ASSET ACQUISITIONS (5)	300	200	200	200	200	1000	200	200	200	1000	200	200	200	0	0	4300
-SENIOR DEBT RET. (100% OF NCF)	3690	2512	1936	2091	686	1390	2302	2473	3103	1948	2528	1064	0	0	0	25723
NET CASH FLOW (NCF)	0	0	0	0	0	0	0	0	0	0	0	1545	2611	0	0	4156
PV OF NCF (10% DISCOUNT FACTOR)	0	0	0	0	0	0	0	0	0	0	0	492	754	0	0	1246
PROPERTY CASH FLOW (2+4-5)	5748	4275	3498	3498	1926	2575	3375	3362	3794	2391	2815	2694	2611	0	0	42562

PROPERTY RATE OF RETURN (3) 9.25

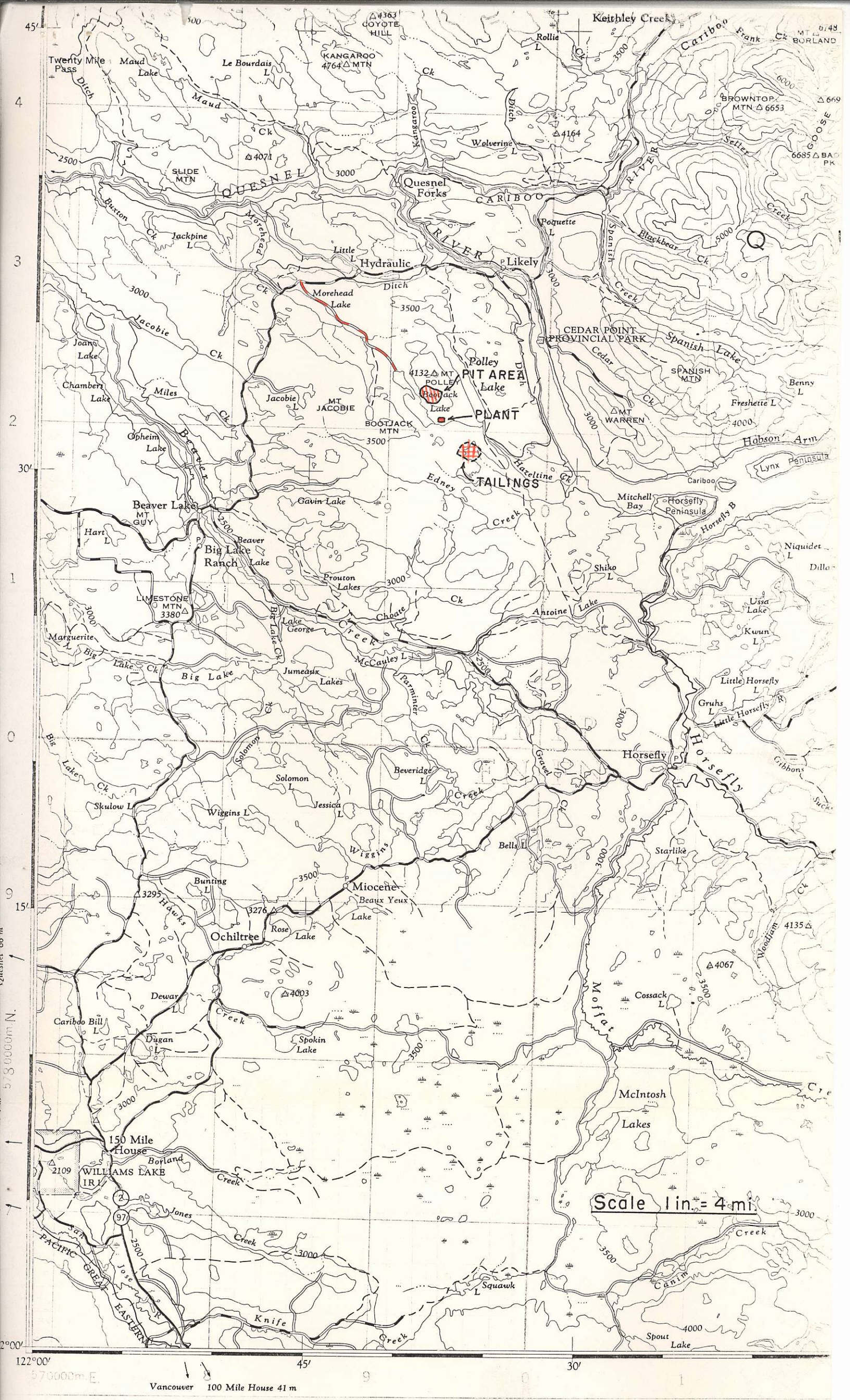
## COPPER @ \$0.60 U.S.

