# REPORT OF ACTIVITIES ON THE CONTACT CREEK PROPERTY

## (Canyon 26 to 29 claims)

LIARD MINING DIVISION
NTS: 104G/04

Owned & Operated By:

**Homestake Mineral Development Company**
**1000-700 West Pender Street,**
**Vancouver, B.C.**

**Jane M. Howe**
**May 1991**

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## SUMMARY

The Contact Creek property, owned by Homestake Mineral Development Company is located approximately 66 kilometres southwest of Telegraph Creek, in northwestern British Columbia.

Prospecting and sampling by Homestake in 1988 and 1989 outlined several quartz veins with anomalous geochemical gold and silver values. Follow up work in 1990 focused upon these anomalous areas.

The 1990 program consisted of:

(1) establishment of a 2.6 line kilometre grid,
(2) detailed geologic mapping (1:500 scale) of an area known to host numerous quartz veins and intense alteration, and
(3) property geologic mapping (1:10 000 scale) down dip from the alteration and veining.

A total of 40 rock samples and 2 stream sediment samples were collected and analyzed by Acme Analytical Labs for 30 elements using Inductively Coupled Argon Plasma (ICP).

# 1.0 INTRODUCTION

The primary objectives of the 1990 program on the Canyon claims were:

(1) to confirm gold anomalies found in quartz veins in 1989,
(2) to evaluate the gold content of numerous other quartz veins, and
(3) to perform detailed geologic mapping of the area surrounding a quartz vein which assayed 0.207 opt gold in 1989.

## 1.1 LOCATION

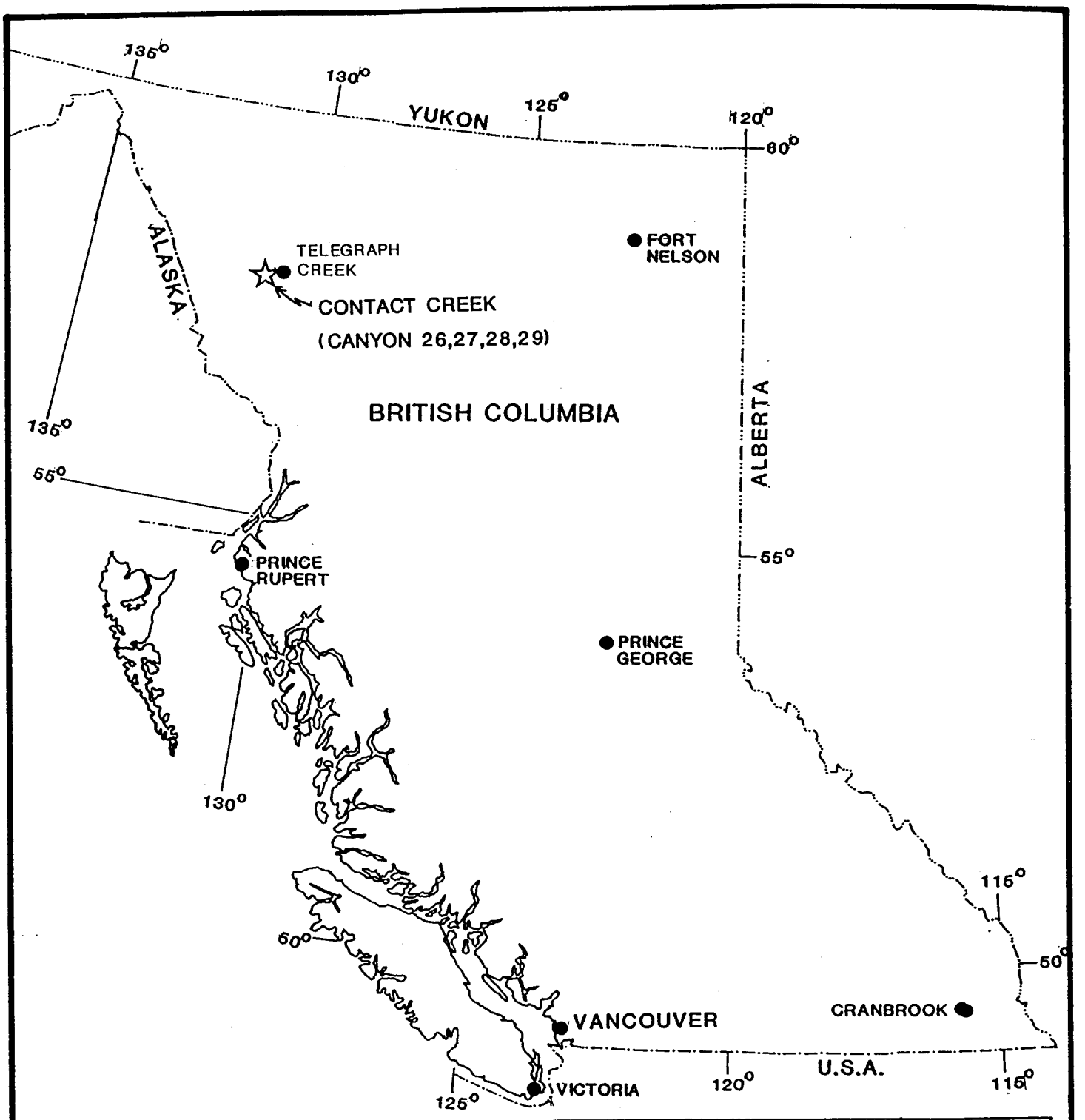
The Contact Creek property is located near the confluence of Jack Wilson Creek with the Stikine River approximately 88 kilometres southwest of Telegraph Creek (Figure 1 and 2). The claims are centred at $57^0$ 10' N latitude and $131^0$ 37' W longitude on NTS map sheet 104G/4.

## 1.2 PHYSIOGRAPHY

The claims encompass a steep mountain between Jack Wilson Creek and Contact Creek. Property elevations vary from 240 metres at Jack Wilson Creek to 1490 metres at the mountain peak. Treeline is roughly 1060 metres on the south facing slope but drops to 700 metres on the north and east slopes. Vegetation includes spruce trees, alders and devil's club forming a dense undergrowth in the valleys, to subalpine meadows near the peak. Drainage is to the north into Contact Creek and south and east into Jack Wilson Creek. The topography varies from gently sloping valley bottoms to steep cliffs and talus covered slopes.

## 1.3 ACCESS

Access to the property is via helicopter from Telegraph Creek, which is connected to Dease Lake by an all-weather road and serviced by fixed wing flights from Smithers, B.C. The Stikine River provides navigable water access from Wrangell, Alaska north to Telegraph Creek. A gravel airstrip capable of handling aircraft as large as DC-3's is located at the mouth of the Scud River, 20 km north of the property.



