

# 5852

HUGHES

92I/10E

Geological, Geochemical and Geophysical  
Report on the HUGHES 1-6 Mineral Claims.

50° 39'N, 120° 33'W. (NTS 92I/10E)

Kamloops Mining Division.

Afton Mines Ltd. (N.P.L.)

22 October 1975 to 21st January 1976

# 5852

By

A. J. Reed, P.Eng.

21st April, 1976

Ashcroft, B.C.

<p>Department of Mines and Petroleum Resources ASSESSMENT REPORT</p> <p>NO. <u>5852</u> MAP <u>X</u></p>
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INTRODUCTION

This report describes approximately 1.7 square kilometres of surface geological mapping, 16 line-kilometres of geochemical soil-sampling and 9 line-kilometres of VLF electromagnetic survey performed by Afton Mines Ltd. (N.P.L.) on the HUGHES group of mineral claims from 22nd October 1975 to 21st January 1976. The survey area is located at 50° 39'N, 120° 33'W and lies approximately 16 km west of the City of Kamloops. Mineral claim data are shown in Table 1.

Table 1

<u>Claim name</u>	<u>Record Number</u>	<u>Number of Units</u>	<u>Location date</u>
Hughes 1	33	3	23 May 1975
Hughes 2	34	1	23 May 1975
Hughes 3	35	3	23 May 1975
Hughes 4	36	1	23 May 1975
Hughes 5	117	2	22 October 1975
Hughes 6	118	1	22 October 1975
		----- 11 -----	

Access to the Hughes group of mineral claims is by the dirt road to Greenstone Mountain which leaves the Trans-Canada Highway at Cherry Creek Esso ( 18 km west of Kamloops) and crosses the Hughes' 3,4, and 6 mineral claims.

#### GEOLOGICAL MAPPING

( See Figure 1 in pocket )

The geological mapping was controlled by a grid of north-trending blazed lines spaced at intervals of 120 metres with stations marked with flagging tape every 60 metres. Survey control of the blazed lines was by Topofil and Ranger compass. The area of the Hughes mineral claims is a north-facing slope drained northwestwards by Cherry Creek and with a light forest cover of pines and firs which has been selectively logged. Surface elevation ranges from 600 metres above sealevel in the north part of the property to 900 metres above sealevel at the southern edge. A generally thin mantle of glacial till covers the Hughes mineral claims and outcrops of bedrock constitute less than 2% of the surface area. Tertiary volcanic rocks of the Kamloops Group cover approximately 95% of the area of the Hughes claims, while the remaining 5% is occupied by Mesozoic volcanic rocks of the Nicola Group.

#### MESOZOIC - UPPER TRIAS - Nicola Group

Nicola Group rocks are exposed along a narrow strip of ground trending northwesterly from Cherry Creek

across the Hughes 1,5, and 3 mineral claims. In the bed of Cherry Creek near 8W18S dark greenish-grey andesites and agglomerates are exposed. The agglomerates contain fragments of pink Cherry Creek syenite and fragments of malachite stained andesite and porphyry. Veinlets of calcite, pink zeolite and haematite are common at this exposure. Northwest from Cherry Creek the exposed Nicola rocks are dark green andesites showing extensive alteration of feldspar to epidote. The exposure at ON24W exhibits a well-developed flow-banding texture.

TERTIARY - EOCENE - Kamloops Group

Kamloops Group rocks exposed on the Hughes claims are predominantly andesitic agglomerates with minor amounts of interbedded sediments and dykes of porphyritic andesite. Weathering of Kamloops agglomerates typically produces a yellowish-brown colour due to limonite, which together with the absence of epidote alteration in Kamloops volcanic rocks, serves to distinguish Kamloops Group volcanic rocks from those of the Nicola Group.

Pyrite is disseminated in porphyritic and dacitic rocks on the Hughes 4 mineral claim at 36W20N and on the Hughes 3 mineral claim at 22W8N.

An impure dark-grey limestone is interbedded with agglomerate at 4E12S on the Hughes 1 mineral claim.

A dyke of pinkish-grey porphyry with pyrolusite on joint faces is exposed at OE4N and occurs as fragments in agglomerate exposed 2E15S .

