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GEOCHEMICAL ASSESSMENT REPORT

### on the

SIMLOCK CREEK PROPERTY Cariboo Mining Division Cariboo Lake Area, B.C.

NTS: 93A/14 LATITUDE: 52<sup>°</sup> 52'N LONGITUDE: 121<sup>°</sup> 20'W

SUB-RECORDER RECEIVED
JUN - 4 1992
M.R. #\$ VANCOUVER, B.C.
A REAL PROPERTY AND ADDRESS OF THE OWNER OF THE

CLAIMS: HH 1-6 (4535-40), HH 7 (5863), HH 8, 9 (5872-73), HH 12 (5876) HH 14 (7449), HH 16-21 (7493-98), HH 30-35 (8955-8960)

on behalf of

HARVEY CREEK GOLD PLACERS LTD. 8679 12 Avenue Burnaby, B.C., V3N 2M1

by

ALEX BURTON, P.ENG.

With Terrain Analysis by June M. Ryder, P. Eng.

MAY 27, 1992

Burton Consulting Inc. 5900 NO. 1 ROAD RICHMOND, B.C., V7C 1T2 Tel. (604) 244 8413

> GEOLOGICAL BRANCH ASSESSMENT REPORT

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### 1.0 INTRODUCTION

This report has been written on behalf of Harvey Creek Gold Placers Ltd., of Burnaby, B.C. It describes field work, and research studies carried out on the <u>Simlock Creek Property</u>, located northeast of Cariboo Lake, in the Harvey Creek/Simlock Creek drainage area.

The Simlock Creek property is located over Paleozoic goldrich sedimentary and metasedimentary rocks. Previous surveys have detected several gold, silver, lead and zinc geochemical soil anomalies which parallel the regional stratigraphic trend. Silver-rich galena and sphalerite mineralization has been found in place on the property, just east of Simlock Creek, on the 1988 geochemical survey grid.

This study was undertaken to guide further exploration of the soil gold anomalies discovered previously. A Terrain Analysis of the surficial materials was undertaken using colored stereographic air photos and known ground control. The geology to the north along the well known lode gold belt of the Cariboo was extrapolated south through the claims. The glacial directions of the district were examined to see if the anomalous soil values could have been transported from adjacent known areas of mineralization. The rock fragments in the coarse material from soil samples collected by Noranda was investigated. The various results from the different soil surveys were compared to each other and to the predominant rock chips.

A statement of costs incurred directly as a result of this work and study program is included. Some elements of this cost statement were supplied by Noranda Exploration Co. Ltd. and Harvey Creek Gold Placers Ltd.

Recommendations are made for further work on the property.

### 2.0 <u>SUMMARY & CONCLUSIONS</u>

Placer work carried out on Harvey Creek and Simlock Creek generated interest in the exploration for lode gold deposits in the area. Heavy mineral testing on the Simlock Creek drainage led to an exploration program on the claims in This 1988 exploration program resulted in the 1988. detection of significant gold, silver, lead and zinc soil geochemical anomalies which parallel the trend of regional qeologic contacts. Follow-up prospecting soil on geochemical anomalies in 1988 resulted in the discovery of silver-rich galena mineralization in a showing on the survey grid just east of Simlock Creek. Further prospecting and test-pitting was carried out in geochemically anomalous areas in 1989.

Field work carried out during 1990 consisted of site access preparation, surveying, geological mapping and geochemical (rock and soil) sampling.

During 1991 Noranda Exploration Co. Ltd. negotiated an option on the property and did some preliminary field work. Later, budget cutbacks forced them to cancel their option. Harvey Creek Gold Placers Ltd. then authorized this study which concludes that the gold soil anomalies were locally derived

### 3.0 LOCATION & ACCESS

The Simlock Creek property is located approximately 100 airkilometres north-northeast of the Town of Williams Lake, B.C. Access to the property is by road from Likely, B.C. and along the northwest side of Cariboo Lake. From the head of Cariboo Lake a series of forest access roads and recently-built logging roads provides excellent access north to many parts of the property. A bulldozer track now leads directly to Grid line I in the area of the gold geochemical highs.

Location information is shown on Figures 3-1 and 4-1.



### 4.0 CLAIM INFORMATION

The Simlock Creek property, owned by Mr. Frank R. Hallam (in Trust for Harvey Creek Gold Placers Ltd.) consists of 34 claims totalling 156 units in the Cariboo Mining Division, B.C. Claim information is as follows:

CLAIM	NAME #	UNITS	RECORD	# RECORD	DATE	EXPIRY	DATE
HH	1	1	4535			30SEI	294
HH	2	1	4536			30SE1	294
HH	3	1	4537			30SEI	294
HH	4	1	4538			30SEI	294
HH	5	1	4539			30SEI	294
HH	6	1	4540			30SEI	294
HH	7	20	5863			07MAI	393
HH	8	20	5872			13MAI	393
HH	9	20	5873			13MAI	R91
HH	12	2	5876			13MAI	R91
$\mathbf{H}\mathbf{H}$	14	20	7449			24MAI	R93
HH	16	1	7493			04API	R94
HH	17	1	7494			04API	R94
HH	18	1.	7495			04API	R94
HH	19	. 1	7496			04API	294
HH	20	1	7497			04API	R94
HH	21	1	7498			04API	R94
$\mathbf{H}\mathbf{H}$	30	1	8955			16DE0	C93
HH	31	1	8956			16DE0	C93
HH	32	1	8957			16DE0	C93
HH	33	1	8958			16DE0	C93
$\mathbf{H}\mathbf{H}$	34	1	8959			16DE0	C93
HH	35	1	8960			16DE0	C93

Expiry dates shown are after the application of assessment work in this report.