(1). \$25,723,000 OF FX DEBT FINANCING.  
 (2). COPPER AT LME \$0.60/US. GOLD \$50. SILVER \$1.50  
 (3). PREPRODUCTION EXPENSE \$5,274,000; DEP \$16,854,000.  
 (4). MILLING ASSETS \$8,500,000; EARNED DEP \$7,434,000.  
 (5) ALL FIGURES IN THOUSANDS UNLESS OTHERWISE NOTED (\$CAN.)  
 (6). C'BELL; US/CAN DOLLAR PARITY; GOLD & SILVER AT 1.45/1T MILLED.

YEAR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
OPERATING COST PER TON MILLED	2.47	2.47	2.84	2.84	2.84	2.83	2.83	2.83	2.52	2.52	2.52	2.52	2.52	0.0	0.0	
PRODUCTION-LPS COPPER	22680	18900	18900	18900	15120	18552	18552	18552	18552	18552	18552	18552	18552	0	0	242916
GROSS REVENUE-FROM COPPER AND SILVER	10455	8713	8713	8713	6970	8552	8552	8552	8552	8552	8552	8552	8552	0	0	111980
-FROM GOLD AND SILVER	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	0	0	23400
-TOTAL (1)	12255	10513	10513	10513	8770	10352	10352	10352	10352	10352	10352	10352	10352	0	0	135380
OPERATING COST-MINING, ACP., ETC.	5187	5187	5964	5964	5964	5943	5943	5943	5300	5300	5300	5300	5300	0	0	72595
-INTEREST SENIOR (2)	2058	1681	1405	1170	916	780	583	329	119	0	0	0	0	0	0	9041
-TOTAL (3)	7245	6868	7369	7134	6880	6723	6526	6272	5419	5300	5300	5300	5300	0	0	81636
DOP (1-3) LESS-PROV. PREPRODUCTION ALLOW.	5010	664	0	0	0	0	0	0	0	0	0	0	0	0	0	5674
-CAPITAL COST ALLOWANCE	0	2981	3144	3379	1890	2268	1648	1213	909	937	715	561	453	0	0	20098
-PROCESSING ALLOWANCE	0	0	0	0	0	243	326	430	603	617	650	673	689	0	0	4231
TAXABLE PROFIT (PROVINCIAL)	0	0	0	0	0	1118	1852	2437	3421	3498	3687	3818	3910	0	0	23741
BC MINING TAX	0	0	0	0	0	167	277	365	513	524	553	572	586	0	0	3557
DOP (1-3) LESS-PRODUCTION ALLOW.	0	0	0	0	0	2851	2823	0	0	0	0	0	0	0	0	5674
-CAPITAL COST ALLOW.	5010	3645	3144	3379	1890	776	299	131	371	277	249	131	0	0	0	19575
-EARNED DEPLETION	0	0	0	0	0	0	234	1277	1600	1560	1584	1176	0	0	0	7434
FEDERAL TAXABLE PROFIT ON MINING	0	0	0	0	0	0	470	2554	1202	3121	3169	3624	4921	0	0	21061
FEDERAL INCOME TAX	0	0	0	0	0	0	164	893	1120	1092	1109	1268	1722	0	0	7368
AFTER TAX CASH GENERATED (4)	5010	3645	3144	3379	1890	3462	3385	2822	3300	3436	3390	3212	2744	0	0	42619
LESS-ASSET ACQUISITIONS (5)	300	200	200	200	200	1000	200	200	200	1000	200	200	200	0	0	4300
-SENIOR DEBT RET. (100% OF NCF)	4710	3445	2944	3179	1690	2462	3185	2622	1486	0	0	0	0	0	0	25723
NET CASH FLOW (NCF)	0	0	0	0	0	0	0	0	1614	2436	3190	3012	2544	0	0	12796
PV OF NCF (10% DISCOUNT FACTOR)	0	0	0	0	0	0	0	0	684	940	1119	960	735	0	0	4438
PROPERTY CASH FLOW (2+4-5)	6768	5126	4349	4349	2606	3242	3768	2951	3219	2436	3190	3012	2544	0	0	47560

PROPERTY RATE OF RETURN (3) 12.25





Scale 1 in. = 4 mi.