GEOCHEMICAL SURVEY

A total of 276 soil samples were collected at intervals of 60 metres along the same north-trending grid lines spaced 120 metres apart that were established for the geological mapping. The samples were taken from the upper part of the B soil horizon at a depth of approximately six inches. The samples were placed into paper envelopes and shipped to Bondar-Clegg and Company Ltd. , 1500 Pemberton Ave., North Vancouver for determination of the copper content by the following method :-

1. Dried in infra-red dryers
2. Sieved to -80 mesh
3. Weighed on 0.5 gm
4. Digested in LeFort aqua regia for three hours
5. Bulked to 20% acid concentration and homogenised
6. Allowed one hour settling time
7. Analyzed by atomic absorption in constant comparison with both synthetic and matrix standards
8. Permanently recorded on chart paper

The analytical values of copper content in the upper part of the B soil horizon are shown on Figure 2 at a plan scale of 1:4800. Table 2 shows the calculation of the mean value, standard deviation, threshold value and anomalous value for this data. The frequency distribution of the copper values is presented as a histogram in Figure 3. The mean value of copper content in the upper part of the B soil horizon on the Hughes 1-6 mineral claims is 62 ppm with standard deviation 18.5

indicating threshold values of 100 ppm and anomalous values of 120 ppm. Isograds of 100 and 120 ppm drawn on Figure 2 show that the only anomalous values in the survey are at 8W4N where a determination of 167 ppm was recorded, and at 16W24S where 147 ppm was recorded. These two isolated anomalous values are not considered significant, and it is concluded that the geochemical survey did not define any target areas worthy of more detailed work.

T A B L E 2

CALCULATION OF THRESHOLD AND ANOMALOUS VALUES

USING STANDARD DEVIATION.

$$\text{Standard deviation} = s = \sqrt{\frac{N \sum (X_i)^2 - (\sum X_i)^2}{N(N-1)}}$$

where N = total number of values = 276

$X_i$  = an individual value

$\sum X_i$  = sum of the values = 17,137

$\sum (X_i)^2$  = sum of each value squared = 1,158,685

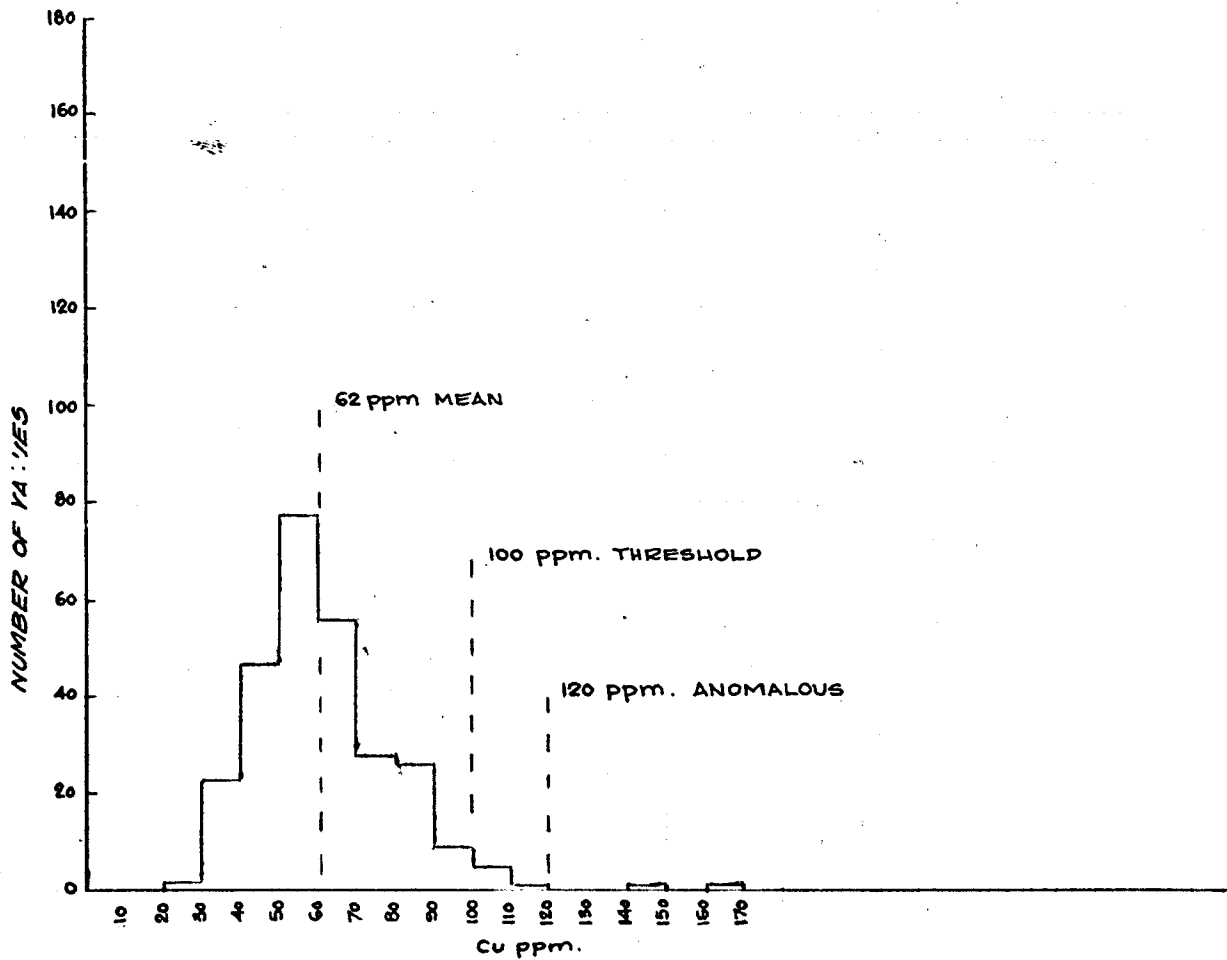
$$\begin{aligned} s &= \sqrt{\frac{276(1,158,685) - (17,137)^2}{276 \times 275}} = \sqrt{\frac{260,120,291}{75,900}} \\ &= \sqrt{344} = 18.5 \end{aligned}$$

