GEOCHEMICAL
ASSESSMENT REPORT

# ACME, OSLO # 1, WONDER I, THREE STAR I, STAR 3, THREE STAR 4, ACME # 1, WIKING # 2, THREE STAR # 2, STAR FRACTION, WIKING # 1, ACME FRACTION, WIKING 3, WONDER 1 FRACTION CLAIMS

RECORD # 524 TO 532 (INCLUSIVE)

CARIBOO M.D.

Lat: 53° 4' N  Long: 121°43' W

Period: November 15, 1982 - November 14, 1983

Authors: Geologists R. Capell & C. Fipke of C.F. Mineral Research Ltd., Kelowna, B.C.

Prepared for American Volcano Minerals Corporation - Alkey Industries Ltd.

Kelowna, B.C.
24 February 1984

CONTENTS

## INTRODUCTION

Mr. Vern Meyers of American Volcano Minerals Corporation requested C.F. Mineral Research Ltd. to complete a preliminary heavy mineral geochem survey for gold and silver and base metals on their reverted Crown grant property (record #'s 524 - 532) at Davis Creek, Cariboo Mining Division.

## LOCATION AND ACCESS

The south boundary of the Davis Creek Group of claims crosses Davis Creek some 200 m N.E. of the crossing of the creek and the Barkerville Highway. The centre of the property lies some 2 km NNW of the village of Van Winkle. The south margin of the property is easily reached by means of the Barkerville highway extending some 73 km from Quesnel, B.C. A point near the center of the property would have the coordinates 121°43' W, 53°4'N and lying within the limits of Reference Sheet 93H/4E.

## GEOLOGY

According to C.T. Pasieka, P.Eng.:

" The area of the Davis Creek Group is underlain by members of the Richfield Formation of the Cariboo Series. These rocks are early Cambrian in age, and are represented by phyllites, limestones and micaceous quartzites. Complex folding and faulting has led to a variety of interpretations by various geologists. The Richfield Formation has been divided into five members of which the rainbow member is composed on interbedded quartzites and argellites, with minor intercalated limestones. This combination has been most productive in its content of gold bearing pyritic mineralization in quartz veins and as replacements in the limestone.

Locally, a well developed fault is indicated by the topographic form of Davis Creek, striking NNE and possibly continuing along the east flank of Mt. Nelson, extending through the depression occupied by Nelson Creek. This structure appears to have suffered a nominal displacement and probably some rotary motion as a result of stress accomodation. Locally, the metasediments of the Richfield Formation strike NNW with a dip of $30^0$ to $40^0$ to the east. "

MINERALIZATION

According to C.T. Pasieka, P.Eng.:

"Placer gold mineralization has been known to occur within the limits of the property and surrounding area for over a hundred years. Records indicate a production of some 60,000 ounces derived from creeks in the immediate area. The production and character of the placer gold in the Welles and Barkerville camp is well documented and will not be commented upon further.

Regionally, the occurance of gold mineralization insitue holds its occurance to the profusion of quartz veins in the area. These quartz veins tend to be of two types, and are locally designated as A and B type veins. The A type veins consist of almost pure white quartz veins occuring inter-formationally with the bedded metasediments and are thought to be segregation veins. These veins strike northerly, with variable dips to the east. On occasion they may contain minor amounts of free gold, however the majority of them appear to be barren.

The B type of veins are discordant in occurance and owe their origin to faults and joints in the area. Locally, these veins strike northerly and occur within and parallel to a similarly oriented series of faults and joints. A secondary set of joints occurs striking north-westerly and may or may not be silicified. Frequently these quartz veins may contain extensive sulphide mineralization mainly pyrite and chalcopyrite. The surface expressions of these veins are typically iron stained and may on occasion exhibit free gold. In the majority of cases the gold values are associated with the sulphide content of the veins.

Published accounts of placer mining operations on Davis Creek mention the occurance of a three to four foot quartz vein carrying sulphide mineralization, traversing the creek bottom. This quartz vein was not observed and may in fact be buried by debris resulting from placer operations. In addition, quartz veins striking NNE are reported to occur along the upper reaches of the east bank of Davis Creek.

Some 1.5km to the NE of Davis Creek, within and along the margins of Oregon Gulch occur several silicious veins of varying attitude. Sampling of these veins in the past has indicated substantial gold values though over narrow widths."

METHODOLOGY

During the period Oct. 29 - Oct 31/83 Mr. Brent Carr of C.F. Mineral Research Ltd., Kelowna, B.C. drove to the area and collected 8 bulk heavy mineral stream sediment samples. (Refer to Figure 1). The bulk samples were collected from stream gravels in Davis Creek commencing at the south boundary of the claims and proceeding upstream at 200 meter (field flagged) intervals for 1.4 km to the headwaters of Davis Creek ( Refer to Figure 2.) The object was to detect the presence of gold and/or base metal sulfide bearing type A or type B quartz veins that could be covered by recent glaciofluvial or soil talus sediments.