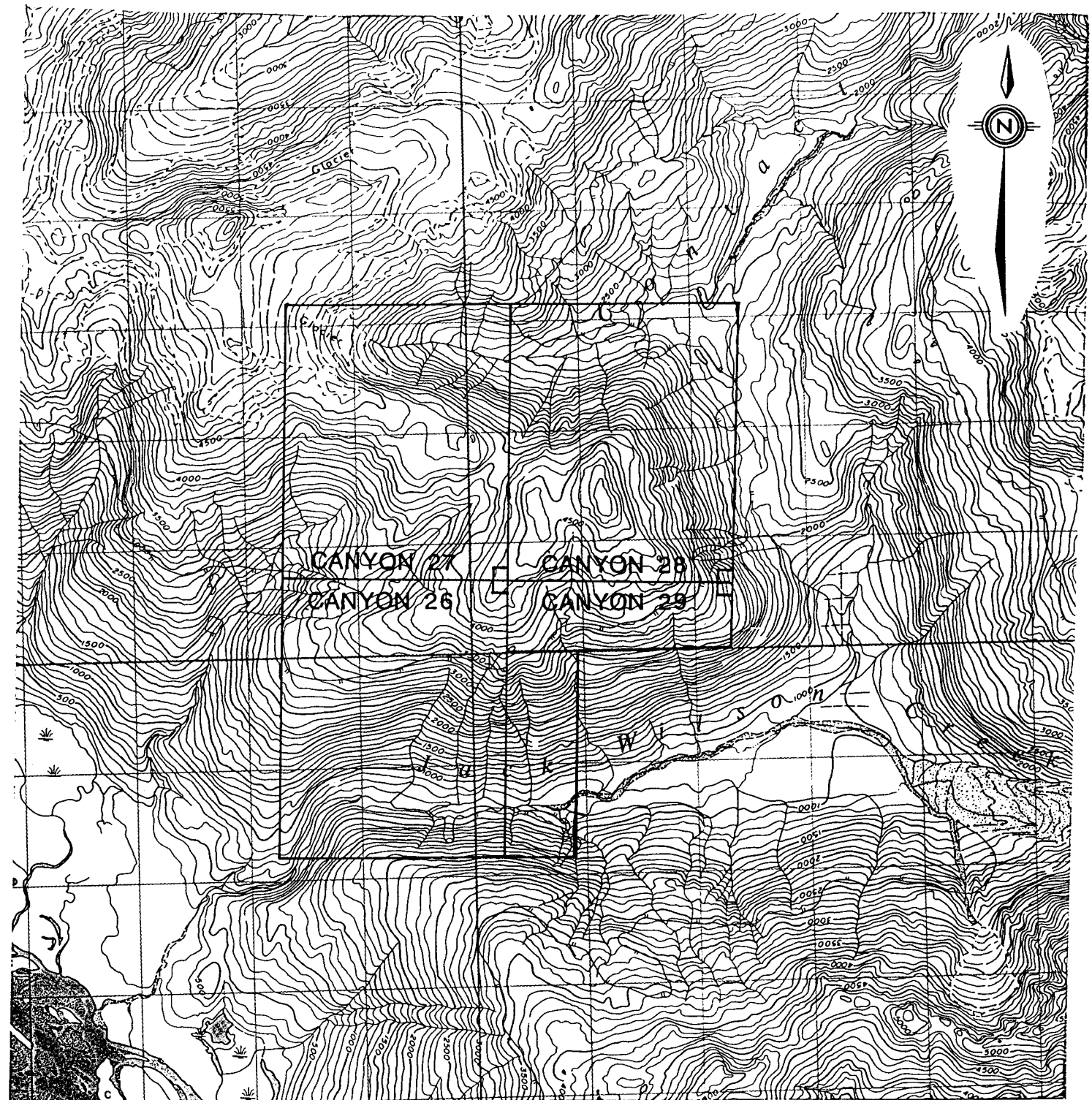

HOMESTAKE MINERAL DEVELOPMENT COMPANY

# GRAND CANYON PROJECT, B.C.

## CONTACT CREEK (CANYON 26,27,28,29)

## LOCATION MAP

| DRAWN | DATE | FILE CODE | |
|---|---|---|---|
| KMc | 11/87 | 104G | FIGURE 1 |
| Revised | | | |




SCALE 1 : 50,000

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CONTACT CREEK (CANYON 26,27,28,29)

DETAILED CLAIM LOCATION

| DRAWN | DATE | FILE CODE | |
|---|---|---|---|
| PH | 08/89 | 104G/4 | FIGURE 2 |
| Revised | | | |

## 2.0 CLAIM STATUS

The Contact Creek property consists of four contiguous claims totalling 80 units and are 100% owned by Homestake Mineral Development Company. Current claim data is as follows:

| CLAIM NAME | UNITS | RECORD # | RECORD DATE | *EXPIRY DATE |
|---|---|---|---|---|
| Canyon 26 | 20 | 4730 | 28/06/88 | 28/06/93 |
| Canyon 27 | 20 | 4731 | 28/06/88 | 28/06/93 |
| Canyon 28 | 20 | 4732 | 28/06/88 | 28/06/93 |
| Canyon 29 | 20 | 4733 | 28/06/88 | 28/06/93 |

* Assuming acceptance of this report.

## 3.0 EXPLORATION HISTORY

The Canyon claims were staked as a result of 2 anomalous stream sediment samples collected by the B.C. Regional Geochemical Sampling Program in 1987. One stream sample located east of the property on Jack Wilson Creek assayed 154 ppb Au, and one sample obtained from Contact Creek north of the property assayed 23 ppb gold. Both samples are above the 88th percentile for gold in stream samples for the area (B.C. RGS 19).

During the summer of 1989, phase one prospecting included stream sediment and outcrop sampling. Results obtained from the stream samples were encouraging with several silts assaying greater than 200 ppb gold (B.C. Assessment Report 19064). Phase two consisted of several reconnaissance traverses on the property resulting in the location of 3 quartz veins with gold and silver anomalies (B.C. Assessment Report 20152).

## 4.0 CURRENT 1990 WORK PROGRAM

In mid-September, the 2.6 line km Saddle Grid was established over an area of quartz veining and alteration in andesitic volcanic rocks in the northeastern portion of the property. An 800 metre north-south baseline was established using compass and chain. East-west grid lines spaced 100 m apart were turned off the baseline at 90° for 200 metres. The grid provided control for 1:500 scale geologic mapping and sampling.

Two mountain climbing geologists were contracted to complete geological mapping and sampling along several steep slopes on the northern and eastern flanks of the mountain. The purpose of this survey was to determine the down dip extension of

several alteration zones and to obtain quartz vein samples for assay from several gossanous areas.

During the 1990 exploration program 40 outcrop samples and 2 stream sediment samples were collected and analyzed by Acme Analytical for 30 elements using ICP methods. Rock sample descriptions are located in Appendix 1, geochemical results are reported in Appendix 2 and the detailed geology map showing sample locations is in the map pocket.

## 5.0 REGIONAL GEOLOGY

The property lies on the boundary between the Coast Plutonic Complex and Intermontane Belts and is underlain by rocks of the Stikine assemblage (Figure 3). The terrane in this area can be divided into four tectonostratigraphic packages: a Late Palaeozoic to Middle Jurassic island arc suite represented by the Stikine assemblage of Monger (1977) and the Stuhini Group (Kerr, 1948); Middle Jurassic to early Late Cretaceous successor-basin sediments of the Bowser Lake Group (Tipper and Richards, 1976); Late Cretaceous to Tertiary volcanic arc assemblages of the Sloko Group (Aiken, 1959); and Late Tertiary to Recent post-orogenic plateau basalts of the Edziza and Spectrum Ranges.

Three stages of plutonism are recognized in the area. The Hickman batholith is composed of Early to Middle Triassic quartz monzonite to quartz diorite. The Yehiniko and Galore Creek Intrusions are composed of quartz diorite to syenite of Early to Middle Jurassic age. Numerous dykes and sills of monzonite to diorite of Tertiary age occur throughout the project area.

These rocks have undergone multiple stages of deformation, forming a complex structural pattern which is complicated by large differences in the competence of the different units. North and northwest trending normal faults are dominant and are cut by narrow west-trending extensional faults (Souther, 1972).

## 6.0 PROPERTY GEOLOGY

The property is underlain by clastic, carbonate and volcanic rocks of the Upper Triassic Stuhini Group. These rocks are intruded by medium-grained diorite of the Coast Plutonic Complex.