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### 5.0 HISTORY & PREVIOUS WORK

Placer gold was discovered in the 1860's on Harvey Creek as a result of the Cariboo Gold Rush and the ensuing influx of placer mining hopefuls. Over a million ounces of gold were reportedly taken out of Harvey Creek, although the recorded production is much lower.

Modern interest in the Harvey Creek and Simlock Creek areas centered around placer gold. It was, in fact, the search for placer gold which led towards the investigation of the Simlock Creek area as a potential source of lode gold mineralization. Placer gold mining operations provided the initial sampling which triggered the search for possible lode sources in the area. Harvey Creek Gold Placers Ltd. used an R.M.S. Ross Derocker to process bulk gravel samples from the Harvey Creek drainage. Examinations of the recovered gold led to the conclusion that multiple lode sources could exist within the Harvey Creek-Simlock Creek drainage basins. Subsequent heavy mineral sampling of the Simlock Creek drainage detected high gold values from specific side creeks.

As a result of the heavy mineral sampling, field programs which included geochemical rock and soil sampling and prospecting were carried out during the 1988, 1989 and 1990 field seasons. These programs resulted in the delineation of several geochemically anomalous zones (gold, silver, lead, zinc) which appear to parallel the regional stratigraphic trend. Follow-up prospecting in the area of one of these anomalous zones in 1988 resulted in the discoverv of silver-rich sphalerite and galena mineralization in a 30 cm. wide zone in limy laminated phyllites, trending 100<sup>0</sup>.

This report covers the field and research work done in 1991.

### 6.0 GEOLOGY

### 6.10 Regional Geology

The regional geology of the Cariboo Gold Mining District has been compiled and updated most recently by Struik, in Geological Survey of Canada Memoir 421<sup>1</sup>. The pertinent section of the geology map which references the Simlock Creek property area is reproduced in Figure 6-1.

The property is shown to be underlain by a succession of sediments and metasediments of the Paleozoic Snowshoe group, which forms a portion of the Barkerville Terrane. Struik<sup>1</sup> relates vein and replacement deposits of gold, lead and zinc and vein deposits of tungsten and copper to Paleozoic goldrich strata within Downey Succession rocks. The grid area, which straddles Simlock Creek, is shown to be underlain by Downey Succession rocks, which include olive and grey micaceous quartzite and phyllite, and other undifferentiated rocks.

Contacts between the various rock units exhibit a strong north-northwesterly trend(approximately 330<sup>0</sup>).



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### **LEGEND**

(To Accompany Figure 6-1)

### PALEOZOIC

### SNOWSHOE GROUP

 $\mathbf{P}_{\mathbf{D}}$ Downey Succession: olive & grey micaceous quartzite & phyllite, and undifferentiated rocks.  $P_A$ Agnes Succession: quartzite clast conglomerate, quartzite, minor limy conglomerate. PGP Goose Peak Succession: quartzite, minor conglomerate.  $P_{HR}$ Harvey Creek Succession: dark grey & grey micaceous quartzite, and undifferentiated rocks. P<sub>HRc</sub> Limestone & limestone conglomerate. P<sub>HRs</sub> Purple grey very micaceous quartzite & black phyllite.

### HADRYNIAN?

HPS

(H)

Snowshoe Group Undifferentiated.

### 6.20 Local Geology & Mineralization

(SI)

The geology of the ore bearing horizons of mines to the north along strike with the property are compared to the section as known and interpreted from the rock chips in the soil samples collected by Noranda Exploration Company Ltd.

Silver-rich galena mineralization was found just east of Simlock creek in limestone and limy laminated phyllites in apparent contact with argillites to the west. To the south and slightly further east on the section bedrock reached in four locations in an area which surrounds the highest gold soil geochemical value (4500 p.p.b. Au) is a micaceous quartzite, sometimes phyllitic, with ankerite which has weathered and altered to limonite.

According to Struik in the upper forks of Harveys Creek the bedrock appears to be predominantly Undiffererentiated Snowshoe Group. From the crest of the N-S ridge on the west side of Simlock creek the succession changes eastwards into Downey Succession of the Snowshoe Group, consisting of olive and grey micaceous quartzite and phyllite, and undifferentiaited rocks.

The geological cross section in the Simlock Creek area has not yet been mapped in detail, but field observations suggest the limestone in Harveys Creek at the falls between its junction with Simlock Creek and the hydraulic placer workings pit of Barney Bowe is the equivalent of the Aurum limestone unit in the Mosquito Creek Gold Mine. The associated stratiform pyritic "replacement ore" is probably that mapped at this location by Amos Bowman in August 21, and 22 of 1885 as the "Ironstone Ledges". This limestone is along the "Baker" (sericitic, pellitic sediments and the "Rainbow" (black carbonaceous quartzites) contact which was used as an ore control in the Wells mining camp. The associated pyrite, galena bearing quartz veins are also found in Harveys Creek at this location. If this postulated reconstruction is correct then the "Main Band" unit which carries the remainder of the orebodies would stratigraphicaly be where the gold soil anomalies occur in the grid east of Simlock Creek. It is not known if the Main Band limestone extends as a continuous unit this far south, but the Baker sericitic ,pellitic sediments are seen near Harveys Creek, and the sericitic and carbonaceous sediments (Midas?) extend eastward upslope from the Simlock Creek gold anomalies.

The Cariboo Hudson Gold mine immediately to the north of this property is in Snowshoe rocks and are described in Bulletin 34 as "---medium grey fissile to flaggy quartzite or quartz sericite schist, a few black argillaceous beds, sericite schist, and chlorite schist." The rocks match the rock chips collected from the coarse particles of the Simlock Creek soil geochemical survey collected by Noranda. In the Cariboo Hudson gold mineralization occurs in shears and vein systems somewhat related to axial planes in isoclinally folded competent quartzites that became fractured.

Amos Bowmans map of 1885 showed lode deposits along the strike trace extension of the rocks underlying the gold soil anomalies, and modern study of air photos shows an old cabin, trails, and trenches which were seen by Mr. Frank Hallam while prospecting the property (personal communication).