At each stream sediment site (B167-174 inclusive) about 9 kg of -20 mesh stream sediments were field wet sieved from about 100 kg of unsieved gravels.

The samples were transported to the C.F. Mineral Research heavy mineral concentration laboratory located in Kelowna, B.C. where the bulk samples were washed, wet-sieved, and jigged. About 3000 gms of -20+35 mesh, 3000 gms of -35+60 mesh and all the -60 mesh concentrates were dried and submitted to tetrabromoethane (S.G. 2.9) and methylene iodide (S.G. 3.3) separation using double +0.5 micron filtration of liquids to prevent fine Au sample intercontamination. The heaviest -20+150 mesh and -150+0.5 micron fractions were subsequently electromagnetically fractionated into magnetic, weakly (para) magnetic and non magnetic concentrates and weighed to 0.02 gm tare accuracy. (Table 1.) The -20+150 resultant heavy non magnetic fractions were subjected to

U.V. lamp treatment to detect the presence of scheelite (Table 2.)

The coarse -20+150 mesh heavy non magnetic (HN) concentrates were submitted to Bondar Clegg analytical laboratory in Vancouver for crushing and standard (A.A.) geochem analysis for Au-Ag-Cu-Pb-Zn-Mo (Table 3.). Bondar Clegg submitted samples that yielded results greater than 10,000 p.p.b. Au to an additional fire assay reported in ounces Au/ton. The fine +0.5 micron minus 150 mesh heavy non magnetic concentrates were tare weighed to 0.001 gms, vialed and submitted to Nuclear Activation Service in Hamilton, Ontario for Au geochem analysis. The -20+150HP fractions were briefly examined by C.Fipke with the use of a binocular microscope.

## RESULTS

The scheelite grain count results and tare weighings are given in Table 2; the Bondar-Clegg analytical results in Table 3a and b. The N.A.A. fine Au geochem results are plotted with the Bondar-Clegg and scheelite results on Figure 3. A topographic profile with profiles of concentrate weights and scheelite grain counts normalized to 9 Kg samples are plotted with geochem results in Figure 4.

Microscopic examination revealed the -20+150HP concentrates of B173 and B174 contain dominant amounts of limonite and micaceous rock particles; vein quartz with limonitized pyrite and sericite are frequently present. Trace amounts of epidote garnet and rock particles with fine actinolite? are present in B173. Garnet and rock particles with actinolite? occur in major amounts in -20+150HP concentrates from all samples collected downslope from B173. In addition the concentrates from sites downslope from B173 do not contain any significant color or mineralogic variations.

## DISCUSSION OF RESULTS AND CONCLUSIONS

1. Very strongly anomalous fine -150 mesh and coarse -20+150 mesh gold with moderate coarse silver are present in heavy non magnetic concentrates of sample B174 collected at the headwaters of Davis Creek. The gold values progressively decrease in a regular normal manner 800 meters downslope to sample site B170. The heavy paramagnetic concentrates of B174 and B173 contain significant amounts of gossanous limonites with some oxidized vein quartz-pyrite-sericite. These features suggest there is a local load Au-Ag rather than glacial erratic source upslope from the strongly anomalous Au site B174.

2. The -20+150 heavy non magnetic concentrate of sample B173 contains moderately anomalous amounts of scheelite. In addition the Cu-Zn-Mo geochem results of the same concentrate are higher than for all other samples. The heavy paramagnetic concentrate of B173 contains trace amounts of garnet-tremolite-epidote. Garnet and rock particles with fine actinolite(?) significantly increase in abundance in all samples downslope from B173. The additional heavy minerals result in an increase in heavy (-20HN and -20HP) sample weights in B171, B172 and other samples collected downstream from B173 (Figure 4). These features indicate an intrusive contact(s) is present in the vicinity of B172 and B173.

3. A significant increase in coarse gold and slight increase in Pb-Zn-Ag results are present at site B170 in relation to results obtained from upstream sample sites B171 and 172. This suggests a Au-Pb-Zn-Ag source is present between site B170 and B171.

4. The Au fire assay results (Table 3b) are significantly lower than the duplicate Au geochem results (Table 3a) of the same (-20+150HN) concentrates of samples B168 and B169. Bondar-Clegg indicate the fire assay analyses were completed two times with identical precision on the same crushed concentrate used for Au geochem except that the portion used for fire assay was all crushed to -150 mesh and the portions used for Au geochem to -100 mesh. Bondar-Clegg subsequently regeochem Au analysed the concentrates and obatined resuts of 8,490 ppb Au and 4,700 ppb Au for B168 and B169 respectively. Thus, the original geochem results for B168 and B169 (Table 3a) are in error.

