

Thunderbird Mines Ltd. (N.P.L.)
Preliminary Report
"AYE" GROUP INDIAN RESERVE NO. 13
May, 1966.
W. M. Sharp Consultant Vancouver, B.C.

801176

Thunderbird Mines Ltd. (N.P.L.)
Vancouver, B. C.

— changed to 'Dark Hawk'
Mines Ltd (N.P.L.) - 1968 -

Preliminary Report

GEOLOGICAL SITUATION & MINERAL POTENTIAL

of the "AYE" GROUP,

INDIAN RESERVE NO. 13, HIGHLAND VALLEY AREA

Kamloops Mining Division, B.C.

May, 1966.

W. M. Sharp, P. Eng.

Consultant

Vancouver, B.C.

WILLIAM M. SHARP, P. ENG.
CONSULTING GEOLOGICAL ENGINEER

STE. 808, 900 WEST HASTINGS ST.
VANCOUVER 1, B. C.

May 28th, 1966.

President and Directors,
Thunderbird Mines Ltd. (N.P.L.),
Vancouver, B.C.

Attention: Mr. D. C. L. Ursaki,
694 Danville Court, Coquitlam,
New Westminster, B.C.

Gentlemen:

This report summarizes my field examination of your recently-located "Aye" mineral-claim group covering I.R. 13, and adjoining Quiltanton (Divide) Lake in the Highland Valley area.

By reason of the obvious impossibility of carrying out the usual study of bedrock exposures, this report is based, primarily, on a study of all available geological data pertaining to the area and adjacent properties, supplemented by the writer's own field experience within this locality.

Respectfully submitted,

W. M. Sharp, P. Eng.



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ILLUSTRATIONS IN TEXT:

Fig. 1 - Location Map; I.R. 13 and Highland Valley properties;
Scale 1 in. = 2 mi. approx.

Fig. 2 - Perimeter traverse I.R. 13; Scale 1 in. = 1,000 ft.

Photographs #1 - #4 incl. showing physical features of
property and area.

SUMMARY & RECOMMENDATIONS

The "Aye" claim group of 16 located claims covering I.R. 13 is very favourably situated with respect to possible extensions of both the Bethlehem and Lornex ore zones. On the basis of the apparent N.E.-S.W. mineral trends on Bethlehem ground, and of northerly to N.E. trends on Lornex (Incl. Skeena) ground, there appears to be a marked real potential for the occurrence of ore within the intervening "Aye" group. Furthermore, from a purely statistical basis, there is a reasonably good possibility of finding other ore zones within the Lornex-Bethlehem interval; hence this additional possibility for the occurrence of copper (molybdenum) mineralization on the "Aye" claim group.

The principal obstacle in the way of exploration of bedrock regions of the "Aye" property is extensive cover of deep overburden, swamp and lake areas. However, as the N.E. corner of the property does not appear to be as thickly drift-covered, preliminary investigations should be initiated within this area. Depending upon the results of the above, the preliminary investigations may be extended to include S.W. corner areas.

The initial recommendation is for detailed seismic surveys to be conducted along 1,000 foot lines corresponding with the N.E. parts of the north and east boundary lines of I. R. 13 - originating from the N. E. corner post.

No specific recommendations for follow-up exploration are included, other than a provision for ascertaining the validity of the seismic data:

ESTIMATED COSTS:

1. 2,000 lineal feet of seismic survey	\$ 500.00
Travel & mobilization costs, estimate	200.00
2. Provision for follow-up 'dozer trenching; estimate 2 days @ \$250.00	500.00
-Moving in-out equipment, estimate	150.00
3. Allowance for supervision & contingencies	150.00
	<hr/>
TOTAL:-	\$ 1,500.00
	<hr/>