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### 7.0 <u>TERRAIN ANALYSIS</u>

This section covering the terrain analysis was prepared soley by Ms. June M. Ryder as an independent contract to obtain the greatest objectivity.

### 7.10 Methods

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Terrain (surficial geology) mapping was carried out by interpretation of 1:15,000 scale color stereoscopic air photos. Terrain unit boundary lines were transferred by hand onto the 1:10,000 scale topographic base map, using the positions of previously mapped roads and other features as a guide for the correct positioning of the lines. The location of logging roads, trails, and old mining features, on the topographic map were checked against visible features on the air photos and their positions confirmed or modified. Some old cabins and trails were identified on the air photos. Additional mining features such as survey grids and base lines were added from surveyed maps and sketch maps.

Reliability of terrain mapping is estimated to be moderately good. No field checking was carried out, but terrain characteristics appear to be uncomplicated. Relaibility is probably somewhat higher in the logged areas than in forested terrain. Terrain unit boundaries are all gradational, and so no reliance should be placed on the exact location of a boundary line.

### 7.20 Description of Simlock Creek Area

The topography consists of rounded ridge crests and long, smooth valleysides leading down to narrow valley floors. There is very little surface expression of underlying bedrock structure. Local relief is about 1,000 metres.

The area was glaciated many times during the Pleistocene, most recently during Fraser Glaciation between about 30,000 and 12,000 years ago. During the early stages of the Fraser Glaciation in this area, ice from sources in the Cariboo mountains advanced southwestward down the Cariboo River valley. Low whale back forms in the valley near the mouth of Harveys Creek indicate this flow direction. Later, as the glaciers thickened and all ridge crests in this area were buried by ice, flow was redirected to the northwest in accordance with regional ice surface gradients. Glaciation resulted in deposition of till in the valleys of Simlock and Harveys Creeks. This was probably derived from local bedrock. No features were recognized on the air photos which would suggest glacial (or meltwater) transportation of drift from distant sources into the area studied.

### 7.30 Terrain and Surficial Materials

The general distribution of surficial materials is indictaed on Figure 7-3 which is a schematic cross section. The valley sides are till covered, with the till thickness being greatest at low elevations and on relatively gentle slopes. The till is probably a few metres thick near the valley floor (Mb), and thins to less than a metre (Mv) on upper slopes where it may be buried beneath locally derived colluvium.

Patches of colluvium (Cv) are probably present on steeper slopes, at locations downslope from rock outcrops (R), and collivium becomes more widespread at higher elevations. Along ridge crests, bedrock lies close to the ground surface and till and colluvium infill shallow depressions(Mw,Cw).

Glacial materials are thickest along the valley floor. Glaciofluvial gravels and sands and glaciolacustrine silts may be present here, although the bulk of the valley floor materials are probably till. Postglacial downcutting by the creeks has resulted in the formation of the drift terraces (Dt), see Figure 7-1 in pocket.

### 7.40 <u>Glossary</u>

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TILL: deposited directly by melting of glacier ice; consists of non-sorted mixture of clay, silt, sand and larger particles.

GLACIOFLUVIAL MATERIALS: deposited by glacial meltwater streams, consists of sand and gravel.

GLACIOLACUSTRINE MATERIALS: deposited in ice dammed lakes; consists of clay, silt, and fine sand.

**COLLUVIUM:** material derived from local bedrock and moved downslope due to gravity; consists of loose, non sorted, angular fragments.

Figure 7.3



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### 8.0 <u>GLACIATION</u>

In the CIMM Bulletin of July 1978 Mr. W.R.Bacon, Consulting Engineer while discussing the Cariboo gold camp stated "Nowhere in B.C., however, has the relationship between placer and lode deposits been more clearly and closely demonstrated than in the Cariboo."

For example the placers of Horsefly River, Eureka, and Frasergold Creeks were successfully traced by Clifford E. Gunn to discover the Frasergold Lode gold deposit.

Glacial travel directions were locally to the southwest and regionally to the north. The only known gold deposits are to the north. In Bulletin 34 which describes the Yanks Peak-Roundtop Mountain area Stuart S Holland states "That glacial ice at one time moved in southerly or southwestern direction -- " He also stated "Despite their having been glaciated the valleys of French Snowshoe, Little Snowshoe, Cunningham, and Simlock Creeks have narrow bottoms and moderately to steeply flaring sides." He later stated "The placer accumulation on Harvey Creek lies beyond the limits of bedrock mapping. The only information available is that it lies close to the southerly extension of the Simlock fault." that statement followed a discussion on the relationship between placer deposits and their possible lode sources. He essentialy concluded that the placer deposits accumulated close to and downstream from their lode sources and could not have been transported long distances.

From personal communication with prospector Richard Keep his recconaisance geochemical soil lines done by Gibralter Mines on the next valley to the east of this property revealed no significant gold values thus removing the east from the potential candidates as a source for the Simlock Creek soil gold anomalies.

Delta Aerial Surveys Ltd. who made the base map used in this survey for its original logging purpose noted a series of rock blufffs just north of the southwest flowing creek that cuts across the southern third of the surveyed grid. This area was mapped by June M. Ryder as Cv (Colluvium-veneer) leading north into the area mapped as Mv (glacial till, includes small areas of colluvium). The geochemical soil anomalies run along strike without any apparent changes across the boundary between the Mv and the Cv, enhancing the position that the soils are related to bedrock as are the anomalies. When all the available information is considered it can be safely concluded that the glaciers did not move serious amounts of placer gold over any significant distances. The Simlock Creek east side soil geochemical gold anomalies are just upstream from the largest placer operation on Harveys Creek, the monitor hydraulic sluicing of Barney Bowe's open pit and the several Harveys Creek bed placer operations.