The western half of the property (Canyon 26 and 27 claims) is underlain by medium grained hornblende diorite. The intrusive is generally massive and is composed

132° 00'
45'
30'
15'
131° 00'
58° 00'
45'

0 6 12 18 Kilometres
1 : 250,000

MAP MODIFIED FROM SOUTHER, 1971

## LEGEND

**CENOZOIC**

QUATERNARY
PLEISTOCENE AND RECENT

29 Fluviatile gravel; sand, silt; glacial outwash, till, alpine moraine and colluvium

28 Hot-spring deposit, tufa, aragonite

27 Olivine basalt, related pyroclastic rocks and loose tephra; younger than some of 29

TERTIARY AND QUATERNARY
UPPER TERTIARY AND PLEISTOCENE

26 Rhyolite and dacite flows, lava domes, pyroclastic rocks and related subvolcanic intrusions; minor basalt

25 Basalt, olivine basalt, dacite, related pyroclastic rocks and subvolcanic intrusions; minor rhyolite; in part younger than some 26

CRETACEOUS AND TERTIARY
UPPER CRETACEOUS AND LOWER TERTIARY
SLOKO GROUP

24 Light green, purple and white rhyolite, trachyte and dacite flows, pyroclastic rocks and derived sediments

22 23 22. Biotite leucogranite, subvolcanic stocks, dykes and sills
23. Porphyritic biotite andesite, lava domes, flows and (?) sills

SUSTUT GROUP

21 Chert-pebble conglomerate, granite-boulder conglomerate, quartzose sandstone, arkose, siltstone, carbonaceous shale and minor coal

20 Felsite, quartz-feldspar porphyry, pyritiferous felsite, orbicular rhyolite; in part equivalent to 22

19 Medium- to coarse-grained, pink biotite-hornblende quartz monzonite

JURASSIC AND/OR CRETACEOUS
POST-UPPER TRIASSIC PRE-TERTIARY

18 Hornblende diorite

17 Granodiorite, quartz diorite; minor diorite, leucogranite and migmatite

JURASSIC
MIDDLE (?) AND UPPER JURASSIC
BOWSER GROUP

16 Chert-pebble conglomerate, grit, greywacke, subgreywacke, siltstone and shale; may include some 13

MIDDLE JURASSIC

15 Basalt, pillow lava, tuff-breccia, derived volcaniclastic rocks and related subvolcanic intrusions

LOWER AND MIDDLE JURASSIC

14 Shale, minor siltstone, siliceous and calcareous siltstone, greywacke and ironstone

LOWER JURASSIC

13 Conglomerate, polymictic conglomerate; granite-boulder conglomerate, grit, greywacke, siltstone; basaltic and andesitic volcanic rocks, peperites, pillow-breccia and derived volcaniclastic rocks

TRIASSIC AND JURASSIC
POST-UPPER TRIASSIC PRE-LOWER JURASSIC

12 Syenite, orthoclase porphyry, monzonite, pyroxenite

HICKMAN BATHOLITH

10 11 10. Hornblende granodiorite, minor hornblende-quartz diorite 11. Hornblende, quartz diorite, hornblende-pyroxene diorite, amphibolite and pyroxene-bearing amphibolite

**MESOZOIC**

TRIASSIC
UPPER TRIASSIC

9 Undifferentiated volcanic and sedimentary rocks (units 5 to 8 inclusive)

8 Augite-andesite flows, pyroclastic rocks, derived volcaniclastic rocks and related subvolcanic intrusions; minor greywacke, siltstone and polymictic conglomerate

7 Siltstone, thin-bedded siliceous siltstone, ribbon chert, calcareous and dolomitic siltstone, greywacke, volcanic conglomerate, and minor limestone

6 Limestone, fetid argillaceous limestone, calcareous shale and reefoid limestone; may be in part younger than some 7 and 8

5 Greywacke, siltstone, shale; minor conglomerate, tuff and volcanic sandstone

MIDDLE TRIASSIC

4 Shale, concretionary black shale; minor calcareous shale and siltstone

**PALEOZOIC**

PERMIAN
MIDDLE AND UPPER PERMIAN

3 Limestone, thick-bedded mainly bioclastic limestone; minor siltstone, chert and tuff

PERMIAN AND OLDER

2 Phyllite, argillaceous quartzite, quartz-sericite schist, chlorite schist, greenstone, minor chert, schistose tuff and limestone

MISSISSIPPIAN

1 Limestone, crinoidal limestone, ferruginous limestone; maroon tuff, chert and phyllite

B Amphibolite, amphibolite gneiss; age unknown probably pre-Upper Jurassic

A Ultramafic rocks; peridotite, dunite, serpentinite; age unknown, probably pre-Lower Jurassic

Geological boundary (defined and approximate, assumed)
Bedding (horizontal, inclined, vertical, overturned)
Anticline
Syncline
Fault (defined and approximate, assumed)
Thrust fault, teeth on hanging-wall side (defined and approximate, assumed)
Fossil locality
Mineral property 15 x
Glacier

### INDEX TO MINERAL PROPERTIES

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MINERAL DEVELOPMENT COMPANY

# GRAND CANYON PROJECT
# TELEGRAPH CREEK B.C.
## CONTACT CREEK
## (CANYON 26,27,28,29)
# REGIONAL GEOLOGY

| DRAWN | DATE | FILE CODE | FIGURE 3 |
|---|---|---|---|
| | 08/89 | | |

of approximately 50% plagioclase, 15% potassic feldspar, 20% quartz, 10% hornblende and 5% biotite. The diorite forms an intrusive contact with clastic and carbonate rocks to the northeast and andesitic volcanics to the south.

A 400 metre wide ribbon of sedimentary rocks which consists of interbedded polymictic matrix supported conglomerate, quartzite, argillite and limestone outcrops near the diorite contact in Canyon claims 27 and 28. Tight isoclinal folding is evident within these units and is likely related to the emplacement of the diorite. Immediately adjacent to the diorite the sedimentary rocks are metamorphosed to hornfels facies and locally form migmatite. Throughout the area orange-yellow limonitic patches reflect the oxidation of trace disseminated pyrite.

Volcanic rocks are exposed on the Canyon 28 and 29 claims and consist of massive andesitic agglomerates and fine-grained ash tuffs to lapilli tuffs which are locally silicified and carbonatized. The andesite generally contains trace amounts of pyrite and pyrrhotite but where silicified, pyrite content may be as high as 5% and pyrrhotite 1%.

## 7.0 CURRENT EXPLORATION

### 7.1 Detailed Stratigraphy

Lithologies encountered during the 1990 detailed mapping have been subdivided into 4 units:

1. Hornblende-phyric Andesite volcanic
2. Plagioclase-phyric Andesite volcanic
3. Hornblende + Plagioclase-phyric Andesite volcanic
4. Felsic Intrusive.

Each of the volcanic units have been further classified according to the following volcanic characteristics:

a) vesicular flow
b) agglomerate
c) ash tuff
d) lapilli tuff
e) massive, undifferentiated, unfoliated
f) synvolcanic dike.

The presence of agglomerate units interbedded with lapilli to ash tuffs and massive flows may indicate a proximal volcanic vent source. Individual tuff and flow units were impossible to distinguish within the lithologic units because most contacts were gradational.

A thin, poorly sorted unit of ash tuff may provide the only bedding attitude information in the immediate area. Based on this unit, stratigraphy in the area appears to strike roughly north-south and dip eastward; tops are to the east.

The felsic intrusive unit crosscuts all volcanic units and appears to have been emplaced along bedding planes and other zones of structural weakness. These dikes are probably apophyses of the large diorite intrusive which underlies most of the western portion of the property. The intimate nature between intense alteration, quartz veins and felsic dikes indicates that they are probably temporally related.

## 7.2 Structure

A weakly-developed penetrative foliation is seen throughout the volcanic rocks in the grid area. The foliation appears to parallel bedding, trending roughly north-south.

The andesitic volcanic rocks host several narrow shear zones generally observed in talus or rubble crop in bedding parallel gullies. The location of the gullies appears to be controlled by the stratigraphic contact between the different volcanic units. These zones are intensely silicified and carbonitized and many contain an altered felsic dike in the core.

Conjugate joint sets are well-developed and mask foliation along the eastern edge of the grid area. The joint sets are only seen in hornblende-phyric unit of the volcanics.

## 7.3 Alteration and Mineralization

Extensive zones of matrix epidotization and silicification occur in the andesitic tuffs and agglomerates. Replacement of primary minerals in the volcanic matrix provides easy identification of the fragmental nature of many of these rocks. This alteration assemblage is pervasive throughout all volcanic units in the area.