$$\text{Mean Value} = \bar{X} = \frac{\sum X_i}{N} = \frac{17,137}{276} = 62$$

$$\text{Threshold Value} = \bar{X} + 2S = 99 \text{ round off to } 100$$

$$\text{Anomalous Value} = \bar{X} + 3S = 117.5 \text{ round off to } 120$$





SOIL COPPER FREQUENCY DISTRIBUTION

VLF-EM ELECTROMAGNETIC SURVEY

A VLF electromagnetic survey was performed on parts of the HUGHES 1,2,3 and 5 mineral claims in the area between 10N and 22S from 8W to 32W. Crone Radem electromagnetic detector serial number 78 was used to monitor the VLF radio signals transmitted at a frequency of 17.8 KHz from Cutler, Maine (NAA). Readings were taken at intervals of 15 metres along north-trending lines spaced 60 metres apart, filtered according to the method described by Fraser (1969, 1971) and are shown on a plan of the gridlines in Figure 4.

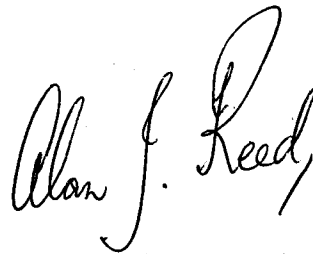
The VLF-EM survey defined three weak northwest trending conductors and two weak northeast trending conductors. The WNW-trending conductor extending from 16W16S to 26W11S is subparallel to a fault plane exposed in an old adit at 25+20W, 10+50S.

The NW-trending conductor extending from 22W on the baseline to 28W5N probably marks the contact between Nicola Group rocks to the southwest and Kamloops Group rocks to the northeast.

The two NE-trending conductors (30W18S & 18W1N) are approximately colinear and suggest a single NE trending structure developed in the Kamloops Group rocks but obscured in the Nicola Group Rocks.

SUMMARY AND CONCLUSIONS

Geological and geochemical surveys of the whole of the HUGHES 1-6 mineral claims together with a VLF-EM survey of part of these claims have not produced any tangible indication of the presence of an orebody on this ground, but because of the presence of some Nicola Group rocks and the proximity to the Afton orebody (3 kilometres ENE) this cannot be totally discounted.