Respectfully submitted,

W. M. Sharp
W. M. Sharp, P. Eng.

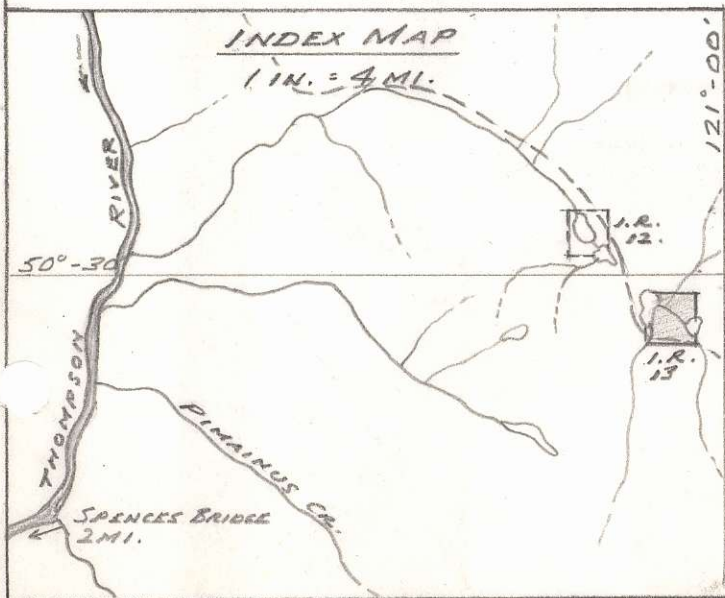
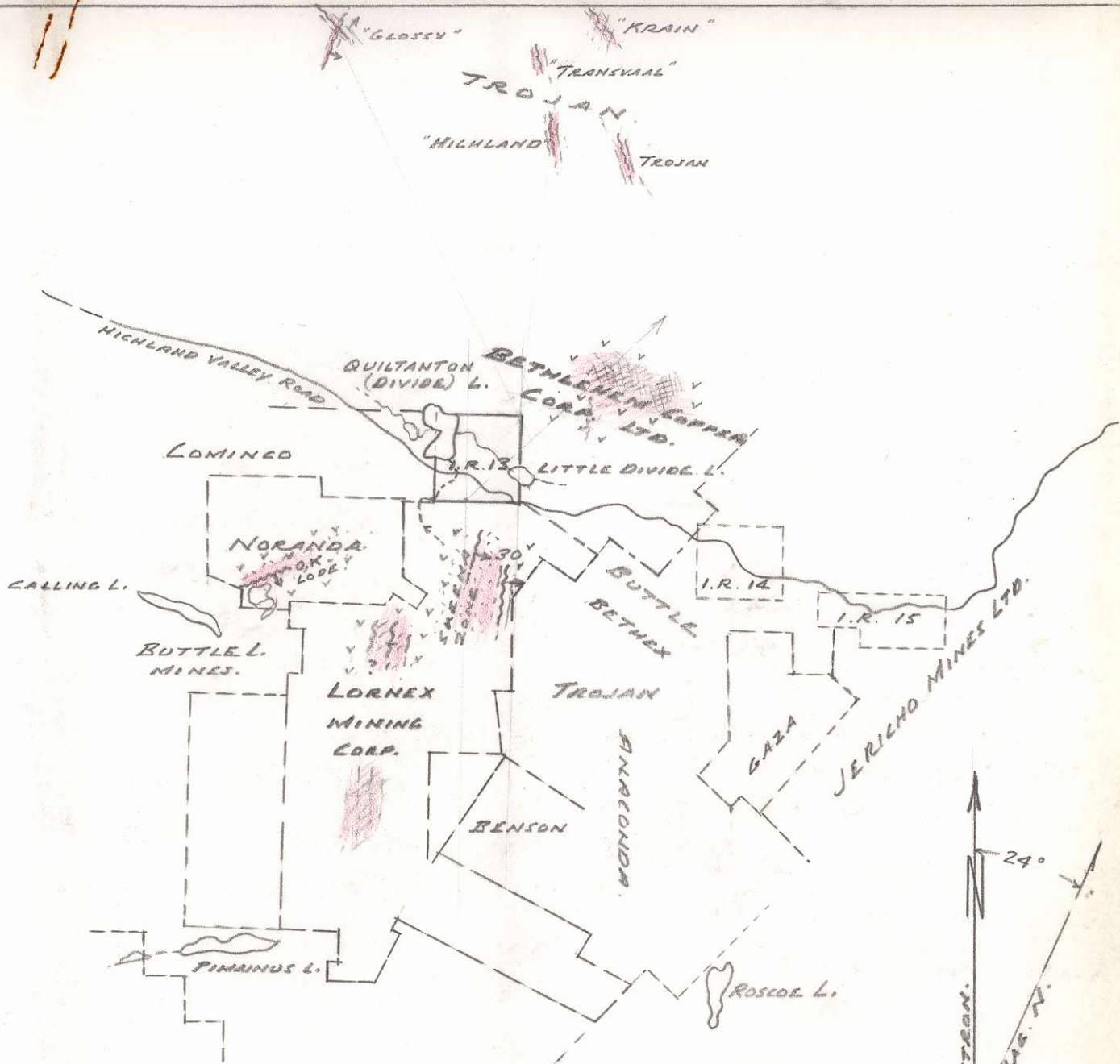


FIG. 1.
 LOCATION MAP
 I.R. 13 & HIGHLAND VALLEY PROPERTIES
 THUNDERBIRD MINES LTD., N.P.L.
 SCALE: 1 IN. = 2 MI. APPROX.
 REFS. B.C.D.M. 92I/6E; 92I/7W.
 92I/10W; 92I/7E
 & COMPANY SKETCHES.
 MAY, 1966. W.M. SHARP, P. ENG.