Elongate zones of intense carbonatization and silicification occur proximal to, and are likely associated with the emplacement of late-stage felsic dikes along bedding planes. The alteration appears to be contemporaneous to dike emplacement since all rocks units have been altered.

Quartz veins and stringers are ubiquitous in the volcanic units, but the majority of the veins are barren, massive and milky-white. The veins often occur

as discontinuous gash veins and are typically less than 20 cm wide. Three generations of veins are recognized in the grid area and are characterized by unique orientations. Crosscutting relationships have not been seen and are therefore assumed.

The first vein set trends roughly east-west, parallel to synvolcanic dikes which crosscut stratigraphy. These veins are typically bull white, barren of sulphides and do not contain geochemically anomalous values of gold, silver or copper (sample 35498b).

The second vein set trends north-south, roughly parallel to bedding and appears to be spatially and temporally associated with late stage felsic dikes and alteration. These veins rarely contain any sulphides however, occasional sulphide casts are visible. Four samples (35494, 35495, 35496 and 35498a) of vein and wallrock material from a 30cm x 20 metre exposed vein returned anomalous gold values. The gold grade in these samples ranged between 184-648 ppb, one sample contained 1875 ppm copper. None of these samples assayed as high as the 0.207 opt gold sample taken from the same vein during the 1989 exploration program.

The third vein set occurs parallel to the dominant joint trend at 310°, dipping 45° NE. These veins are well mineralized, contain numerous sulphides and are anomalous in gold, silver and copper. Sample 35018, obtained from a 15cm wide quartz vein along a joint surface assayed 347 ppb gold, 59.5 ppm silver, 20854 ppm copper. This vein and other veins nearby contain 2 to 5% blebby to disseminated chalcopyrite, 1 to 2% malachite and azurite in lenses and trace to 1% euhedral disseminated pyrite and pyrrhotite. These veins are exposed for 30-40 metres of strike length. The veins are offset 20 metres in a sinistral movement along a brittle fault presently occupied by a synvolcanic dike. The offset portion of the vein is exposed for 5 metres before masked by rubble in a gully. Further detailed geologic mapping and sampling of the other veins and structures in this area is warranted.

Numerous quartz veins were located along the steep eastern slopes of the mountain. Most veins were associated with pervasive silicification and carbonatization of andesitic tuffs and agglomerates. Samples 90C-HS-K01 and 90G-HS-W7 returned anomalous gold values of 1336 and 1723 ppb gold respectively, and only slightly elevated copper and silver values. Five samples (90G-HS-K-03,W-04,W-08,W-09,W-10) were obtained from veins hosted in narrow shear zones with intense quartz-sericite alteration, trace pyrite and chalcopyrite but failed to return any anomalous values. Vein orientations along the steep slopes are erratic and may indicate that structural controls are weaker or not well developed here.

## 8.0 RESULTS AND INTERPRETATION

Descriptions of all samples taken during 1991 are listed in Appendix 1 and geochemical results are tabulated in Appendix 2.

The quartz vein which returned an assay of 0.207 opt gold during the 1989 exploration program (sample 31751) was resampled in the immediate sample area and along strike. Three samples returned values between 184 and 648 ppb gold, with one sample containing anomalous copper. This quartz vein contained little or no visible sulphides and therefore all quartz veins in the vicinity were sampled regardless of sulphide content.

Several mineralized quartz veins with anomalous gold and silver values trend NW-SE near the summit of the mountain and appear to hold the most potential for further exploration (sample 35018).

The spotty nature of sulphides and gold mineralization may be attributed to weathering. Abundant "casts" of euhedral pyrite crystals are frequently seen throughout the area in quartz veins and host rock andesites. Every attempt was made to obtain fresh unweathered material in the samples, but was impossible for most veins. If gold is associated with pyrite, then it may be weathered out as well. This may account for the occurrence of anomalous gold values with and without visible sulphides in the sample. A program of trench blasting to obtain unleached samples is recommended.

## 9.0 REFERENCES


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## APPENDIX I

(Sample Descriptions)

## SAMPLE DESCRIPTIONS

| Sample Number | Description |
|---|---|
| 90C-HS-K01* | Qz-carbonate vein 0.5 to 2.0 m wide, trace py, cpy. |
| 90G-HS-K02 | Limonite altered m.gr andesite, 1% py, trace-1% cpy, hematite. |
| 90G-HS-K03 | Carb. altered andesite agglomerate, incl 7cm qz-carb vein, mariposite, trace cpy, trace py. |
| 90G-HS-K04 | Siliceous pod in andesite agglomerate, limonitic, <1% py, po. |
| 90G-HS-K05 | Silicified andesite with 10% py. |
| 90L-HS-K01 | Stream silt sample. |
| 90L-HS-W01 | Stream silt sample. |
| 90F-HS-W01 | Float, 2cm euhedral qz vein with hematite staining. |
| 90G-HS-W02 | Qz-siderite vein, trace malachite, pervasive alteration of host. |
| 90G-HS-W03 | Qz-siderite-calcite breccia vein, 5cm wide contains fragments of graphitic phyllite, cpy blebs |
| 90G-HS-W04 | 10cm wide qz vein with siderite within qz-carb shear zone, trace py. |
| 90G-HS-W05 | 10-20cm wide qz-carb vein minor disseminated py. |
| 90G-HS-W06 | 10-15cm wide qz vein, 5% disseminated po. |
| 90G-HS-W07* | 60cm wide qz pod, weakly gossanous with Mn staining. |
| 90G-HS-W08 | Qz-sericite altered andesite in 1-2m shear zone, micro calcite veins, trace py. |
| 90G-HS-W09 | Qz-sericite altered, fractured andesite along shear zone, trace py. |
| 90G-HS-W010 | Qz-calcite-siderite vein, 2cm wide in narrow shear zone. 50 cm wide Qz-carb altn halo. |
| 90G-HS-W011 | Qz vein, 20cm wide no mineralization, minor siderite. |
| 90G-HS-W012 | Qz calcite vein, 5-10 cm wide in carb altered andesite |
| 35487 | Gossanous limestone, 1-2% disseminated po. |
| 35489 | Qz vein in argillite, 1% py, trace po and cpy. |
| 35490 | Qz vein in andesite, <40cm wide, trace py in wallrock, no sulphides in vein |
| 35491 | Rubble outcrop, extremely qz-carb altered rock, minor stringers |
| 35492 | Extremely altered rubble, possible felsic dike, hematite altered, no sulphides. |
| 35493 | 4cm wide py,po,cpy stringers in andesitic tuff, weak epidote alteration. |
| 35494 | Qz vein, 13cm wide in pervasively epidote altered lapilli tuff, no sulphides. |
| 35495* | Qz vein, one small bleb of py, otherwise no mineralization (same qz-vein as #35494) |
| 35496* | Qz vein, 13cm wide, incl 30% lapilli tuff wallrock, no mineralization (same as #35494 vein). |
| 35497 | 50cm wide shear zone on strike with qz vein (along strike with vein in #35494). |
| 35498 | Felsic dike cross cuts qz vein and andesite country rock, blebs of cpy. |
| 35499 | Qz vein, 20-40cm wide, 25m along strike from sample #35494. |
| 35000 | Numerous qz stringers, <5mm across, euhedral disseminated py. |
| 35005 | Epidote altered andesite with massive stringers of py up to 2mm wide |
| 35006 | Andesite, 1% disseminated cpy, trace malachite. |
| 35007 | Highly silicified-carb altered dike, trace-1% disseminated cpy. |
| 35016 | 12cm wide brecciated qz vein, qz stringers form halo around vein, no sulphides. |
| 35017 | Qz vein, abundant py casts completely weathered out, occasional euhedral py visible. |
| 35018* | Qz vein, 15cm wide, parallel joint set, 2-5% cpy,1-2% malachite, trace azurite, po,py. |
| 35023 | Qz-carb altered andesite, trace py, abundant py casts. |
| 35074 | Qz stringer in lapilli tuff, trace cpy and malachite. |
| 35075* | Qz vein with felsic dike, trace-1% py, trace cpy. |

* Anomalous gold vaules.