A. J. REED, P.Eng.  
21 April, 1976

REFERENCES

- |                     |  |
|---------------------|--|
| Fraser, D.C. (1969) | "Contouring of VLF-EM Data, Geophysics XXXIV, 6, pp 958-967. December 1969 |
| Fraser, D.C. (1971) | "VLF-EM Data-processing". CIM Bulletin, pp. 39-41. January 1971            |

STATEMENT OF COSTS - JOB #1218

Geochemical & Geophysical Fieldwork

G. Lovang 22nd Oct. 1975 - 19 Jan. 1976 - 46 days \$5,040.00

Geology

R.E.Hindson	22 Oct, 23rd Oct., 14 Nov. - 3 days	420.00
J.M.Carr	1-3 Dec. - 3 days	515.00
A.J.Reed	14th-30th Nov., 8-15 Dec, - 17days	1,700.00

Assaying

Bondar-Clegg & Co. Ltd. 2,645.80

Air-photos

McElhanney Engineering & Surveying Ltd. 223.44

Rental 4x4 pick-up

Redhawk Rentals & Syd Smith U-Drive 602.60

Accommodation, meals & field expense

Dome Motor Hotel, Kamloops 1,400.36

Drafting

A.J.Reed 600.00

TOTAL

\$13,147 .00

Job # 1218 covers HUGHES mineral claims and also ROD and KAREN mineral claims. Costs are apportioned according to number of units in each claim group. That portion of Job #1218 costs applicable to HUGHES mineral claims is

$$13,147.20 \times \frac{11}{45} = \$3,147.20 \quad \$3,147.20$$

Preparation of Report on Hughes Group

400.00

TOTAL COST

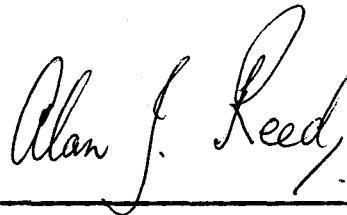
\$3,547.20

A.J.Reed, P.Eng.  
21 April, 1976

CERTIFICATE

I, Alan James Reed of Ashcroft, British Columbia, do hereby certify that :

1. I am a geologist employed by Highmont Mining Corporation Limited of 1199 West Hastings Street, Vancouver, B.C.
2. I am a Professional Engineer registered in the Province of British Columbia and the Province of Ontario.
3. I am a graduate of the University of Leeds with a B.Sc. (Hons. 1963) in Geology.
4. I have practised my profession since 1963 while employed with the Geological Survey of Jamaica , Siscoe Metals of Ontario Ltd., and Highmont Mining Corporation Limited.
5. This report deals with work performed on the HUGHES 1-6 mineral claims by myself and under my supervision during the period 22nd October 1975 to 21st January 1976