INTRODUCTION

Authorization to conduct the field work relating to this report was given by Mr. D.C.L. Ursaki during May, 1966. This followed from discussions between him, (Dr.) D. D. Campbell, and W. M. Sharp concerning the present situation, and future plans with regard to mining exploration and development of certain strategically-located Indian lands. The general consent of the Cook's Ferry Band, occupants of I. R. 13 other local reservations, to proceed with the necessary formalities was given (to Mr. Ursaki and his associates). With this, he submitted his highly-interesting proposals re the exploitation of the potential mineral resources of certain geologically well-located reservations - specifically I.R. 13 - to the above geological consultants.

The writer subsequently made arrangements for the examination with Mr. Forrest Walkem, Spences Bridge, and one of Mr. Ursaki's associates, and this was carried out on May 20, 1966.

Mr. Walkem's helpful guidance and assistance during this examination is hereby thankfully acknowledged.

The writer's field examination consisted of a detailed inspection of features relating to local topography, forest cover, and surficial geology, as any, or all of these factors would have a bearing on the choice of feasible and/or applicable exploration procedures.

PROPERTY

The property consists of 16 located mineral claims - Aye #1 to #16 inclusive, and all contained within the boundaries of the one-mile square I.R. 13. These are owned by Thunderbird Mines Ltd. (N.P.L.) - as sponsored by the Cook's Ferry Band, and organized by (Mr. D.C.L. Ursaki and Associates,) subsequent to obtaining the necessary approval of the Department of Indian Affairs.

<u>Name</u>	<u>Locators</u>	<u>Record Date</u>	<u>Record No's.</u>	<u>Min. Div.</u>
Aye #1-16	F. Walkem (and D.C.L. Ursaki?)	(pending)	(pending)	Kamloops

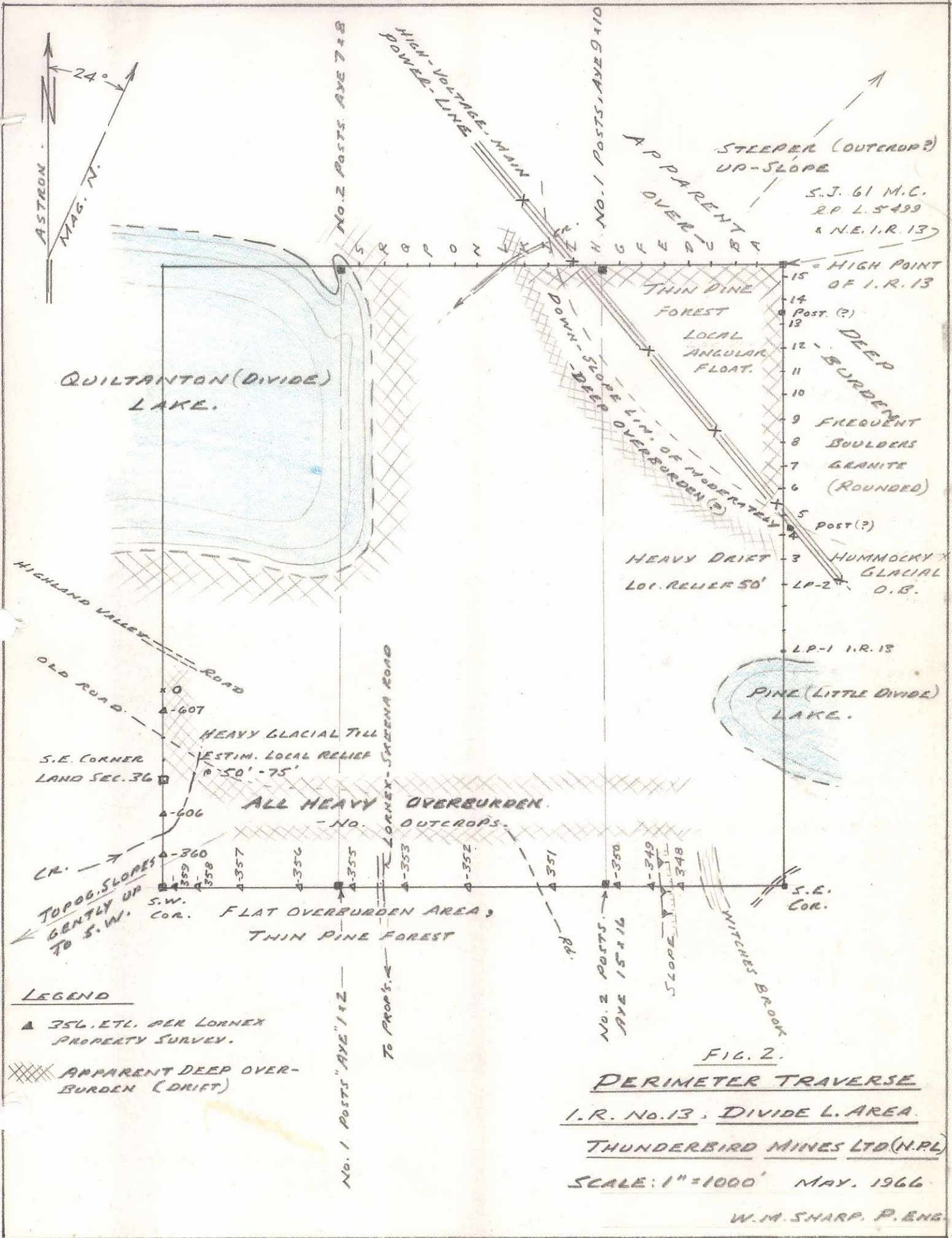
LOCATION AND ACCESS (Fig. 1)