Abbreviations used:

| | | | | | |
|---|---|---|---|---|---|
| py | pyrite | carb | carbonate | cpy | chalcopyrite |
| po | pyrrotite | qz | quartz | altn | alteration |

## APPENDIX II

(Geochemical Assay Results)

...ME ...LYT... LA...TOR... LTD. ... E. ...INGS ST. VANCOUVER B.C. V6A 1R6 PHONE(604)253-3158 FAX(604)253-1716

# GEOCHEMICAL ANALYSIS CERTIFICATE

Homestake Mining (Canada) Limited PROJECT CONTACT CREEK File # 90-4897 Page 1

1000 - 700 W. Pender St., Vancouver BC V6C 1G8 Submitted by: D. MARUD

| SAMPLE# | Mo ppm | Cu ppm | Pb ppm | Zn ppm | Ag ppm | Ni ppm | Co ppm | Mn ppm | Fe % | As ppm | U ppm | Au ppm | Th ppm | Sr ppm | Cd ppm | Sb ppm | Bi ppm | V ppm | Ca % | P % | La ppm | Cr ppm | Mg % | Ba ppm | Ti % | B ppm | Al % | Na % | K % | W ppm | Tl ppm | Au** ppb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90C-HS-K01 | 3 | 107 | 2 | 28 | .4 | 6 | 7 | 614 | 2.16 | 7 | 5 | ND | 1 | 204 | .3 | 2 | 2 | 9 | 1.93 | .025 | 2 | 3 | .09 | 338 | .01 | 6 | .10 | .01 | .08 | 1 | 2 | 1336 |
| 90G-HS-K02 | 2 | 75 | 6 | 52 | .3 | 2 | 18 | 1155 | 4.67 | 14 | 5 | ND | 3 | 235 | .2 | 2 | 2 | 24 | 6.29 | .183 | 4 | 1 | .81 | 467 | .01 | 4 | .62 | .01 | .29 | 1 | 2 | 11 |
| 90G-HS-K03 | 1 | 300 | 20 | 53 | .5 | 76 | 20 | 937 | 3.50 | 45 | 5 | ND | 2 | 849 | .3 | 2 | 2 | 18 | 11.25 | .101 | 5 | 21 | 1.68 | 744 | .01 | 4 | .51 | .01 | .22 | 1 | 2 | 8 |
| 90G-HS-K04 | 39 | 15 | 27 | 35 | .3 | 8 | 3 | 260 | .78 | 2 | 5 | ND | 1 | 73 | .6 | 2 | 2 | 9 | 3.60 | .008 | 2 | 6 | .09 | 32 | .02 | 2 | .10 | .01 | .02 | 1 | 2 | 22 |
| 90G-HS-K05 | 3 | 68 | 5 | 23 | .1 | 23 | 10 | 242 | 3.19 | 2 | 5 | ND | 3 | 128 | .3 | 2 | 8 | 39 | .83 | .102 | 5 | 32 | .36 | 33 | .22 | 2 | .56 | .04 | .15 | 1 | 2 | 171 |
| 90G-HS-W2 | 2 | 288 | 3 | 77 | .2 | 7 | 18 | 1448 | 4.67 | 2 | 5 | ND | 1 | 458 | .9 | 2 | 2 | 31 | 9.46 | .042 | 2 | 1 | .83 | 1236 | .01 | 2 | .26 | .01 | .15 | 1 | 2 | 5 |
| 90G-HS-W3 | 2 | 4170 | 6 | 165 | 5.9 | 11 | 18 | 1062 | 3.64 | 84 | 5 | ND | 1 | 466 | 3.0 | 32 | 2 | 36 | 7.27 | .052 | 2 | 4 | .55 | 91 | .01 | 3 | .33 | .01 | .09 | 1 | 2 | 18 |
| 90G-HS-W4 | 6 | 34 | 15 | 61 | .1 | 75 | 9 | 844 | 4.57 | 5 | 5 | ND | 1 | 585 | 1.0 | 2 | 2 | 18 | 13.63 | .021 | 2 | 9 | 2.28 | 171 | .01 | 2 | .18 | .01 | .05 | 1 | 2 | 3 |
| 90G-HS-W5 | 1 | 13 | 2 | 50 | .1 | 8 | 6 | 1227 | 4.29 | 10 | 5 | ND | 1 | 991 | .8 | 2 | 2 | 12 | 22.18 | .038 | 6 | 3 | 2.47 | 317 | .01 | 2 | .40 | .01 | .09 | 2 | 2 | 34 |
| 90G-HS-W6 | 3 | 28 | 2 | 9 | .4 | 10 | 3 | 174 | .67 | 3 | 6 | ND | 1 | 100 | .2 | 2 | 2 | 4 | .79 | .004 | 2 | 7 | .11 | 1469 | .01 | 2 | .12 | .01 | .03 | 1 | 2 | 6 |
| 90G-HS-W7 | 12 | 108 | 22 | 40 | 1.8 | 12 | 3 | 67 | .70 | 15 | 7 | 3 | 2 | 33 | .3 | 3 | 2 | 3 | .13 | .004 | 2 | 10 | .05 | 540 | .01 | 6 | .10 | .01 | .04 | 1 | 2 | 1723 |
| 90G-HS-W8 | 2 | 52 | 9 | 157 | .2 | 25 | 11 | 649 | 3.19 | 2 | 5 | ND | 3 | 427 | .6 | 2 | 2 | 22 | 9.31 | .074 | 12 | 6 | .96 | 37 | .01 | 2 | .42 | .02 | .11 | 1 | 2 | 38 |
| 90G-HS-W9 | 2 | 50 | 10 | 22 | .3 | 18 | 10 | 166 | 2.87 | 2 | 8 | ND | 2 | 65 | .6 | 2 | 4 | 28 | .87 | .094 | 6 | 13 | .26 | 74 | .17 | 3 | .62 | .05 | .09 | 2 | 2 | 16 |
| 90G-HS-W10 | 1 | 45 | 2 | 35 | .4 | 8 | 9 | 1014 | 2.26 | 7 | 5 | ND | 1 | 112 | .9 | 2 | 2 | 26 | 11.50 | .009 | 2 | 1 | .12 | 144 | .01 | 3 | .24 | .01 | .05 | 1 | 2 | 19 |
| 90G-HS-W11 | 6 | 62 | 2 | 11 | .4 | 15 | 4 | 193 | .97 | 5 | 19 | ND | 2 | 43 | .3 | 4 | 3 | 4 | .69 | .008 | 6 | 12 | .16 | 81 | .01 | 2 | .06 | .01 | .06 | 1 | 2 | 7 |
| 90G-HS-W12 | 1 | 19 | 9 | 31 | .2 | 2 | 5 | 4915 | 1.76 | 2 | 5 | ND | 1 | 1969 | .6 | 2 | 6 | 28 | 37.18 | .019 | 12 | 1 | .64 | 28 | .01 | 2 | .49 | .01 | .08 | 1 | 2 | 22 |
| CC-28-1 35005 | 3 | 29 | 6 | 56 | .1 | 6 | 13 | 635 | 4.06 | 5 | 9 | ND | 1 | 58 | .3 | 2 | 7 | 66 | .83 | .187 | 2 | 2 | 1.63 | 50 | .21 | 2 | 1.87 | .03 | .30 | 2 | 2 | 3 |
| CC-28-1 35006 | 2 | 2737 | 2 | 49 | 1.5 | 6 | 16 | 530 | 2.85 | 5 | 5 | ND | 1 | 89 | .7 | 2 | 3 | 68 | 1.11 | .174 | 2 | 2 | 1.01 | 94 | .19 | 2 | 1.42 | .05 | .29 | 1 | 2 | 65 |