5. There is a substantial increase in the fine and coarse Au as well as Ag-Pb and scheelite results in samples collected at downstream site B167 compared with results from upstream site B168 (Table 3a and b). Although there is no significant mineralogic variation of -20+150HM (magnietite) and -20+150HP concentrates from site B167 and B168, the normalized -20HM as well as -20HP concentrate weights are substantially higher for B167 than for B168 (Figure 4). These indicate that magnetite and other weakly magnetic heavy minerals are placer concentrated at site B167. If magnetite and other heavies are placer concentrated at B167 it is possible the anomalous Au-Ag-Pb and scheelite also could be placer concentrated. Thus, the substantial highly anomalous Au-Ag-Pb-scheelite could be caused by buried mineralization between sites B167 and B168 and/or by placer concentration at site B167.

RECOMMENDATIONS

The very strong amounts of coarse and fine gold in practically all of the heavy mineral samples indicate additional trenching or excavation is required to expose any indicated unexposed Au anomaly sources. The heavy mineral sample spacing is presently 200 meters and therefore to cut down on the extensive excavating required it may be more economical to firstly complete additional close-spaced geochemical and/or geophysical surveying.

The results of this report indicate heavy mineral bulk sampling of right and left bank talus with some additional stream sediments will definitely detect any buried gold-silver mineralization, providing the sample spacing is sufficiently close (i.e. every 30 meters for bank talus and every 50 to 200 meters for stream sediments). The -20HP concentrates that concentrate base metal limonites and gossan particles are unanalysed. These should be analysed for base metals as the HP results could possibly more effectively detect base metals associated with gold veins than the heavy non magnetic results (Table 3).

Conventional geochem should be tested. However, in many cases conventional geochemistry will not detect veins that are unaffected by mining development and covered in extensive dilutent overburden.

Close-spaced electrical surveys should detect pyritic Au bearing quartz veins and dykes. E.M. surveys that require continuous conductivity, would miss buried veins with disseminated sulfides and Au. If veins with disseminated Au and sulfides are a desired target an electrical I.P. should be considered.

APPENDIX A

STATEMENT OF EXPENDITURES

CARIBOO REVERTED CROWN GRANT MINERAL CLAIMS (Record # 524 to 532 inclusive)

| | |
|---|---|
| Salary of Field Technician Brent Carr Oct 29 - 31/83 | $400.00 |
| Total Benefits | $ 63.60 |
| Total 4 wheel truck rental including mileage Kelowna - Cariboo R.T. | $236.00 |
| Total Gas and Oil | $105.80 |
| Total meals | $ 64.04 |
| Total Lodging | $ 63.17 |
| Telephone | $ 12.75 |
| Sample processing 8 bulk ±9.0 kg samples of stream sediment and/or soil talus through multistage washing-sizing, semigravity concentration; processing to 3000 gms -20+35, to 3000 gms -35+60 and all -60 mesh through a tetrabromoethane and a methylene iodide separation using double +0.5 micron filtration; processing the resultant heaviest -20+150 and heaviest -150 mesh fractions through 6 electromagnetic separations including tare weighing resultant concentrates to 0.02 gm accuracy @ quoted price $91.50 each | $732.00 |
| Hand agate mortar pestle crushing -20+150 oversize concentrates @ $2.25 each | $ 18.00 |
| Coding, vialing and tare weighing crushed concentrates and -150HN concentrates @ $1.00 each | $ 16.00 |
| Prepaid courier to Nuclear Activation, Hamilton Ontario and Bondar Clegg, Vancouver | $ 30.00 |
| Nuclear Activation analytical cost fine Au | $ 81.50 |
| Bondar Clegg Total cost Au-Ag-Cu-Pb-Zn-Mo | $135.60 |
| Analysis of results, report writing, compilation and drafting by geologists R. Capell and C. Fipke | $295.00 |
| | $2,253.46 |

Please apply any excess credits granted to a P.A.C. account of American Volcano Minerals Corp.

## APPENDIX B

## STATEMENT OF QUALIFICATIONS

Mrs Rosemary Capell is a 1965 BSc graduate of University College of Rhodesia. Between 1966 and 1975 Mrs Capell worked for Anglo American in Rhodesia chiefly on base metal geochemistry.