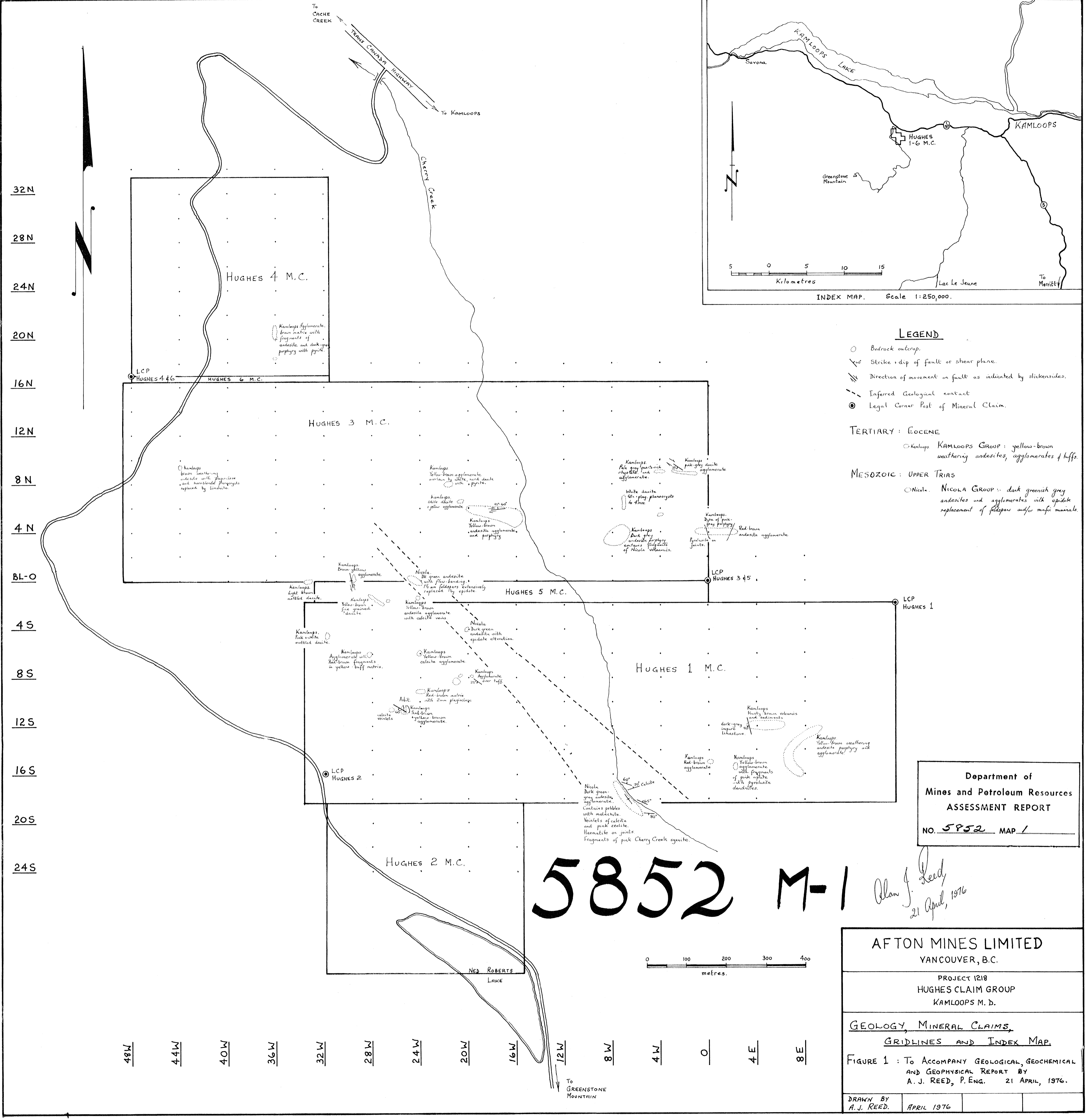


Alan J. Reed

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A. J. REED . P.Eng.

21st April 1976



32N  
28N  
24N  
20N  
16N  
12N  
8N  
4N  
BL-O  
4S  
8S  
12S  
16S  
20S  
24S

48W 44W 40W 36W 32W 28W 24W 20W 16W 12W 8W 4W 0 4E 8E

**LEGEND**

- Bedrock outcrop.
- ↘ Strike + dip of fault or shear plane.
- ↔ Direction of movement on fault as indicated by slickensides.
- - - Inferred Geological contact
- Legal Corner Post of Mineral Claim.

**TERTIARY : EOCENE**

○ Kamloops KAMLOOPS GROUP : yellow-brown weathering andesites, agglomerates of tuffs.

**MESOZOIC : UPPER TRIAS**

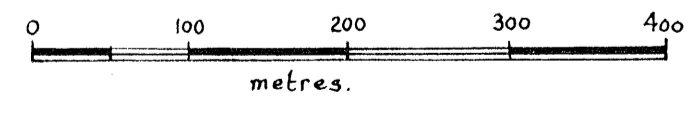
○ Nicola NICOLA GROUP : dark greenish grey andesites and agglomerates with epidote replacement of feldspar and/or mafic minerals.