As the soil geochemical survey on the west bank of Simlock Creek showed no significant gold mineralization when the significant amount of exposed bedrock was field checked, and the west branch of Harveys Creek has been tested for both lode and placer gold and found wanting, the only remaining possible source is the bedrock upslope from the gold soil anomalies on the east side of Simlock Creek. This is of course is exactly along the outcrop strike trace of the favourable gold bearing rocks.

#### 9.0 GEOCHEMISTRY

### 9.10 Soil Samples Collected by Noranda

Noranda staff collected soil samples along the East grid on Line I from station 926 at the base line to station 946 at the east end of line I. The stations were consecutively numbered and at 20 metre intervals.

Noranda seived the soil samples in a ten mesh screen, and then analysed the minus ten mesh material in two separate portions based on further seiving at 80 mesh. The minus eighty mesh material was analysed directly and the minus ten - plus eighty mesh material was pulverised and then analysed.

Noranda did not examine or analyse the plus ten mesh material but did return it to the vendor who then had Burton Consulting Inc. examine this material.

A graph was constructed showing the 1988 soil sample results compared to the minus eighty mesh seived soils samples and the pulverized minus ten mesh to plus eighty mesh portion of Noranda's soil samples from the same stations. Their samples were collected from a somewhat deeper horizon of soil. The graph is of course akin to comparing apples and oranges as the materials are not the same.

Noranda's samples show highly elevated values (200 to 880 ppb) for gold in their minus eighty mesh fraction and modest (10 -15ppb) gold values in the +80--10 mesh portion with occassional high blips (25, 100ppb).

As usual when different soil surveys over the same lines are compared the values at each station vary largely, but a general anomaly does definitely emerge. There is no immediately apparent relationship between the predominant rock particle types at each station and the soil gold values.

#### 9.20 <u>Coarse Fraction</u>

The plus ten mesh material was coarse seived (about 5 mesh) to separate the larger rock particles from the fines, and the twenty five largest rock particles picked out by hand. This sample was compared to the remainder and visually it appeared to be representative of the whole plus ten mesh material.



The 25 rock particles were washed and examined with the hand lense to identify rock types, quartz veins, gossans, sulphides, and degree of rock type alteration. Counts of each category were made and are listed in Appendix 1. Numbering goes from Line I East, station 926 at the base line on stations at 20 metre intervals sequentialy to station 946 at the east end of line I.

Each sample showed a preponderance of one or two major rock types typical of the local bedrock. Indeed the sharp changes in predominant rock types from one station to the next were in accord with a locally derived colluvium rather than a modestly transported glacial material. If the soil rock particles were glacially transported one would expect them to be homogenous. All of the twenty five rock particles in each sample exhibited litle or no rounding indicating minor transport. Sphericity of the particles is low with the predominant shape being blade rather than disk, spheroid, or roller. Roundness of the particles is also low with high angularity of edges and corners. Most of the particles look like they have not moved since they were freed from the bedrock.

#### 9.30 Rock Types Present.

<u>White sericite schist</u> with quartz and feldspar grains. In some cases there is a significant amount of grains of ankerite or siderite which are now masses of limonite. At some stations the iron in the white sericite schist particles was in the form of red hematite rather than the more common limonite. Some of the hematite colored specimens were magnetic. none of the other rock types were magnetic.

<u>Green mica schist</u> is similar to the white mica schist except that the mica is a grey - green color like chlorite.

<u>Quartzite</u> is a common rock type which consists of quartz, and feldspar grains with varying amounts of micas, both the chloritic and sericitic varieties.There is noticeable amounts of limonite after ankerite. This rock has classicaly been described as a quartzite but until thin section work has been completed it could just as easily have been derived from a metamorphosed crystal tuff or even a quartz feldspar porphyry volcanic or flow that was later sheared during folding and metamorphism. It has less micas than the schists.

<u>Quartz vein</u> material may be either single quartz particles or quartz veins in a mass of schist. Most of the quartz contained no sulphides <u>Gossan</u> particles are of two types, either limonitic as if from weathering of ankerite, or dark goethite as from weathering of sulphides. Some of the gossans show definite relict sulphides casts, mostly iron sulphides presumably pyrite, although one at least contains identifiable limonite, hematite, chalcopyrite, and pyrite. On other sulphide gossan particles some of the sulphide casts appear to have been developed from the weathering of galena. No visible gold was seen, nor would it easily be seen if present, on the rust stained, handled, scrubbed and washed surfaces.

<u>Ankerite</u> gossan particles might be more common in the source bedrock than they appear in the soil pebbles due to their delicate and friable nature

<u>Arkose</u> a less common rock type was seen in only one site. It appeared dffent enough from the quartzite to be labelled separately.

<u>Andesite</u> was seen at only one site and was relatively fresh dark green color. It could be from a later dyke.

<u>Chert</u>, also uncommon, was seen only at one site. It is probably related to a silica rich section of the black argillites.

9.40 Discussion of Soil Survey Rock Particles.

No rock types that are demonstratably foreign to this area were seen in any of the twenty five rock particles from each of the twenty one stations examined for a total of five hundred and twentyfive pebbles . Nor was any limestone seen even though it is known to outcrop just downslope from the base line. The closest to foreign was the single cherty piece which could be an interbed in the quartzite - schist section as the nearest known major outcrop is adjacent the limestone described above. No exotic or obviously transported rock types were seen.

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In the first four stations(926 to 929) there are roughly equal amounts of the three main rock types - white schist, quartzite, and green schist. The next four stations contain mostly white sericite schist (930 to 933). From station 934 to 936 quartzite is the predominant rock type in the soil particles. Stations 937 and 938 have nearly equivalent amounts of white sericite schist and quartzite, and then station 939 is almost soley quartzite. From stations 940 to 943 white sericite schist with half as much quartzite are the comon rock types. From stations 943 to 946 quartzite with some green schist are the prominent rock types. Quartz pieces may be related to the development of larger metamorphic quartz veins rather than mineralization. Gossan particles are difficult to quantify because the presence of weathered ankerite can influence the perception , and because the sulphide gossans decompose and are quite friable.