| CC-28-1 35007 | 1 | 119 | 3 | 70 | .1 | 6 | 21 | 1322 | 5.15 | 3 | 5 | ND | 1 | 487 | .6 | 4 | 2 | 46 | 7.80 | .160 | 7 | 1 | 1.48 | 623 | .01 | 2 | .55 | .01 | .31 | 1 | 2 | 6 |
| CC-28-1 35016 | 2 | 8 | 2 | 28 | .1 | 7 | 8 | 992 | 1.92 | 2 | 5 | ND | 1 | 188 | .2 | 2 | 2 | 18 | 3.19 | .037 | 3 | 5 | .38 | 1957 | .01 | 4 | .50 | .01 | .09 | 1 | 2 | 2 |
| CC-28-1 35017 | 4 | 407 | 10 | 27 | 1.4 | 9 | 22 | 142 | 5.68 | 112 | 5 | ND | 1 | 12 | .4 | 8 | 2 | 18 | .19 | .132 | 7 | 4 | .37 | 79 | .01 | 3 | 1.11 | .01 | .13 | 1 | 2 | 22 |
| CC-28-1 35018 | 3 | 20854 | 13 | 2434 | 59.5 | 12 | 30 | 868 | 3.37 | 2301 | 5 | ND | 1 | 220 | 15.0 | 6453 | 3 | 27 | 4.20 | .055 | 2 | 5 | .52 | 32 | .01 | 2 | .16 | .01 | .10 | 1 | 2 | 347 |
| CC-28-1 35023 | 2 | 274 | 2 | 46 | .3 | 6 | 11 | 917 | 2.54 | 6 | 5 | ND | 1 | 147 | .4 | 15 | 2 | 15 | 1.25 | .068 | 2 | 3 | .14 | 1293 | .01 | 4 | .27 | .01 | .10 | 1 | 2 | 10 |
| CC-28-1 35074 | 2 | 213 | 15 | 24 | 1.5 | 11 | 6 | 376 | 1.80 | 4 | 5 | ND | 1 | 41 | .4 | 3 | 5 | 25 | .35 | .026 | 2 | 5 | .46 | 301 | .03 | 2 | .64 | .01 | .02 | 2 | 2 | 15 |
| CC-28-1 35075 | 3 | 221 | 6 | 39 | 13.6 | 10 | 9 | 305 | 1.64 | 18 | 5 | 4 | 1 | 55 | .6 | 37 | 2 | 4 | .50 | .014 | 2 | 7 | .04 | 366 | .01 | 2 | .08 | .01 | .06 | 1 | 2 | 1215 |
| CC-27-1 35487 | 3 | 158 | 7 | 43 | .3 | 19 | 24 | 263 | 4.58 | 2 | 5 | ND | 1 | 88 | .4 | 2 | 2 | 49 | .81 | .175 | 8 | 11 | .70 | 63 | .16 | 2 | .94 | .05 | .08 | 1 | 2 | 2 |
| CC-27-1 35488 | 2 | 36 | 6 | 31 | .4 | 20 | 10 | 255 | 1.76 | 2 | 5 | ND | 1 | 71 | .6 | 2 | 2 | 17 | 1.73 | .052 | 5 | 12 | .48 | 27 | .08 | 2 | .62 | .03 | .05 | 2 | 2 | 3 |
| CC-28-1 35489 | 4 | 121 | 2 | 53 | .6 | 16 | 30 | 1028 | 4.87 | 6 | 8 | ND | 3 | 68 | 1.2 | 3 | 3 | 86 | 2.46 | .201 | 3 | 6 | .96 | 24 | .23 | 2 | 1.40 | .04 | .19 | 1 | 3 | 3 |
| CC-28-1 35490 | 2 | 6897 | 7 | 67 | 9.4 | 16 | 66 | 707 | 5.45 | 4 | 5 | ND | 2 | 23 | .7 | 2 | 6 | 39 | .42 | .101 | 3 | 6 | 1.52 | 71 | .04 | 2 | 2.00 | .01 | .13 | 1 | 2 | 74 |
| CC-28-1 35492 | 1 | 20 | 10 | 92 | .2 | 16 | 27 | 1556 | 7.24 | 4 | 5 | ND | 2 | 627 | .6 | 2 | 2 | 73 | 12.09 | .077 | 3 | 1 | 1.49 | 52 | .01 | 3 | .29 | .01 | .16 | 1 | 2 | 1 |
| CC-28-1 35493 | 3 | 609 | 17 | 75 | 1.5 | 10 | 68 | 923 | 8.20 | 5 | 5 | ND | 2 | 123 | .2 | 2 | 10 | 70 | 1.52 | .165 | 6 | 1 | 1.48 | 76 | .11 | 2 | 2.32 | .03 | .29 | 1 | 2 | 50 |
| CC-28-1 35494 | 3 | 66 | 37 | 13 | .8 | 9 | 5 | 160 | .71 | 4 | 5 | ND | 3 | 13 | .3 | 2 | 2 | 5 | .08 | .010 | 2 | 7 | .04 | 154 | .01 | 2 | .11 | .01 | .05 | 1 | 2 | 184 |
| CC-28-1 35495 | 5 | 61 | 2 | 4 | 1.1 | 10 | 4 | 136 | .57 | 3 | 16 | ND | 2 | 6 | .3 | 2 | 2 | 2 | .02 | .002 | 2 | 9 | .01 | 162 | .01 | 2 | .03 | .01 | .02 | 1 | 2 | 458 |
| CC-28-1 35496 | 4 | 164 | 7 | 38 | 1.3 | 11 | 11 | 686 | 2.66 | 7 | 5 | ND | 1 | 34 | .3 | 5 | 2 | 12 | 1.21 | .069 | 3 | 5 | .10 | 344 | .01 | 3 | .34 | .01 | .17 | 1 | 2 | 648 |
| CC-28-1 35497 | 1 | 36 | 2 | 49 | .4 | 6 | 14 | 1650 | 3.34 | 9 | 5 | ND | 4 | 404 | .6 | 2 | 5 | 32 | 7.73 | .093 | 7 | 1 | 1.00 | 1228 | .01 | 2 | 1.48 | .01 | .20 | 1 | 2 | 21 |
| CC-28-1 35498 NO TAG | 2 | 1875 | 2 | 65 | 1.5 | 12 | 14 | 974 | 3.17 | 2 | 5 | ND | 2 | 179 | .6 | 2 | 4 | 63 | 1.57 | .179 | 3 | 4 | 1.58 | 98 | .16 | 2 | 1.83 | .02 | .05 | 1 | 2 | 17 |
| CC-28-1 35498 WITH TAG | 1 | 140 | 6 | 69 | .6 | 4 | 18 | 1113 | 4.78 | 4 | 5 | ND | 4 | 95 | .7 | 2 | 2 | 25 | 5.06 | .169 | 9 | 1 | .71 | 117 | .01 | 2 | .46 | .02 | .21 | 1 | 2 | 10 |
| STANDARD C/AU-R | 19 | 59 | 43 | 130 | 6.9 | 72 | 32 | 1049 | 3.94 | 40 | 21 | 7 | 40 | 56 | 19.1 | 15 | 23 | 56 | .45 | .093 | 39 | 57 | .89 | 182 | .08 | 33 | 1.88 | .06 | .14 | 13 | 3 | 506 |

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HNO3-H2O AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER.
THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM.
- SAMPLE TYPE: P1-P2 ROCK P3 SILT AU** ANALYSIS BY FA\ICP FROM 10 GM SAMPLE.