The property is situated in the main Highland Valley, between and adjoining the Lomex Mining Corp. and Bethlehem Copper Corp. properties to the southwest and northeast, respectively.

The claim block, which includes the easterly half of Quiltanton Lake is reached by 26 miles of paved highway from Ashcroft, B.C. Locally, it is situated at less than one mile east of the Bethlehem access road, and contains part of the Lomex (and Skeena) access road.

GENERAL FEATURES

1. Transport: all weather access is provided by 260 miles of paved highway from Vancouver, B.C. via Ashcroft.
2. Terrain: This is typical of the valley sections of the "Interior Dry Belt" plateau. In general, exploration is accomplished relatively easily, and at minimum expense. Locally, exploration would be impeded by the presence of considerable areas of heavy overburden, swamp, and lakes.
3. Climate: This is characterized by hot, dry summers and cool-to-cold dry winters. Snow seldom exceeds 5' - 6' depths, and severe sub-zero temperatures are usually restricted to periods of a few days to a week, or two weeks at the most.
4. Labour and Supplies: These are readily available from Ashcroft, Kamloops, Merritt, or Vancouver.
5. Overburden: This is comprised of glacial, fluvio-glacial, and alluvial deposits. In depth, it probably exceeds 100 feet over a considerable part of the total area - in both dry and wet sections. The variations in composition and texture at various horizons have not been determined. Specific features noted during the writer's traverse of the perimeter of l. R. 13 are noted on Fig. 2.



ASTRON
MAG. N.
24°

QUILTANTON (DIVIDE) LAKE.

No. 2 Posts, AVE 748

HIGH-VOLTAGE MAIN POWER-LINE

No. 1 Posts, AVE 9410

STEEPER (OUTCROP?) UP-SLOPE
S.J. 61 M.C.
R.P. L. 5499
& N.E. I.R. 13

HIGH POINT OF I.R. 13

15
14 Post. (?)
13 DEEP BURDEN
12 LOCAL ANGULAR FLOAT
11
10
9 FREQUENT BOULDERS
8 GRANITE (ROUNDED)
7
6
5 Post. (?)
4 HEAVY DRIET
3 HUMMOCKY GLACIAL L.P. 2 O.B.
2
1 L.P. 1 I.R. 13

PINE (LITTLE DIVIDE) LAKE.

HIGHLAND VALLEY ROAD
OLD ROAD

607
606

S.E. CORNER LAND SEC. 36

HEAVY GLACIAL TILL
ESTIM. LOCAL RELIEF 50'-75'

ALL HEAVY OVERBURDEN - NO. OUTEROPS.

LORNEK-SARENA ROAD

CR.
TOPOG. SLOPES GENTLY UP TO S.W. COR.

360
359
358
357
356
355
353
352
351
350
349
348
S.E. COR.

FLAT OVERBURDEN AREA, THIN PINE FOREST

LEGEND

- ▲ 356. ETL. PER LORNEK PROPERTY SURVEY.
- ▨ APPARENT DEEP OVERBURDEN (DRIET)

No. 1 Posts "AVE" 1412

No. 2 Posts, AVE 15416

SLOPE 1:1

WHITCHES BROOK

FIG. 2.
PERIMETER TRAVERSE
I.R. NO. 13, DIVIDE L. AREA.
THUNDERBIRD MINES LTD (N.P.L.)
SCALE: 1" = 1000' MAY, 1966
W.M. SHARP, P. ENG.