The sharp changes in predominant local rock types from adjacent stations argues more for a colluvium source than from a distal glacial source. Gary Bysouth of Gibralter Mines stated in his report on the next valley east of Simlock Creek that"----soils appeared to be developed either over talus or colluvium----".



### 10.0 <u>CONCLUSIONS</u>

This field and research examination of the Simlock Creek geochemical gold soil anomalies has established that the anomalies are real and not transported from some distant place .All evidence points to the conclusion that the gold in the soil anomalies could not have come from the known gold mines to the north. There is also some evidence that the anomalies could not have come from the east. All known travel directions by the glaciers were from the NE to the SW and to the N. The logical conclusion is that the soil anomalies represent a small amount of downslope migration from the lode source(s).

### 11.0 RECOMMENDATIONS

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The soil geochemical surveys should be extended along the strike trace of the favourable horizon.

Surface prospecting should be extended along the same zone.

Vertical soil geochemical profiles should be taken in areas of opportunity.

The geological section should be mapped along the strike trace length of the zone with emphasis on the potential ore horizons.

Further trenching and later diamond drilling should follow on the success of the above programs.

### 12.0 COST STATEMENT

Noranda Costs A. Burton (3 field days @ \$425) F. Hallam (3 field days @ \$150) Truck 4 x 4 (3 days & fuel) Food & Accommodation (2 men, 3 days)

Sub Total

\$3,357.00

\$1,227.00

\$1,275.00

\$ 450.00

\$ 180.00

225.00

500.00

\$3,100.00

135.00

\$

\$

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Geology & Report

Terrain Analysis Air Photos & Maps Particulate Analysis & Report

Sub Total

Total

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1 **2**5

\$3,735.00

\$7,092.00

### 13.0 QUALIFICATIONS

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### <u>**OUALIFICATIONS**</u>

I, ALEX BURTON do hereby certify that I am an independent Consulting Geologist with Burton Consulting Inc. at 5900 No. 1 Road, Richmond, B.C., V7C 1T2

#### I FURTHER CERTIFY THAT:

1. I am a geology graduate of the University of British Columbia and am a registered Professional Engineer in B.C. with Certificate No. 6262 and a Fellow of the Geological Association of Canada, and a founding member of the Association of Exploration Geochemists.

2. I have practised my profession for over 30 years both as an independent consultant and in senior managerial capacity for major mining companies in Canada and other countries.

3. I visited the Simlock Creek Property many times.

Dated this 27nd day of May 1992 in Richmond, B.C.

ALEX BURTON, P. Eng. Consulting Geologist

13.20

#### <u>QUALIFICATIONS</u>

JUNE M. RYDER, P. GEO. 3415 West 24 Avenue Vancouver, B.C. V6S 1L3 Tel. (604) 736 4189

### PRESENT POSITIONS

Adjunct Professor, Dept. Geography, U.B.C.

Adjunct Professor, Natural Resources Management program, Simon Fraser University

Geological Consultant, J.M. Ryder and Associates

### EDUCATION

B.Sc. (Hons) Geography, University of Sheffield, England, 1960

Diploma in Education, University of Sheffield, 1961

M.A. Physical Geography, McMaster University, 1963

Ph.d.. Geomorphology, University of British Columbia, 1970

Registered Engineer, Association of Professional Engineers and Geoscientists of B.C., May 1992.

### APPENDIX I

## (Laboratory Assay Sheets & Rock Descriptions)

Rock Sample Report; Noranda Ex. Co. Ltd., June 11,1991; Project 240.; 2 pages.

Sketch Map, Sample Locations Project 240, June 12, 1991

Geochemical Analysis Certificate, Acme Analytical Laboratories Ltd.; for Noranda Ex. Co. Ltd. Project 9106-055-240; June 27, 1991

Geochemical Analysis, Noranda Vancouver Laboratory; Noranda Ex. Co. Ltd.; Soil Sample Analyses, Line I East from 926 to 946, Simlock Creek Property; July 3, 1991. two sheets Lab Code 9106-055.

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NORANDA EXPLORATION COMPANY, LIMITED

PROPERTY\_Sim loci

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SAMPLE NO.

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boulders to Im, up to 50%

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N.T.S. <u>934/</u> DATE June 11 PROJECT 240

ROCK SAMPLE REPORT

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LOCATION & DESCRIPTION	% SULPHIDES	TYPE	WIDTH	GLAC	G 🗋 A 🗔	G ☐ A []	<u>g []</u> A []	G 🗌 A 🗌	G 🗌 A 🗌	g 🗌 A 🔲	SAMPLED 8 Y
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19 boulder of pj-dolomite bx	55	grab									
150% py, 590 po, on bank of											·····
Harvey's Cr.											
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as for B2B27	50	grab									RB
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dolomite bx with 5-1070	5-10	grab	·								RB
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# NORANDA VANCOUVER LABORATORY Geochemical Analysis

 

 Project Name & No. SIMLOCK/FRANK CREEK - 240
 Geol.: R.B.
 Date received:
 JUNE 20
 LAB CODE:

 Material:
 46 SOILS
 Sheet: 1 of 2
 Date completed:
 JULY 03
 LAB CODE:

 Remarks:
 \$ Sample screened @ +80 -10 MBSH (Called P 221 0) n Organic, & Humus, S Suifide
 Au - 10.0 g sample digested with aqua-regia and determined by A.A. (DL. 5 PPB)
 ICP - 0.2 g sample digested with 3 ml HClO4/HNO3 (4:1) at 203 °C for 4 hours diluted to 11 ml with water. Leeman PS3000 ICP determined elemental contents.