DATE RECEIVED: SEP 28 1990 DATE REPORT MAILED: Oct 2/90. SIGNED BY. C. Leong .D.TOYE, C.LEONG, J.WANG; CERTIFIED B.C. ASSAYERS

✓ ASSAY RECOMMENDED

| SAMPLE# | Mo ppm | Cu ppm | Pb ppm | Zn ppm | Ag ppm | Ni ppm | Co ppm | Mn ppm | Fe % | As ppm | U ppm | Au ppm | Th ppm | Sr ppm | Cd ppm | Sb ppm | Bi ppm | V ppm | Ca % | P % | La ppm | Cr ppm | Mg % | Ba ppm | Ti % | B ppm | Al % | Na % | K % | W ppm | Tl ppm | Au** ppb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CC-28-1 35499 | 3 | 9150 | 4 | 1 | 1.9 | 10 | 2 | 189 | 1.51 | 3 | 5 | ND | 1 | 10 | .2 | 2 | 2 | 4 | .08 | .014 | 2 | 8 | .05 | 60 | .01 | 2 | .13 | .01 | .03 | 1 | 2 | 275 |
| CC-28-1 35500 | 1 | 73 | 6 | 33 | .9 | 3 | 23 | 262 | 6.38 | 11 | 9 | ND | 4 | 17 | .2 | 2 | 2 | 30 | .21 | .098 | 3 | 1 | .57 | 25 | .07 | 3 | .78 | .03 | .15 | 1 | 2 | 393 |

| SAMPLE# | Mo ppm | Cu ppm | Pb ppm | Zn ppm | Ag ppm | Ni ppm | Co ppm | Mn ppm | Fe % | As ppm | U ppm | Au ppm | Th ppm | Sr ppm | Cd ppm | Sb ppm | Bi ppm | V ppm | Ca % | P % | La ppm | Cr ppm | Mg % | Ba ppm | Ti % | B ppm | Al % | Na % | K % | W ppm | Au** ppb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90L-HS-K01 | 2 | 217 | 12 | 151 | .5 | 20 | 29 | 2085 | 6.01 | 12 | 5 | ND | 1 | 88 | .2 | 2 | 2 | 82 | .93 | .181 | 8 | 19 | .60 | 393 | .02 | 2 | 1.54 | .01 | .11 | 1 | 14 |
| 90L-HS-W1 | 1 | 105 | 12 | 103 | .3 | 25 | 25 | 1329 | 7.36 | 11 | 5 | ND | 1 | 33 | .2 | 5 | 2 | 93 | .31 | .172 | 14 | 15 | .60 | 252 | .03 | 2 | 1.59 | .02 | .17 | 1 | 4 |
| CC-28-2 35491 | 2 | 62 | 10 | 90 | .1 | 27 | 13 | 854 | 3.64 | 39 | 5 | ND | 1 | 69 | .2 | 2 | 2 | 93 | .73 | .109 | 4 | 44 | .98 | 58 | .08 | 2 | 1.65 | .03 | .14 | 1 | 1 |

## APPENDIX III

(Analytical Methods)

## ANALYTICAL METHODS

ACME ANALTICAL LABORATORIES LTD.

Induced Coupled Argon Plasma

A 0.500 gram sample is digested with 3 ml 3-1-2 HCl-$HNO_3$-$H_2O$ at 95° Celcius for one hour and is diluted with 10 ml water. This leach is partial for Mn, Fe, Sr,Ca, P, La, Cr, Mg, Ba, Ti, B, W and limited for Na, K and Al. Au detection limit by ICP is 3 ppm.

** Au analysis by Fire Assay/ICP from 10 gram sample.

## APPENDIX IV

(Statement of Qualifications)

## STATEMENT OF QUALIFICATIONS

I, Jane M. Howe, with a residence address of 310-1040 East Broadway Street, Vancouver, B.C., V5T 4N7, do hereby certify that:

1. I am a graduate of the University of Waterloo at Waterloo, Ontario with a Bachelor of Science Degree in Geology (1985).

2. I have practiced my profession as a Geologist in Ontario, North West Territories and British Columbia since 1985.

3. I am presently employed as a Contract Geologist by Homestake Mineral Development Company of 1000-700 West Pender Street, Vancouver, B.C.

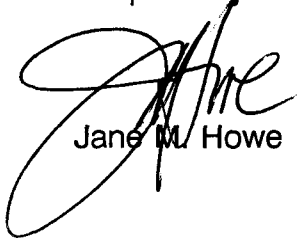
4. The work described in this report is based on fieldwork conducted during September 1990 in which I participated.

5. I have no direct or indirect financial interest in any company known by me to have an interest in the mineral properties described in this report, nor do I expect to recieve any such interest.

6. I am the author of this report.

Dated at Vancouver, B.C. this 18 day of JUNE.

Respectfully Submitted,



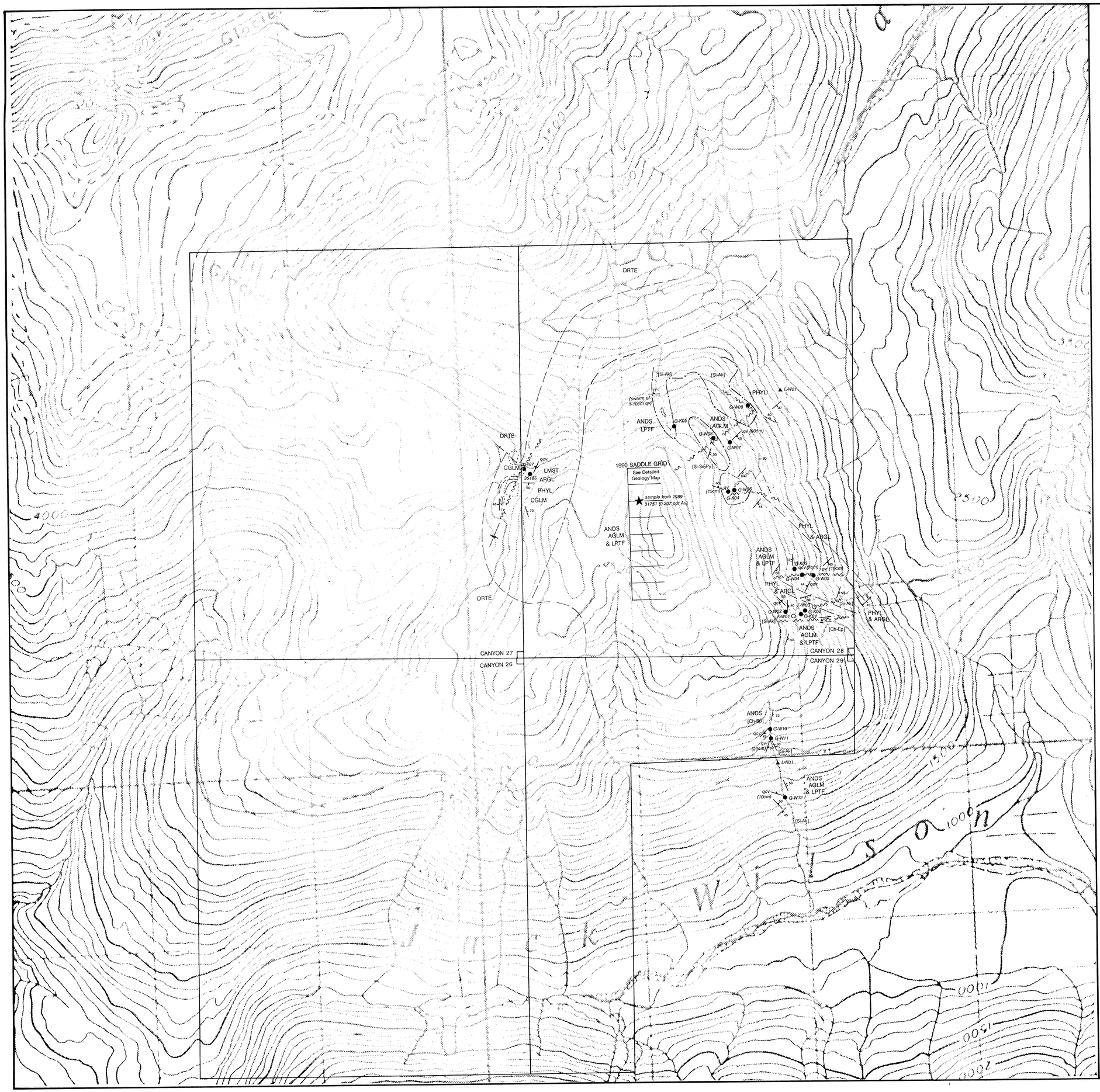
Jane M. Howe

## APPENDIX V

(Statement of Costs)