HISTORY

To date no exploratory work has been conducted on this, or other reserves in the locality. The land has been generally utilized by the occupants for the raising of livestock and minor agricultural pursuits.

GEOLOGICAL SETTING (Fig. 1)

The claim group is situated within the same generally favourable geological environment as the adjoining Bethlehem and Lornex mineral properties. It lies well within the large mass of the Guichon Creek batholith extending from Ashcroft to Lower Nicola, and from the Nicola River to Guichon Creek, to the N-S and E-W respectively.

The Guichon Creek batholith is an intrusive complex, mainly consisting of granitic, granodioritic, quartz dioritic, and dioritic phases. Locally, more acidic and/or basic intrusives have been noted.

In general, the more highly-fractured "boxwork" and/or "breccia" zones within the Guichon body provide the necessary structural conditions for the localization of economic deposits of the typical copper-molybdenum mineralization of the region. The "disseminated" or "porphyry-copper" type of mineralization forms the principal exploration target.

From past experience in the district, it appears that the optimum geological environment for the occurrence of deposits of the "porphyry-copper" type are those areas of intrusive characterized by the presence of multiple phases or various facies of the parent body. It appears that these particular zones constitute the principal facit for intensive fracturing - the necessary structural condition for the occurrence of extensive bodies of economic mineralization.

The presence of certain typical forms of wall-rock alteration is of assistance in narrowing down the search for mineral zones. These are characterized by the presence of significant proportions of silica, sericite, (pink) orthoclase-albite, green talc-chlorite, kaolin, and calcite. Associated metallic gangue minerals include pyrite, hematite, and magnetite, or their oxidation products.

The adjoining Bethlehem ore zone consists, primarily, of disseminated and veining chalcopyrite, bornite, and minor molybdenite in extensive fracture stockworks and/or breccia zones within a locally-complex intrusive zone. The regional Guichon quartz diorite has been intruded by granite, a younger quartz diorite, porphyries, and "breccia". The principal component of this "complex" is the younger quartz diorite and related porphyries. It is light coloured and the mafics do not exceed 10% - consisting of (poikilitic) hornblende, and platy biotite.

Structurally, the principal fracture zones trend N-S, however mineralization appears to favour a subordinate (conjugate) NE - SW trending set. Both the "Jersey" and "East Jersey" zones show detailed control of mineralization along these N.E.-S.W. trends.

Both Fig. 1 and general plans released by Bethlehem Copper Corp. indicate that S.W. projections of the main Jersey ore zone could intersect the easterly half of the "Aye" claim group. Similarly, it is favourably situated with respect to northerly and/or NNE projections of ore zones from within the adjoining Lornex (including Skeena) properties.

The critical factor is the depth of burial of these projected mineral zones within the "Aye" group.

Respectfully submitted,



W. M. Sharp, P. Eng.

CERTIFICATE

I, W. M. SHARP, of North Vancouver, British Columbia,

DO HEREBY CERTIFY THAT:-

1. I am a Consulting Geological Engineer, with residence at 3280 Chesterfield Avenue, and offices at 900 West Hastings Street, Vancouver, British Columbia;
2. I am a registered Professional Engineer in the Province of British Columbia;
3. I am a graduate of the University of British Columbia, with B.A.Sc. & M.A.Sc. degrees in Geological Engineering, and have practiced my profession since 1946;
4. I am not a vendor, member of the Board of Directors, or a regular employee of the Thunderbird Mines Ltd. to which this report is directed;
5. I have no interest, direct or indirect, in the properties or securities of the above company, nor do I expect to have any such interest;
6. This report on the "Aye" group, Thunderbird Mines Ltd., (N.P.L.), is based on personal examinations, the most recent being on May 20, 1966, and previous reports prepared by the Geological Survey of Canada.


W. M. Sharp
W. M. Sharp, P. Eng.



• JUN • 66

View from 20' S. of station 360, looking S 60 E - showing light forest growth on heavy (glacial-alluvial) overburden - also Forest Walkem, my guide and assistant.



• JUN • 66

**View due north from station 360, showing part of cleared west boundary. I.R. 13 and Cullenton Lake in background (1)
The (E-W) trending "drift" ridges and draws have a local relief of 50' - 75'/**



JUN • 66 •

**View of Bethlehem mine area from point 250' E
and 50' N of station 353 - looking N 50 E.**



JUN • 66 •

**From same point as (3) above; looking N 27 W.
Showing low-lying central area of I.R. 13, and
typical Highland Valley topographic features.**