C. Fipke is a BSc Honors Geology graduate of the University of British Columbia. Between 1970 and 1977, C. Fipke worked as a geologist involved to a large extent in heavy mineral exploration and research for Kennecott Copper in New Guinea, Samedan Oil in Australia, Johannesburg Consolidated Investments in Southern Africa and Cominco Ltd. in Brazil and British Columbia. C. Fipke and L.M. Fipke organized C. F. Mineral Research Ltd. in 1977. Currently the C.F. Mineral Research heavy mineral laboratory which employes 25 to 35 people is involved in heavy mineral exploration and processing on behalf of many international companies.

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Alkey Resources
Dave King
[illegible]ruary 9,1984

TABLE 1

C.Fm.83-132

Project: Caribou

1/2

| SAMPLE NO. | Net Wt *(gms) | Grains of Scheelite ? Blue-white S.W. & dead L.W. Fluorescence | Possible Powellite ? Yellow S.W. & dead L.W. Fluorescence | Others | SAMPLE NO. | Net Wt *(gms) | Grains of Scheelite ? Blue-white S.W. & dead L.W. Fluorescence | Possible Powellite ? Yellow S.W. & dead L.W. Fluorescence | Others |
|---|---|---|---|---|---|---|---|---|---|
| B 167 | | | | | B 169 | | | | |
| -20+150 HM | 26.13 | | | | -20+150 HM | 3.50 | | | |
| HP | 272.12 | | | | HP | 192.27 | | | |
| HN | 143.51 | ±25 | | | HN | 120.72 | ±5 | | |
| | | | | | | | | | |
| -150 HM | 0.17 | | | | -150 HM | 0.22 | | | |
| HP | 5.04 | | | | HP | 5.89 | | | |
| HN | 6.95 | | | | HN | 10.77 | | | |
| | | | | | | | | | |
| ORIG. WT. Kg. | 8.3 | | | | ORIG. WT. Kg. | 7.7 | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| B 168 | | | | | B 170 | | | | |
| -20+150 HM | 4.05 | | | | -20+150 HM | 4.22 | | | |
| HP | 179.68 | | | | HP | 200.66 | | | |
| HN | 147.31 | ± 11 | | | HN | 157.45 | ±3 | | |
| | | | | | | | | | |
| -150 HM | 0.15 | | | | -150 HM | 0.28 | | | |
| HP | 3.61 | | | | HP | 4.80 | | | |
| HN | 5.65 | | | | HN | 7.62 | | | |
| | | | | | | | | | |
| ORIG. WT. Kg. | 8.9 | | | | ORIG. WT. Kg. | 8.6 | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

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TABLE 1



| SAMPLE NO. | Net Wt *(gms) | Grains of Scheelite ? Blue-white S.W. & 'dead' L.W. Fluorescence | Possible Powellite ? Yellow S.W. & 'dead' L.W. Fluorescence | Others |
|---|---|---|---|---|
| B 171 | | | | |
| -20+150 HM | 4.33 | | | |
| HP | 271.97 | | | |
| HN | 147.80 | ± 5 | | |
| | | | | |
| -150 HM | 0.13 | | | |
| HP | 4.00 | | | |
| HN | 4.88 | | | |
| | | | | |
| ORIG. WT. Kg. | 8.0 | | | |
| | | | | |
| | | | | |
| B 172 | | | | |
| -20+150 HM | 1.94 | | | |
| HP | 114.50 | | | |
| HN | 79.46 | ± 5 | | |
| | | | | |
| -150 HM | 0.04 | | | |
| HP | 1.28 | | | |
| HN | 1.46 | | | |
| | | | | |
| ORIG. WT. Kg. | 6.6 | | | |

| SAMPLE NO. | Net Wt *(gms) | Grains of Scheelite ? Blue-white S.W. & 'dead' L.W. Fluorescence | Possible Powellite ? Yellow S.W. & 'dead' L.W. Fluorescence | Others |
|---|---|---|---|---|
| B 173 | | | | |
| -20+150 HM | 0.95 | | | |
| HP | 45.50 | | | |
| HN | 40.58 | ± 85 | | |
| | | | | |
| -150 HM | < 0.01 | | | |
| HP | 1.46 | | | |
| HN | 3.11 | | | |
| | | | | |
| ORIG. WT. Kg. | 7.0 | | | |
| | | | | |
| | | | | |
| B 174 | | | | |
| -20+150 HM | 0.86 | | | |
| HP | 28.06 | | | |
| HN | 17.25 | ± 3 | | |
| | | | | |
| -150 HM | < 0.01 | | | |
| HP | 0.15 | | | |
| HN | 0.87 | | | |
| | | | | |
| ORIG. WT. Kg. | 4.7 | | | |

