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April 16, 1992

**MEMORANDUM**

TO: Mine Manager  
FROM: Engineering Supervisor  
SUBJECT: HEARNE HILL PROPERTY

**INTRODUCTION**

The Hearne Hill property, owned by Mr. Dave Chapman, is located on the east side of Babine Lake approximately 25 km north of the Bell Mine. Access to the property is available using the lake barge at Topley Landing and good logging road to within 1-2 km of the copper zone. Access from the logging road would require upgrading for mining purposes. Presently, reserves estimated by the owner are 30,000 t grading 3.02% copper, 6 g/t silver and 0.48 g/t gold.

**FINDINGS**

Under the parameters used, the project would only break-even. Better grades or metal prices, particularly for copper are required. At \$1.30/lb copper, profit would be \$12.83/t or \$385,000 for the estimated 30,000 t.

**ASSUMPTIONS**

1. Mining - negligible dilution; 1:1 strip ratio; \$6/t mining cost (limestone project); \$10,000 for road improvement; \$20,000 for reclamation.
2. Transportation - \$10/t to Equity via logging road and Topley Landing barge. (This amount is a guess).
3. On property costs - mill (excl. gold plant) \$4.6/t; plant \$1.2/t; administration \$5.6/t (Nov/Dec budget); rehandle \$0.30/t.
4. Head office charges - \$2.50/t (from N. Zone feasibility).
5. Revenue - metal prices U.S. \$1.10/lb copper; U.S. \$4.25/oz silver; U.S. \$400/oz gold; exchange U.S. \$1.00 = Can \$1.18.
  - Payable metal and smelter charges based on proposed revisions to Equity's smelter contract.
  - Concentrate transportation charges of Can. \$92.12/t.
  - Concentrate treatment charge of U.S. \$130/t.
  - Penalties of \$5.1/t for arsenic.

ORE RESERVES

Reserves have been verbally indicated from the owner at 90,000 t grading 2% copper as well as a smaller reserve within this zone of 30,000 t of material grading 3.02% copper, 6 g/t silver and 0.48 g/t gold. The present economic evaluation is based on the 30,000 t of higher grade material.

METALLURGICAL TESTWORK (01 Apr. 1992 report by M. Cannon)

Testwork was performed on a composite drill core sample.

	<u>Cu%</u>	<u>Ag g/t</u>	<u>Au g/t</u>	<u>Sb%</u>	<u>As%</u>	<u>Fe%</u>	<u>Pb%</u>	<u>Zn%</u>
Head Grade (Assay)	3.02	6	0.48	.01	.032	6.04	.01	.02
Concentrate Grade	22.2	*37.4	*2.66		.27 (est.)			

Concentration Ratio = 8.3. 30,000 t feed = 3,614 t concentrate.

\*Adjusted to recoveries of 66.7% for gold and 75% for silver.

DISCUSSION

Metal prices used are above current prices. Better prices or grade are required to provide a positive return.

Diamond drilling should be reviewed to verify estimated tonnage, grades and strip ratio. If this work provides positive results, then an agreement might be negotiated to develop the property if economics improve.

Some of the costs used are only "ballpark" estimates such as for road improvements, reclamation, mining and transportation to Equity. On property and head office costs are based on milling at 2000 tpd on a four days on/four days off schedule.

Arrangements for smelting concentrates would also be required.

CALCULATIONS

1. Net Smelter Return

Revenue

$$\begin{aligned} \text{Copper} &- 3614 \text{ t} \times .222 \times 1000 \text{ kg/t} \times 2.2046 \text{ lb/kg} \\ &\times .923 \times (\$1.10 - 0.13) \times 1.18 = \qquad \qquad \qquad \$1,869,000 \end{aligned}$$

Silver - 3614 t x 37.4 g/t x .03215 oz/g x .96 x (\$4.25 - 0.40) x 1.18 =	19,000
Gold - 3614 x 2.66 g/t x .03215 oz/g x .96 x (\$400 - 5) x 1.18 =	<u>138,000</u>
Sub-Total	\$2,026,000
Less: concentrate transport 3614 x 92.12/t =	(333,000)
treatment charge 3614 x 130 US x 1.18 =	(555,000)
penalties arsenic (.27 - .1)/.1 x \$3 US x 1.18 x 3614 t =	<u>(22,000)</u>
NSR	\$1,116,000
	or \$37.2/t milled

## 2. Costs

- Road \$10,000	\$ .33/t milled
- Mining (1:1 SR) 60,000 t x \$6/t mined	12.00/t milled
- Transport to Equity	10.00/t milled
- Reclamation \$20,000	.67/t milled
- Mill (excl. Gold Plant)	4.60/t milled
- Plant	1.20/t milled
- Administration	5.60/t milled
- Rehandle	.30/t milled
- Head Office	<u>2.50/t milled</u>
TOTAL COSTS	37.20/t milled

## 3. Profit

N.S.R. - Cost = \$37.2 - \$37.2 = 0

Increasing copper price to \$1.30 increases revenue by \$385,000 and provides a positive return of \$12.83/t.

*R Baase*

R. Baase  
Engineering Supervisor

BB/gp

cc: D. Hanson