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 5852 MAP. 1

5852 M-1

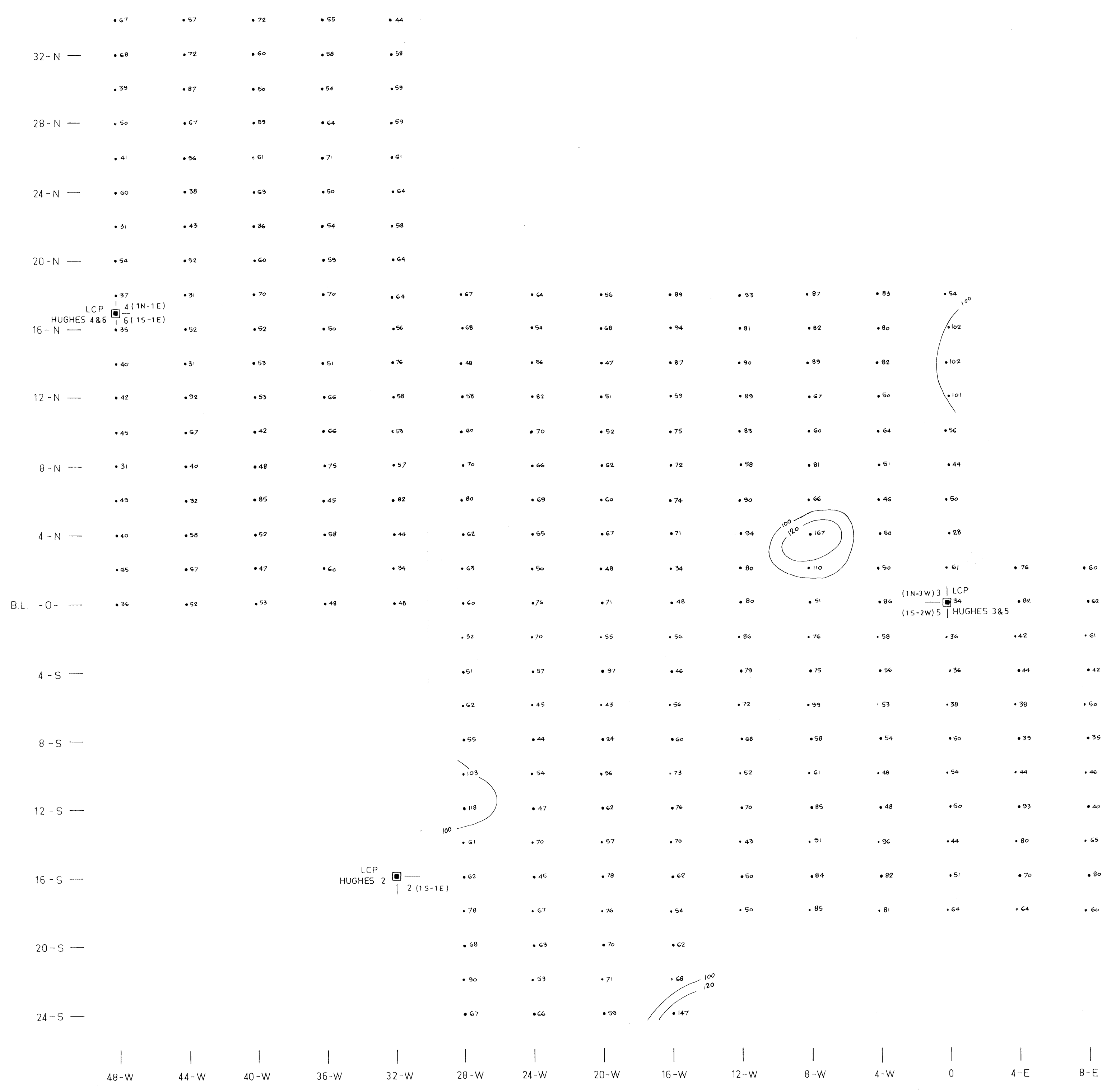
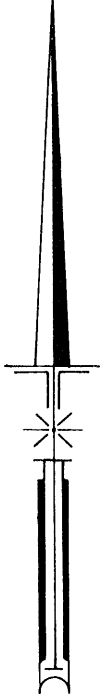
Alan J. Reed  
21 April, 1976

AFTON MINES LIMITED  
VANCOUVER, B.C.  
PROJECT 1218  
HUGHES CLAIM GROUP  
KAMLOOPS M. D.  
**GEOLOGY, MINERAL CLAIMS,  
GRIDLINES AND INDEX MAP.**  
FIGURE 1 : TO ACCOMPANY GEOLOGICAL, GEOCHEMICAL  
AND GEOPHYSICAL REPORT BY  
A. J. REED, P. ENG. 21 APRIL, 1976.  
DRAWN BY  
A. J. REED. APRIL 1976