TABLE 2

Scheelite Results

| Sample # | Grains Scheelite | Grains Scheelite Normalized to 9 Kg sample weights |
|---|---|---|
| B167 | 25 | 27 |
| B168 | 11 | 11 |
| B169 | 5 | 6 |
| B170 | 3 | 3 |
| B171 | 5 | 6 |
| B172 | 5 | 7 |
| B173 | 85 | 109 |
| B174 | 3 | 6 |

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BONDAR-CLEGG

Geochemical Lab Report

TABLE 3a

REPORT: 124-0188 | PROJECT: CARIBOU | PAGE 1

| SAMPLE NUMBER | ELEMENT UNITS | Cu PPM | Pb PPM | Zn PPM | Mo PPM | As PPM | Au PPB | $A_u$ PPB | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| -20+150HN | | | | | | | | | |
| C B167 | | 80 | 590 | 130 | 2 | 8.6 | > 10000 | 16,389 | |
| C B168 | | 83 | 250 | 185 | 2 | 3.1 | > 10000 | 7,646 | |
| C B169 | | 72 | 122 | 170 | 3 | 0.7 | > 10000 | 5,897 | |
| C B170 | | 76 | 184 | 188 | 3 | 0.8 | 7750 | | |
| C B171 | | 70 | 60 | 158 | 2 | 0.4 | 3280 | | |
| C B172 | | 84 | 71 | 200 | 3 | 0.7 | 5680 | | |
| C B173 | | 95 | 113 | 245 | 4 | 0.5 | 9670 | | |
| C B174 | | 60 | 130 | 170 | 3 | 2.9 | > 10000 | 24,446 | |