## STATEMENT OF COSTS

| | | | | |
|---|---|---|---|---|
| SALARIES AND WAGES | | | | |
| Project Leader | 2.5 days | @ | $200/day | $ 500 |
| 2 Geologist | 26 days | @ | $180/day | 4,680 |
| 1 Climbing Geologist | 3 days | @ | $425/day | 1,275 |
| 1 Climbing Geologist | 3 days | @ | $375/day | 1,125 |
| GEOCHEMISTRY AND ASSAYING | | | | |
| 31 element ICP analysis | 42 rocks | @ | $11.40/sample | 479 |
| ADMINISTRATION | | | | |
| Freight and Shipping | | | | 61 |
| SURFACE WORK | | | | |
| Camp Accomodation | 30 days | @ | $135/day | 4,050 |
| Camp Communication | 30 days | @ | $15/day | 450 |
| Climbing Supplies | | | | 209 |
| Helicopter (500D) | 5.8 hrs | @ | $664.76/hr | 3,856 |
| Helicopter (206B) | 1.7 hrs | @ | $572.20/hr | 973 |
| PROPERTY COSTS | | | | |
| Filing Fees | 4 claims | @ | $300/claim | 1,200 |
| | | | SUB-TOTAL | $ 18,858 |
| | | | Administration Fee (12%) | 2,263 |
| | | | **TOTAL** | **$ 21,121** |




N

LEGEND

| | |
|---|---|
| ANDS | Andesite |
| AGLM | Agglomerate |
| LPTF | Lapilli to Ash Tuff |
| PHYL | Phyllite |
| ARGL | Argillite |
| LMST | Limestone |
| CGLM | Conglomerate |
| DRTE | Diorite |

ABBREVIATIONS

| | |
|---|---|
| qv | Quartz vein |
| qcv | Quartz-Carbonate vein |
| [Si-Ak] | Quartz-Ankerite Alteration |
| [Ch-Ep] | Chlorite-Epidote Alteration |
| [Si-Se-Py] | Quartz-Sericite-Pyrite Alteration |

SYMBOLS

- Rock Sample Location
- Float Sample Location
- Stream Sediment Sample Location
- Bedding
- Fracture
- Schistosity
- Vein (width)
- Shear Zone
- Joint
- Geological Contact (observed,inferred)
- Limit of Alteration Assemblage

GEOLOGICAL BRANCH
ASSESSMENT REPORT

21,442

1" = 10,000

0 200 400 600 800 1000
meters

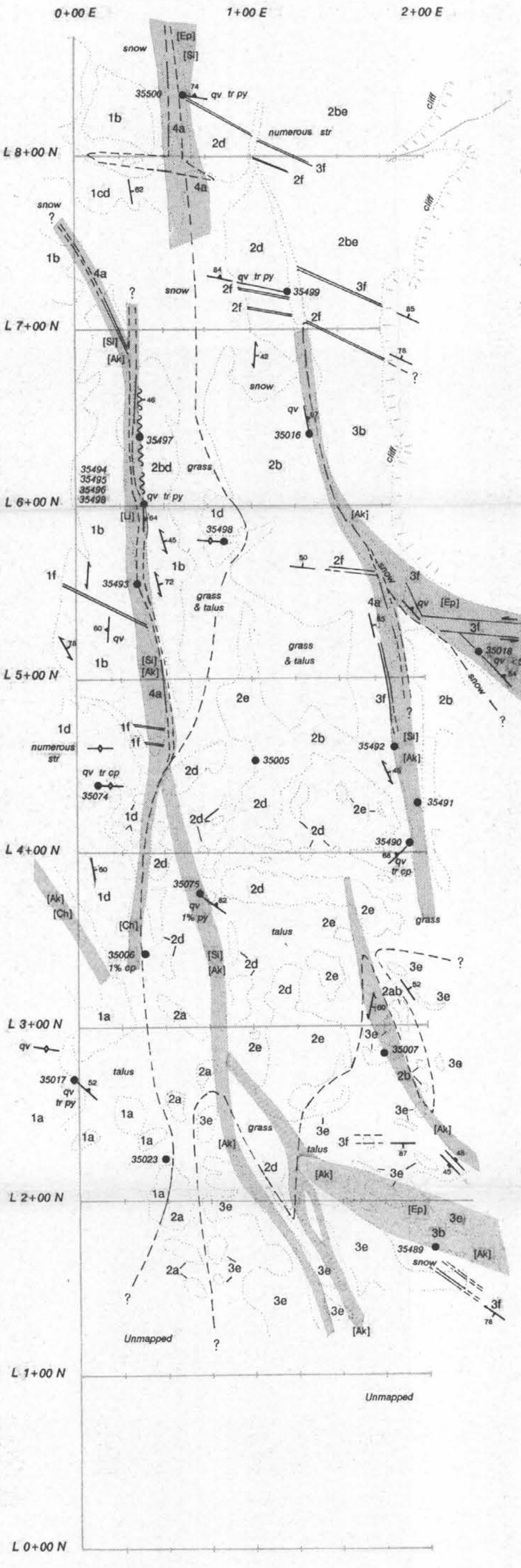
HOMESTAKE MINERAL DEVELOPMENT COMPANY

CONTACT CREEK PROPERTY

PROPERTY GEOLOGY AND SAMPLE LOCATIONS

LIARD MINING DIVISION, BRITISH COLUMBIA

| DRAWN | DATE | FILE CODE | |
|---|---|---|---|
| | 04/91 | 104G/4 | |
| REVISED | | | |




N

LEGEND

4 Felsic Intrusive Dike

3 Hornblende-Phyric Andesite
- a) vesicular flow
- b) agglomerate
- c) ash tuff
- d) lapilli tuff
- e) massive, undifferentiated, unfoliated
- f) synvolcanic dike.

2 Hornblende-Plagioclase-Phyric Andesite
- a) vesicular flow
- b) agglomerate
- c) ash tuff
- d) lapilli tuff
- e) massive, undifferentiated, unfoliated
- f) synvolcanic dike.

1 Plagioclase-Phyric Andesite
- a) vesicular flow
- b) agglomerate
- c) ash tuff
- d) lapilli tuff
- e) massive, undifferentiated, unfoliated
- f) synvolcanic dike.

SYMBOLS

- Area of Outcrop
- Sample Location
- Vein (width, associated minerals)
- Joint (inclined,vertical)
- Schistosity (inclined,vertical)
- Bedding (inclined,vertical)
- [Si] Limit of Alteration Assemblage
- Shear Zone (observed,inferred)
- Geological Contact (observed,inferred)

ABBREVIATIONS

| | |
|---|---|
| [Ep] | Epidote Alteration |
| [Si] | Silica Alteration |
| [Ak] | Ankerite Alteration |
| [Ch] | Chlorite Alteration |
| [Li] | Limonite Alteration |
| py | pyrite |
| cp | chalcopyrite |
| po | pyrrhotite |
| qv | quartz vein |
| str | stringers |
| ma | malachite |
| az | azurite |
| bo | bornite |
| tr | trace |

**GEOLOGICAL BRANCH ASSESSMENT REPORT**

# 21,442

1: 2,000

0 20 50 75 100

METERS

HOMESTAKE MINERAL DEVELOPMENT COMPANY

CONTACT CREEK PROPERTY, B.C.
SADDLE GRID

DETAILED GEOLOGY MAP

LIARD MINING DIVISION

| DRAWN | DATE | FILE CODE | |
|---|---|---|---|
| | 04/91 | 104G/4 | |

Revised