N.B. The major oxide elements and Ba, Be, Ce, La, Ll, Ga are rarely dissolved completely from geological materials with this acld dissolution method.

[mm m		<b>.</b>	- <u>.</u>	14		Da	Re	Bi	<u> </u>	Ce	<u> </u>	<u>r</u>	Ô	Fe	Ga	ĸ	La	Li	Mg	Mn	Mo	Na	Ni	P	РЪ	Sr	Ti	v	Zn
1.1.	SAMPLE	Au	Ag	01	AS	Da	0000	00	of a	DD/0	nnm	nnm	nnm	%	DDm	· %	DDI	opm	%	ppm	ppm	%	ppm	%	ррт	ppm	%	ppm	ppm
<u>INO.</u>	1220200	_ppo	phm-	6 10	12	220	20	5 E	0.67	161	20	21	34	4 4 1	34	2.15	80	44	0.15	552	1	0.15	43	0.07	19	180	0.03	54	75
102	152629	40	35	2 02	12	100	11	12	0.70	74	23	10	101	15.47	56	1.21	36	17	0.13	6490	2	0.14	59	0.16	40	122	0.01	40	59
103	13/839		2.5	5.64	11	107	1.1	5	0.17	121	18	25	50	677	21	1.81	69	28	0.56	1118	1	0.17	52	0.09	31	n	0.09	105	95
104	1E - 920	- <b>చ</b> ్చ	0.0	0.11	11	001	1.7	2	0.17	120	17	20	24	6 69	23	1 35	63	28	0.40	1380	1	0.12	41	0.10	52	79	0.12	96	128
105	927	40	0.8	5.60	2	251	1.5	2	0.24	100	17	29	74	5 77	21	1.00	57	23	0.26	827	1	0 12	44	0.10	43	82	0.08	80	90
106	IE – 928	5	0.4	5.27	8	520	1.8	2	0.19	120	17	44	33	2,11	21	1.4/	57	້	vv	021	- 1			••			••••		
											17	22	61	6 50	$\mathbf{x}$	1 26	72	25	0.33	700	1	0.14	38	0.09	44	76	0.09	96	94
107	IE - 929	60	0,6	5.02	11	448	1.5	2	0.24	143	17	22	51	0.00	24	1.50	74.	25	0.25	103	1	0 13	36	0.06	25	20	0.08	86	74
108	930	15	0.2	5.24	13	437	1.5	5	0.25	14.5	17	18	31	2.17	41	1.00	40	20	0.20	1020	1	0.00	40	0.00	133	6	0.00	67	115
109	931	10	0.4	4.11	7	355	1.3	5	0.21	120	16	24	31	5.50	19	1.01	60	20	0.27	1125	1 0	0.10	40	0.07	84	74	0.10	74	106
110	932	200	0.6	4.26	12	399	1.4	5	0.47	135	16	25	33	<b>3.0</b> /	25	1.07	65	23	0.22	1122	4	0.10	40	0.00	07	22	0.00	71	147
111	IE - 933	105	0.4	4.30	9	445	1.3	5	0.12	105	15	29	37	5.66	<u>14</u>	1.16	54	20	0.31	203	1	0.10	40	0.08	01		0.09	/1	
																		-		010	-	A 11	20	0.00	42	20	0.12	80	112
112	1E - 934	5	0.8	4.95	8	455	1.4	5	0.19	102	16	32	- 24	2.27	17	1.19	4/	28	0.28	813	1	0.11	30	0.00	44	22	0.13	0) 00	
113	935	35	0.2	5.40	11	521	1.5	5	0.11	124	13	28	28	5.05	16	1.48	62	26	0.37	3/8	1	0.13	38	0.08	2/	24	0.12	60	23
114	936	45	0.2	4.21	11	385	1.3	5	0.06	146	12	23	31	4.89	15	1.22	76	17	0.26	622	1	0.10	34	0.09	20	27	0.09	60	
115	937	340	0.4	4.48	15	410	1.3	5	0.06	150	17	24	37	5.22	15	1.28	75	18	0,29	510	1	0.10	40	0.08	34	₩.	0.10	71	104
116	1E - 938	880	0.2	4.40	9	384	1.2	5	0.05	141	13	22	31	5.04	15	1.34	73	11	0.23	327	1 }	0,10	31	0.08	19		0.11	/1	<i>13</i>
																					. 1							60	
117	1E - 939	230	0.2	3.94	16	342	1.1	5	0.03	130	13	20	35	4.76	12	1.23	67	11	0.23	311	1	.0.09	36	0.07	18	- 29	0.07	28	
118	940	835	0.2	4.74	15	448	1.4	5	0.04	126	12	21	29	4.15	12	1.49	67	18	0,30	267	1	0.11	34	0.08	20	37	0.07	66	<b>6</b> 00
119	941	15	0.4	4.10	16	345	1.0	5	0.08	131	10	25	19	5.02	14	1.11	68	18	0.24	376	1	0.08	24	0.07	32	35	0.12	70	90
120	942	20	0.2	4.93	10	429	1.3	5	0.05	129	9	19	27	335	16	1.52	67	8	0.15	167	1	0.12	24	0.04	10	39	0.08	83	54
121	1E - 943	100	0.4	3.28	12	266	1.2	5	0.05	111	15	23	42	4.45	13	0.98	59	14	0,19	361	1	0.09	33	0.06	20	38	0.08	63	<b>72</b>
121	10 710			••												-													
122	IE - 944	20	1.0	4.88	8	388	1.5	5	0.20	126	19	31	54	4.65	18	1.23	63	21	0.28	717	1	0.10	41	0.08	22	50	0.12	90	135
123	945	10	0.4	5.13	5	481	1.6	5	0.08	130	18	29	33	4.65	14	1.39	69	22	0.36	620	2	0.11	40	0,10	16	41	0.10	82	95
124	1E - 946	20	0.2	4.78	14	411	1.4	5	0.05	118	12	23	28	4.26	14	1.37	61	18	0.30	311	1	0.10	32	0.10	15	- 33	0.09	72	91
125	132829 8	5	0.6	7.07	12	391	2.2	5	0.46	147	18	19	25	4.41	27	2.52	73	37	0.17	632	1	0.18	35	0.06	13	142	0.04	59	65