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BONDAR-CLEGG

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of Ana

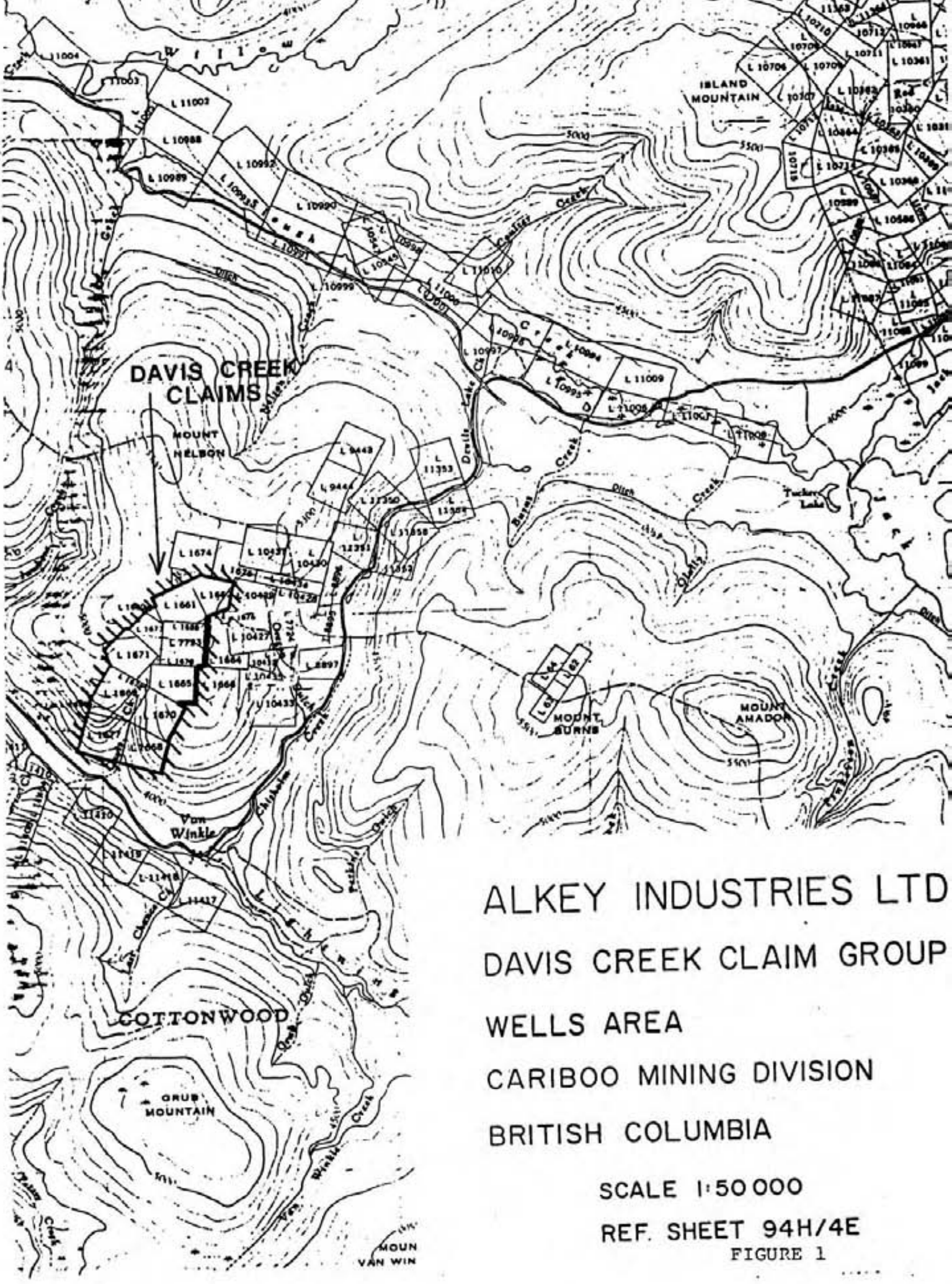
TABLE 3b

REPORT: 624-0188

PROJECT: CARIBOU PAGE 1

| SAMPLE NUMBER | ELEMENT UNITS | Au OPT | NOTES |
|---|---|---|---|
| -20+150HN | | | |
| C B167 | | 0.478 | |
| C B168 | | 0.223 | |
| C B169 | | 0.172 | |
| C B174 | | 0.713 | |