NED ROBERTS LAKE

To GREENSTONE MOUNTAIN



— LCP HUGHES 1  
 (15-3W) 1

(1N-3W) 3 LCP  
 (15-2W) 5 HUGHES 3&5

LCP HUGHES 2  
 2 (1S-1E)

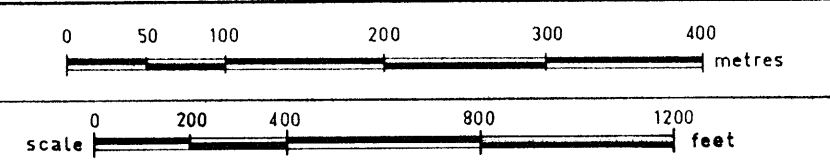
Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. 5852 MAP 2

*Alan J. Reed*

FIGURE 2: To accompany  
 Geological, geochemical and  
 geophysical report by  
 A. J. Reed, P. Eng., 21 Apr., 1976

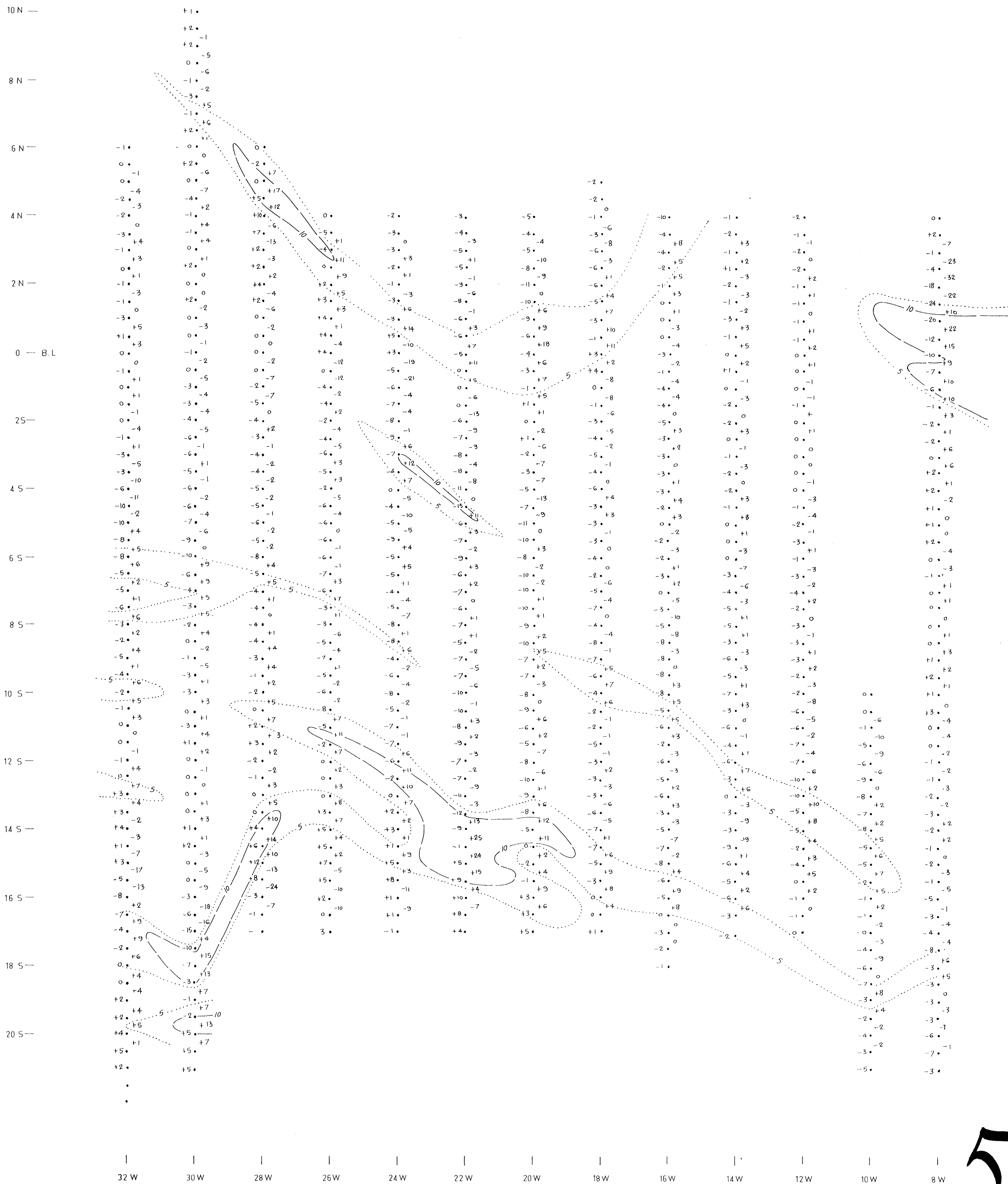
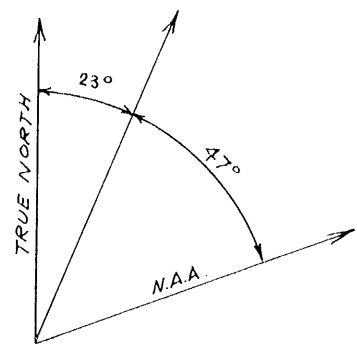
AFTON MINES LIMITED  
 VANCOUVER, B.C.