126	132830 8	20	30	4.21	9	238	1.2	9	0.36	57	26	35	89	15.34	48	1.40	29	16	0.13	7543	2	0,16	57	0.11	30	130	0.02	51	51
120	101000 8	~			-																								
127	1F - 976 &	10	0.8	6.00	18	668	1.8	5	0.12	97	19	30	50	6.10	18	1.82	51	24	0,48	1228	1	0.17	46	0.07	32	69	0.07	98	84
120	027.8	5	0.8	5 10	10	517	17	ŝ	0.18	97	. 19	37	30	6.57	19	1.35	.47	24	0.36	1812	1	0.12	36	0.09	61	69	0.09	91	107
128	747 S	2	0.6	577	5	502	20	š	0.16	121	19	32	35	5.73	20	1.78	45	23	0.36	1091	1	0,13	43	0.09	48	89)	0.06	83	86
129	928 8		A 4	5.21	10	160	15	š	0.10	101	23	30	52	6 97	19	1.45	50	24	0.31	1049	1	0.16	39	0.09	59	71	0.06	109	85
130	929 8	C1	0.4	2.21	10	402	1.0	5	0.19	105	21	20	35	\$ 72	18	1 80	54	25	0.26	595	1	0.17	39	0.06	33	74	0.06	108	71
131	IE - 930 §	2	U.O.	0.43	23	234	1.0	5	0.19	102	21	47	55		10	1.02		20		270	- 1								
				2 01	14	202	12	5	0 16	29	18	62	28	5.63	16	1.07	40	17	0.26	1303	2	0.10	`35	0.05	145	50	0.06	63	96
132	IE - 931 §	10	0.0	2.21	14	201	1.3	5	0.10		10	74	22	5 47	20	0.00	42	16	0.27	1505	2	0.09	38	0.05	88	64	0.06	61	94
133	932 §	20	0.0	3.39	19	207	1.3	5	0.49	74	1/	67	22	5 00	11	0.00	34	12	0.24	1134	$\tilde{2}$	0.08	36	0.06	94	37	0.05	56	109
134	933 §	10	0.4	3.18	15	35/	1.1	2	0.08	00	20	02 52	22	Sec.	15	1 11	41	20	0.25	1257	ĩ	0 10	31	0.07	49	42	0.09	77	95
135	934 §	5	0.4	4.18	10	410	1.5	2	0.13	00	20	26	25	2446	-12	1 17	30	16	0.72	611	i	0 10	32	0.06	30	37	0.07	70	
136	<u>IE §</u>	5	0.2	3.82	13	<u>~401</u>		3	0,07		14	. 43	ω	2221421	<u>4</u>	1,1/	55	10		011				0.00		000000000000000000000000000000000000000			≝ 
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<u></u>	SAMPLE	Au Ag	Al	As	Ba	Be	Bi	Ca	Ce	Со	Cr	Cu	Fe (	ia .	K L	a L	i Mg	Mn	Mo N	la N % ppp	î P n %	Pb ppm	Sr ppm	Ti %	V Zn ppm ppm	9106-055 Pg. 2 of 2
No. 137 138 139 140	<u>No.</u> IE - 936 § 937 § 938 § 939 § IE - 940 §	ppb         ppm           100         0.4           5         0.2           5         0.4           10         0.4           10         0.4	% 3.66 3.42 3.42 3.41 4.75	ppm 17 16 20 23 17	250 350 322 315 319 434	1.2 1.1 1.1 1.1 1.1 1.8	5 5 5 5 5 5	0.03 0.02 0.02 0.02 0.01 0.02	72 74 73 77 92	13 15 14 13 18	56 54 44 43 50	31 32 35 35 48	4.73 4.91 5.28 5.07 5.10	10 1. 11 1. 9 1. 10 1. 15 1.	9 3 0 3 4 3 4 4 5 4	7 1 7 1 8 1 0 9 1	1 0.22 0 0.22 8 0.19 9 0.22 8 0.29	884 535 446 601 385	1 0.0 2 0.0 2 0.0 2 0.0 1 0.	19 3 18 3 18 3 18 3 18 3 18 4	4 0.07 8 0.06 7 0.07 9 0.07 3 0.08	24 27 22 22 20	30 26 26 24 34	0.05 0.04 0.05 0.03 0.04	58         72           52         80           55         75           50         73           69         78	
142 143 144	IE - 941 § 942 § 943 § 944 §	5 0,2 5 0,2 5 0,2 25 0,8	3.69 4.78 3.57 4.66	4 4 7 10	335 439 300 391	1.2 1.4 1.2 1.4	5 5 5 5	0.03 0.04 0.03 0.13	83 91 94 94	12 9 13 16	54 44 60 54	25 36 36 45	4.80 3.93 4.55 4.78	14 1. 15 1. 12 1. 18 1.	17 4 71 4 16 4 33 4	2 1 5 6 6 1 6 1	2 0.20 7 0.14 1 0.21 5 0.26	541 191 557 857	1 0 1 0 1 0 1 0 1 0	)9 3 13 2 11 3 12 3	0 0.06 9 0.05 3 0.06 6 0.07	37 7 20 25	30 36 40 47 29	0.05 0.05 0.05 0.08	61 71 77 56 62 66 89 97 60 68	
146 147	IE - 945 § IE - 946 §	5 0.4 5 0.2	4,06 4.10	8 14	389 356	1.2 1.3	5 5	0.03 0.02	83 81	12 11	49 48	28 75	3.95 4.43	12 1. 12 1.	22 4 30 4	0 1	4 0.27 2 0.26	552 400	1 0.	10 3	4 0.08	17	25	0.05	54 74	
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#### APPENDIX II

### **REFERENCES**

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#### APPENDIX IV

#### SOIL ROCK PARTICLE DESCRIPTIONS

Line I on the East grid along the east side of Simlock Creek upstream from its junction with Harveys Creek.