Registered Assayer, Province of Britis




# ALKEY INDUSTRIES LTD

## DAVIS CREEK CLAIM GROUP

WELLS AREA

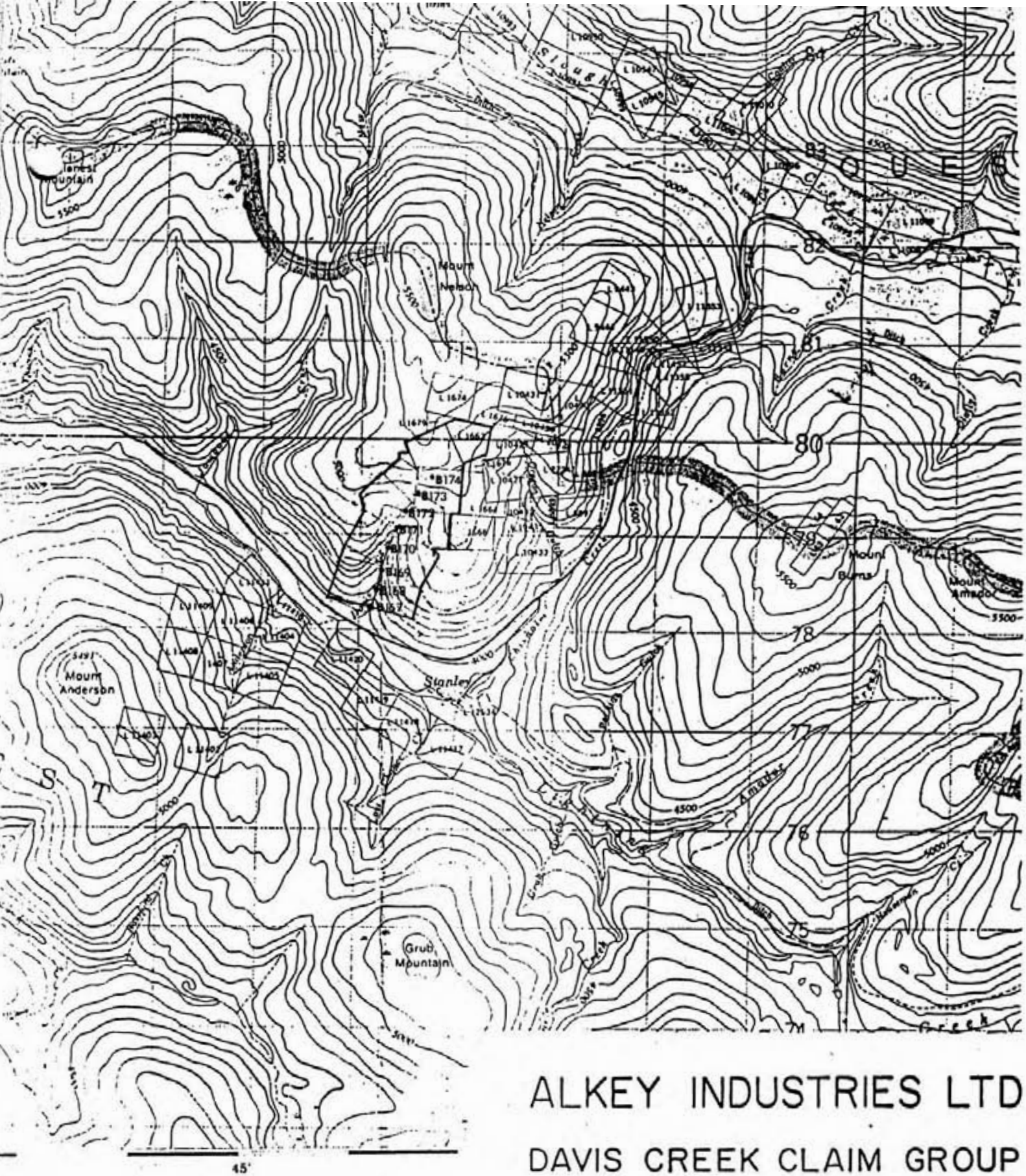
CARIBOO MINING DIVISION

BRITISH COLUMBIA

SCALE 1:50 000

REF. SHEET 94H/4E

FIGURE 1



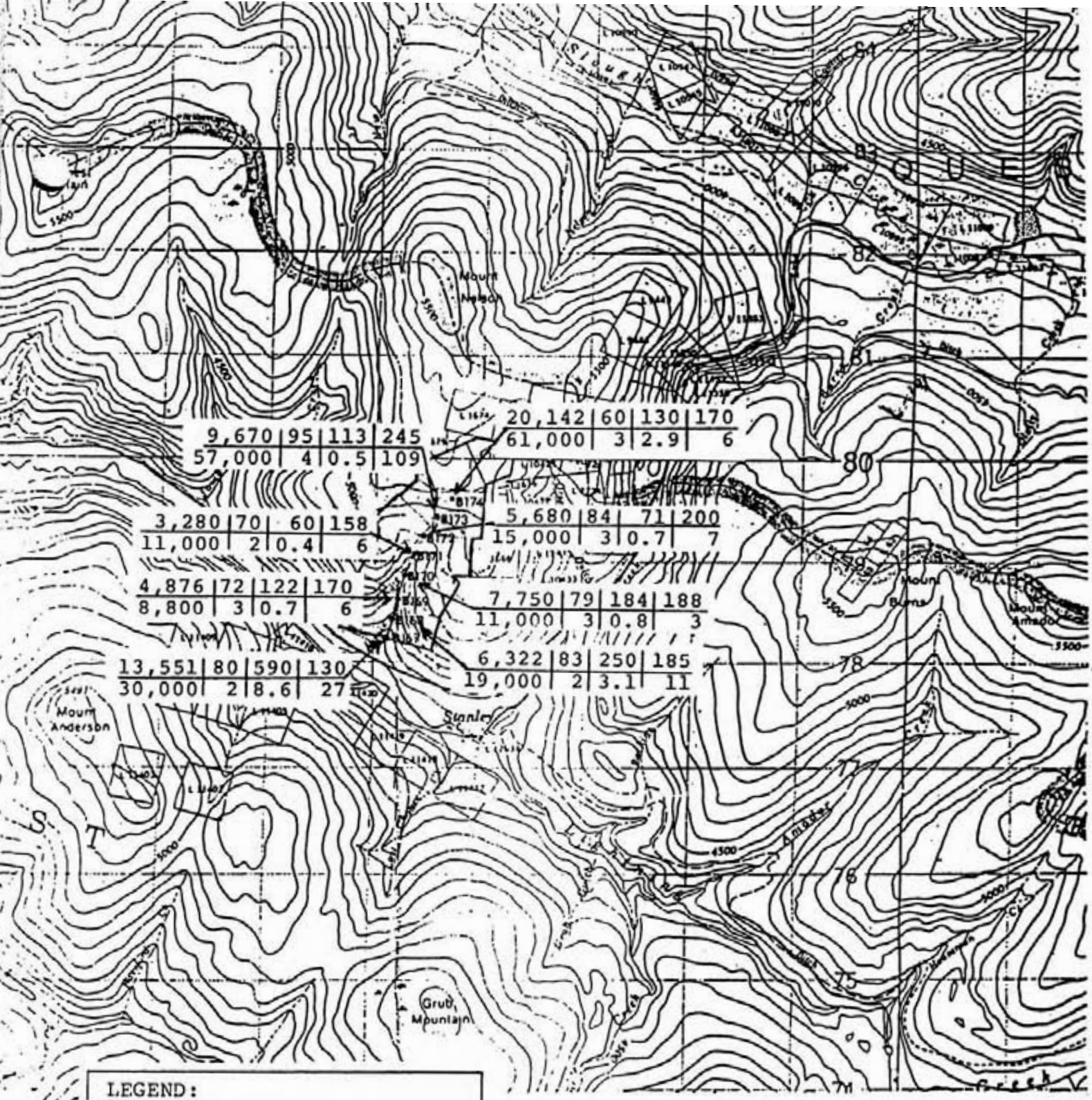

# ALKEY INDUSTRIES LTD

## DAVIS CREEK CLAIM GROUP

**SAMPLE LOCATIONS**

SCALE 1:50 000

FIGURE 2




LEGEND:

| Coarse Au ppb | Cu ppm | Pb ppm | Zn ppm |
|---|---|---|---|
| Fine Au ppb | Mo ppm | Ag ppm | W grains |