GEOCHEMICAL SOIL SURVEY  
 CU IN P.P.M.  
 PROJECT 1218  
 HUGHES CLAIM GROUP  
 KAMLOOPS, B.C.

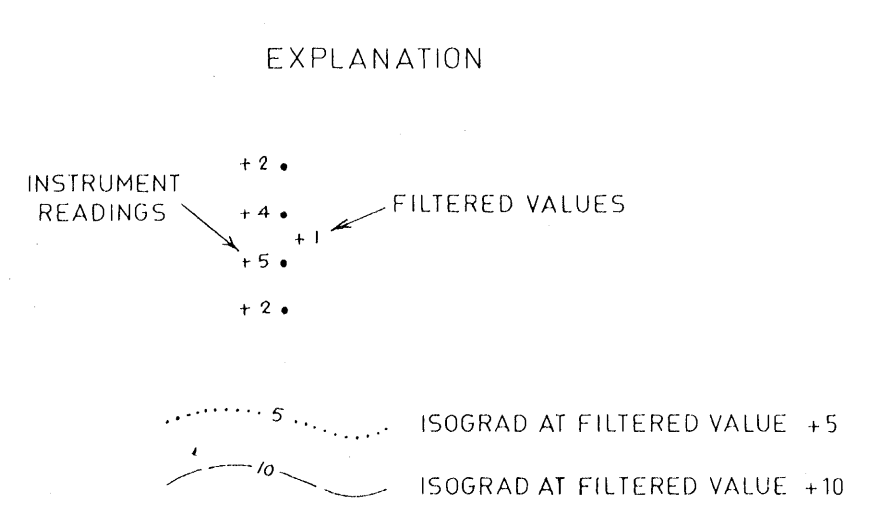


DRAWN BY: P.V. DATE: DEC. 1975 REVISED: DRAWING NO. NTS. 92-1-10-1

5852 M-2



**5852 M-3**  
*Alan J. Reed*  
 21 April, 1976.



Department of  
 Mines and Petroleum Resources  
**ASSESSMENT REPORT**  
 NO. 5852 MAP 3

**AFTON MINES LIMITED**  
 VANCOUVER, B.C.

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**V.L.F. E.M. SURVEY**

PROJECT 1218  
 HUGHES CLAIM GROUP  
 KAMLOOPS, M.D.

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1:2400 ~ 0 25 50 100 150 200 metres

scale 0 100 200 400 600 feet

DRAWN BY P.V.	DATE: DEC. 1975	REVISED: APRIL, 1976	DRAWING NO. NTS. 92-I-10-
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FIG. 4

TO ACCOMPANY GEOLOGICAL, GEOCHEMICAL AND  
 GEOPHYSICAL REPORT BY A. J. REED, P. Eng. 4-21-76