Station sites are numbered from the base line at site number 926 then at 20 metre intervals easterly to the end of the line at station 946. The number of particles of each rock type out of 25 is given first followed by a description of each rock type.

926

134

11	WHITE sericite schist with ankeritic limonite.
6	QUARTZITE less schistose than WHITE with quartz,
	feldspar, sericite.
4	BROWN schist from weathered ankerite
2	GREEN schist, grey green, micaceous
1	CHERT schistose black chert with small quartz veinlets.

1 QUARTZ vein.

927

11 QUARTZITE with quartz, feldspar, sericite, has red hematite staining as well as goethite.

- 8 GREEN schist, micaceous
- 4 QUARTZ veins with some gossan
- 3 WHITE sericite, chlorite, quartz schist

928

- 12 GREEN banded schist
- 4 QUARTZ vein
- 4 WHITE sericite schist, two pieces with hematite

3 ARKOSE

- 2 QUARTZITE green chlorite and sericite micas, quartz eyes,feldspar
- 2 GOSSAN in quartz rich schist

- 9 WHITE schist with ANKERITE sericite, quartz
- 7 WHITE sericite schist
- 7 QUARTZ vein, with sericite and ankerite
- 3 GOSSAN, one piece from galena and pyrite, 2 pieces of quartz vein with hematite from sulphides
- 1 GREEN schist

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10 7 5 2	WHITE sericite schist, some quartz WHITE sericite schist, but with hematite staining WHITE sericite schist, with ankerite QUARTZ vein
931	
9 5 4 2 2 2	WHITE sericite schist with ankerite QUARTZ vein QUARTZITE, with quartz, feldspar, sericite, and ANKERITE GOSSAN, magnetic with hematite WHITE sericite schist with much ANKERITE GREEN schist, grey blue micaceous
932	
14 4 3	WHITE quartz, sericite, feldspar poorly banded schist QUARTZ vein QUARTZITE with quartz, feldspar, and Ankerite GOSSAN, one piece with limonite, hematite, pyrite, and chalcopyrite 2 pieces have quartz and ankerite with hematite
2	GREEN - grey micaceous schist
933	
15 4 3 2	WHITE sericite schist, more massive with quartz, feldspar, and Ankerite QUARTZITE with quartz, sericite, feldspar, and Ankerite QUARTZ vein GOSSAN, one piece is goethite red brown with boxwork holes two pieces are quartz vein with hematite from sulphides.
1	GREEN schist, silvery blue color
934 14	QUARTZITE, quartz, feldspar, sericite, plus ankerite
9 4	GREEN schist, silvery, grey, blue color. QUARTZ vein
935	
15	QUARTZITE, 11 pieces of quartz, feldspar,plus ankerite 4 pieces of quartz, feldspar, ankerite, sericite, plus hematite.
5 2 2	WHITE schist, quartz, sericite, feldspar. QUARTZ vein. GREEN schist, mainly grey mica schist.

18 3 2 2 1	QUARTZITE, blocky quartz, feldspar with ankerite and sericite, two particles with significant ankerite. GOSSAN, quartz veinlets with sulphide gossans. WHITE sericite schist. GREEN SCHIST, blue micas. QUARTZ vein
937	
12 6 2 2	WHITE schist, quartz, sericite, feldspar. QUARTZITE, massive schistose quartz, feldspar, sericite plus ankerite GREEN schist, grey-green micas. GOSSAN, gossanous schist.
938	
10 5 3 3 2	WHITE schist sericite, quartz, feldspar, plus ankerite. QUARTZITE, feldspar and quartz. GREEN schist, grey mica. GOSSAN, quartz vein plus gossan. QUARTZ vein
939	
19 3 2 1	QUARTZITE, quartz, sericite, feldspar. QUARTZ vein, with schist matrix. WHITE schist, massive with quartz eyes. GREEN schist, blue grey micas.
940	
16 7 2 00	WHITE schist, massive with quartz, feldspar, ankerite, plus some silvery micas. QUARTZITE, quartz, feldspar, ankerite. GREEN schist, green micas. QUARTZ
941	
12	WHITE schist, blocky quartz mica schist with sericite

QUARTZITE, like a quartz, feldspar, porphyry.

936

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and chlorite micas.

QUARTZ vein.

GOSSAN

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12 7 3 3	WHITE schist, quartz, sericite, ankerite. QUARTZITE, quartz, feldspar, ankerite, sericite, like a porphyry. GREEN schist, grey green micas. GOSSAN, ankerite veinlets in schist.
943	
16 4 4 1	WHITE schist, massive quartz, feldspar, ankerite, plus sericite schist. GREEN schist, grey green micas in quartz rich schist. QUARTZITE, quartz, feldspar, ankerite. GOSSAN, massive schist with individual relict pyrite gossans.
944	
11 11 3	QUARTZITE, quartz, feldspar, ankerite, +- mica. GREEN schist, massive, quartz, feldspar, grey green micas, ankerite. QUARTZ vein.
945	
13 64 4	QUARTZITE, quartz, feldspar, ankerite, + mica. GREEN schist, massive, grey green micas. QUARTZ vein, 1 vein, 3 veinlets.
946	
18 3 2	QUARTZITE, 11 particles massive schist . GREEN schist, platy blue grey micas.

2 ANDESITE, or 1 QUARTZ vein.