# ALKEY INDUSTRIES LTD

## DAVIS CREEK CLAIM GROUP

### SAMPLE LOCATIONS AND RESULTS

SCALE 1:50 000

FIGURE 3

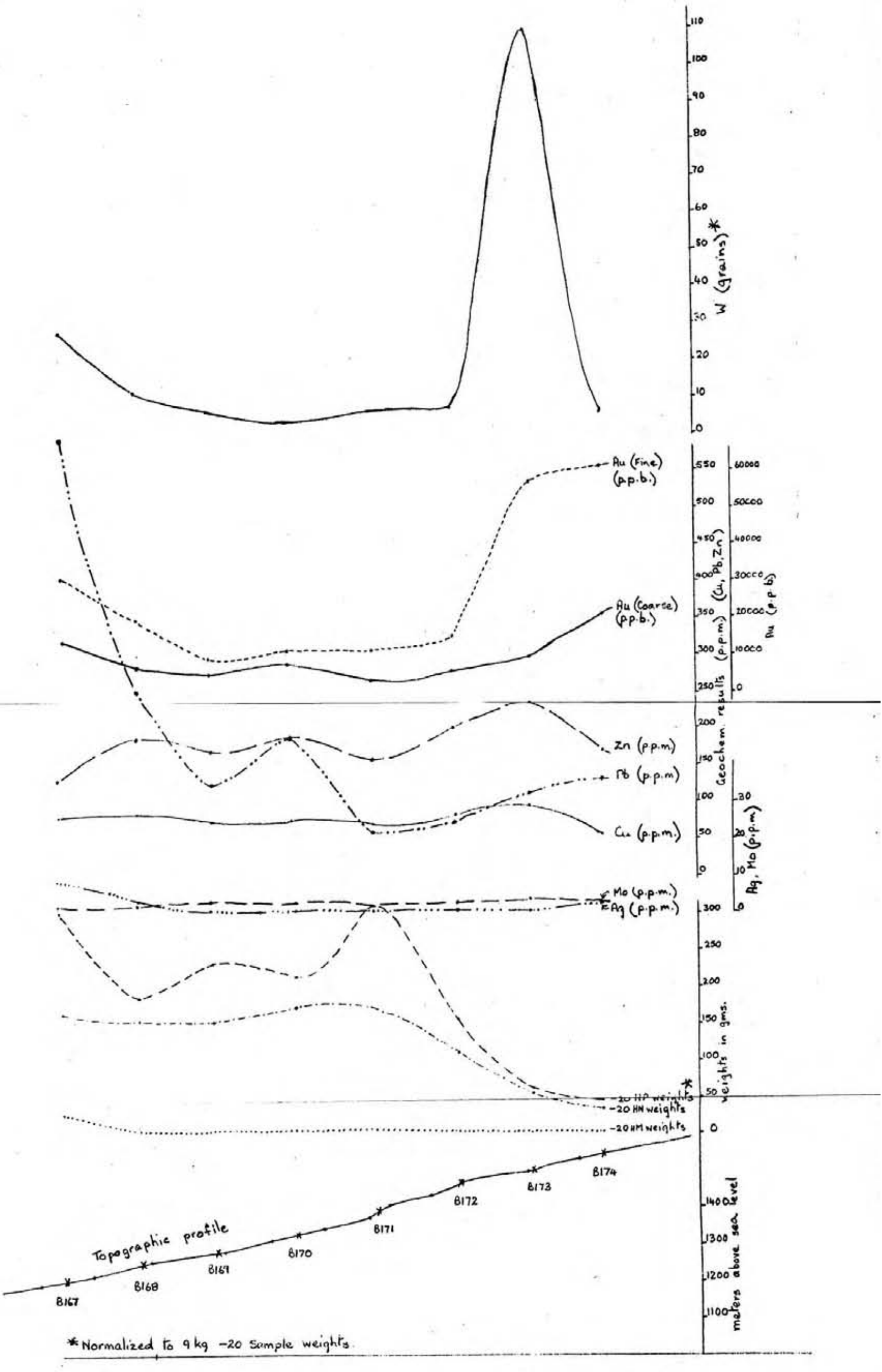



FIGURE 4.

Profile of Topography and Results Normalized to 9 Kg -20 sample weights Obtained from Davis Creek Heavy Mineral Project.